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JOHN McHUTCHEON.

Aug. 6, 1887]



The GARDEN

AN
ILLUSTRATED WEEKLY JOURNAL

OF
HORTICULTURE IN ALL ITS BRANCHES.

FOUNDED BY

W. Robinson, Author of "The Wood Garden," "English Flower Garden," &c.

" You see, sweet maid, we marry
A gentler scion to the wildest stock;
And make conceive a bark of baser kind
By bond of nobler race: This is an art
Which does mend nature, — change it rather, but
The art itself is nature."

Shakspeare

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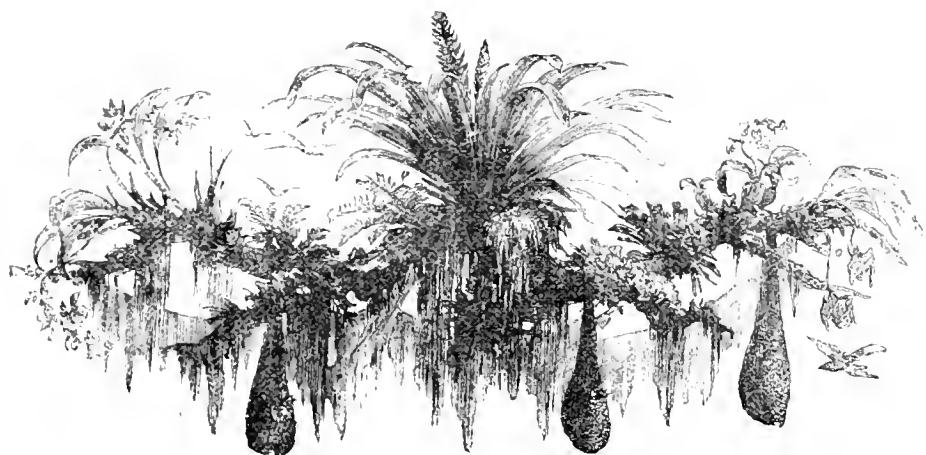




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THE GARDEN.

VOL. XXXI.

FRUIT GARDEN.

SMALL FRUIT GARDENS.

I HAVE often wondered that small gardens attached to villa residences are not oftener than they are laid out as fruit gardens. In many cases they are not large, the soil is often poor in quality; but all things considered, the evidence, as a rule, is in favour of planting fruit trees. People who have passed middle age generally take to fruit culture more than to flowers. Most growers know that vigorous shoots if allowed to develop to their full extent are not fruitful, and such shoots monopolise more than their fair share of the elaborated sap, causing the weaker shoots to grow more weakly than they otherwise would do. How to treat these vigorous shoots is a question that is not always answered in the right way. I propose to answer that question and some others, but before doing so, I will state how such gardens as those to which I have alluded ought to be planted. An amateur, whom I knew some fifteen years ago, acted as to planting and pruning on my advice, and did most of the work himself; and no wealthy landowner, whose garden is filled with the choicest flowers and fruits, could have more pleasure from it than the garden in question yields, though only a narrow strip divided from the neighbouring gardens by low walls on each side. One wall faced the south-west, and this was planted with Peaches, Nectarines, and Apricots, and Black Hamburg and Royal Muscadine Grapes. The wall at the end of the garden did not get much sun, and there we planted a Morello Cherry. On the other wall, which was not much exposed to the sun, we planted Plum and Apple trees. The border in front of the walls was not wide enough, or we would have had a row of cordon Apple trees about a foot from the ground instead of box edging; a few flowers were planted on the borders. The path all round was not a wide one—not much more than 2 feet. If space could have been afforded, the border and path ought to have been 4 feet wide each. The centre of the garden we planted with pyramid Apple and Pear trees, Gooseberries, a few Currant trees, and Strawberries. There was room for three rows of fruit trees worked on dwarf stocks at 6 feet apart. The trees being small at first, two rows of Strawberry plants were placed between them. The Gooseberries stood 3 feet apart; 4 feet would have been better, but we had not much room. The ground

received but little preparation beyond digging it up and adding decayed manure; some decayed fibre from an old heap of Couch Grass was also placed round the roots of each tree when planted. It may be well to observe that I never plant a fruit tree without placing some decayed turfy loam around its roots. Any mangled roots are cut off clean: the hole for the tree is made large enough to permit the fibrous roots to be spread out to their full extent. Under the roots we spread a layer of this fibrous turf, and placed some more of it over and amongst them. This fibrous material is conducive to the formation of quite a mass of roots during the first year, and their formation is accelerated by placing a mulching of decayed manure over the surface of the ground as far as the roots extend. No manure is added to the turfy loam. Wall trees and standards are treated alike. We are not so particular with Gooseberry and Currant bushes, although the same care bestowed upon them would not be labour wasted.

It is desirable to obtain good trees to begin with; they should be purchased early in the season and be sent home in November, or not later than December, and all the arrangements for planting them should be complete before they arrive. Get them into the ground as soon as possible. Some years ago I recommended a fruit grower to purchase some good wall trees, which he did, paying a high price for them. They were planted; but some years afterwards I heard they were doing badly, and on calling I found a large portion of the wood dead. The cause of this was soon discovered. It arose from burying carrion in contact with the roots, and thus killing them; growth was arrested, and they never recovered, even after the carrion was removed. Another grower whom I knew planted some wall trees; he spread out the roots and nailed the branches to the wall, but at the end of four years they had produced nothing but leaves; they made very strong growths annually, which were left to the autumn and then cut out. This being done yearly, the shoots got stronger still, and the trees grew at an alarming rate. The mistake in this case was allowing vigorous growths to develop at all. They ought to have been pinched back in the summer time; shoots not required should also have been cut out at that time. Careful hand-pinching and pruning in summer will restrain tree growth, unless the ground is immoderately rich with manure. Fruit trees do not require

heavy manuring. Ordinary kitchen garden soil that has been annually manured for vegetables would not require any more stimulus of that kind if fruit trees were to be planted. I have the greatest faith in surface dressings with manure, especially during summer: they retain moisture around the roots and near the surface, and induce the roots to work in that direction instead of deep into the ground to find moisture in dry weather. I had recently to lift some pyramid Plum trees which had been planted three years on over-rich ground, and although sufficiently summer pinched to restrain such free-fruited varieties as Victoria, Pond's Seedling, Orleans, Diamond, and others from making too much growth, we found those that did not carry good crops made too strong wood. They were removed from the ground entirely—an operation which has induced them to bear freely. When a tree has been lifted and re-planted, or even root-pruned, the branches should not be interfered with. The object of cutting the roots is to check the supply of food, but if some of the branches are removed the balance between root and top is again restored, and no good results from the operation. A wall tree has a tendency to grow with greatest vigour in the centre, and with least at the base. The balance of vitality can therefore only be well maintained by summer stopping and pruning. If the vigorous centre growths are stopped, those lower down on the wall, which may not require stopping, will grow with greater vigour. Many lay in too much young wood, which is a mistake. No more ought to be nailed in to the wall than will be required for next season. We do scarcely any winter pruning, either in the case of wall trees or in that of trees trained as bushes and pyramids in the open ground.

Insect pests are a great trouble in some seasons Plum trees especially being seldom free from them. Dusting with tobacco powder or washing with a solution of soapy water strengthened with tobacco liquor will destroy them. Red spider often injures Peach and Nectarine trees; it can, however, be destroyed or kept under by frequent syringings in hot, dry weather. Mildew, which may also appear, yields most readily to flowers of sulphur dusted upon the affected parts. The best results in the way of fruit growing cannot be obtained unless the trees are kept clean, and when they show signs of distress in hot, dry weather, mulchings and a good soaking of water benefit

them greatly. In many gardens water is laid on, and can be applied with a hose when wanted. This lessens labour immensely. J. DOUGLAS.

FIGS ON THE SOUTH COAST.

FIGS grow with great luxuriance on the south coast, and ripen fine crops of fruit, but, nevertheless, no attempt is made to turn these advantages to practical account on anything like a large scale for the supply of our markets, although I have not the slightest doubt that anyone growing them with anything like the care that is bestowed on many other fruits would be well rewarded. It is no uncommon thing to find very large Fig trees on this part of the coast that have evidently at some remote period enjoyed the advantage of wall culture, but that have long since left the walls and grown out into wide-spreading heads that produce annually many hundreds of fine fruits each. In autumn such trees must yield a good revenue to their owners, as they invariably sell well, even when other fruits are a glut in the market. I should say that a century back the Fig was far more largely planted than it is now. Very fine specimens may be seen growing on the walls of Salisbury Cathedral; at Eaglehurst Castle, too, overlooking the Solent, some of the largest and most prolific open-air Fig trees in the country may be seen, the main stems being larger than a man's body. Such trees must certainly have left the walls more than a century ago, as the limbs which run out cover a very large space, not only over a wide border and walk, but are stretching out on to the vegetable quarter beyond. They are supported on stout posts, furnished with cross-bearers, and the crops of fine Figs thus produced are enormous. We have in this neighbourhood Figs in all directions growing nearly wild, especially on the old walls of farm and manor houses, where they were evidently carefully cultivated before the advent of cheap glass caused these open-air wall trees to be so much neglected. Now, when so many are inquiring what they can grow for market, it is singular that the Fig is overlooked, for, unlike the open-air Grape, it fruits freely, and ripens its crops in this district even away from walls, and now that Grapes realise such a low price, even from under glass during autumn, I feel sure that the Fig would be more profitable. The Brown Turkey and White Marseilles appear to be the only sorts planted so long ago as these old specimens date back to, and very useful kinds they are. Some of the newer sorts might, however, be tried with good results, for if so much earlier and more prolific in a young state in pots under glass than old sorts, why would they not be equally suitable for open-wall culture? About here very few owners of gardens think it necessary to train Figs close to the walls; they simply plant them in some sunny corner and let them take their chance, and very fine fruits in this way they get. It is rare that the wood of the Fig tree suffers from frost on the coast, and covering up in winter is unknown; if the tips get injured they break out all over from the older wood, and soon recover, but, of course, when this occurs the crop for the current year suffers, as it is only the first show of fruit that can ripen in our short summers. If any regular system of market culture were attempted, it would probably be found the best course to either adopt some of the old devices of our forefathers, or else the modern system of glass copings; at present, although the Fig is so well grown in private gardens, it is almost totally ignored as a market fruit, although it is equal in value to many fruits on which great care is expended. J. GROOM.

Gosport.

Lord Derby Apple.—This is a culinary Apple of great merit. The tree is a robust grower and free fruiter. It is not unlike Lord Suffield in this respect, and at first, when the fruits are small, they might be taken for fruits of that variety, but before harvesting time they become much larger and flatter than those of Lord Suffield. We

have tried repeatedly to keep fruits of Lord Suffield until the new year, but they always shrank very much or decayed; whereas those of Lord Derby are just now in prime condition, and will keep so for three or four weeks to come. It is a noble Apple, of a thoroughly useful description.—J. MITR, *Margam, Port Talbot.*

PEAR CULTURE AT GUNNERSBURY PARK.

THERE is now at Gunnersbury Park one of the best collections of Pears probably to be found in Middlesex. Mr. Roberts has during the past few years planted weeping cordons, covering every piece of available wall with them, and they have now reached a good bearing condition, enabling some definite conclusion to be arrived at as to their quality as bearers. The trees are planted from 2½ feet to 3 feet apart, and they vary in height according to the walls—from 6 feet and 7 feet to 9 feet and 10 feet. Those on a north-west aspect are planted at the back of the plant houses and vineries. Williams' Bon Chrétien gave no fruit on the wall, but shoots trained round a corner, so as to have a south-west aspect, bore fruit. Neither Winter Nelis nor Duchesse d'Angoulême have done well, though the last-named bears well as a pyramid. On this aspect Vicar of Winkfield does remarkably well, while Beurré Superfin fruits but sparingly. Baron de Melo, Souvenir du Congrès, and Marie Louise bear well; while neither Glou Moreceau nor Doyenné du Comice yield anything like satisfactory crops. Van Mons Léon Leclerc does well, also British Queen, but Fondante d'Automne not so well. On the west side of one of the houses Chaumontel bears well, but not a fruit comes on the more northern exposure. On the latter Hacon's Incomparable does very well. Glou Moreceau does remarkably well at Gunnersbury on an espalier. It may be remarked that the borders are all made 2 feet in depth, with a good deal of clay in them.

On a south-west wall, which is fully exposed to the north-east at the back, Mr. Roberts has had good crops of excellent fruit. Pitmaston Duchess is especially fine. Van Mons Léon Leclerc does well anywhere about the garden; but Fondante d'Automne, though doing better than on a north-west wall, is by no means free; Bon Chrétien is here very fine; Eye-wood, an excellent October Pear, bears well; while Beurré Superfin fails here, as it does on the colder aspect, and it does not bear well even under the most favourable circumstances. British Queen, Forelle, and Beurré Bachelier are all very fine; Nouvelle Fulvie bears well and is of excellent quality; Louise Bonne of Jersey is very good; Gansel's Bergamot grows very strong and requires double grafting to make it fruitful; Doyenné du Comice did not yield any fruit; Beurré Clairgeau is very showy and fine, but lacks quality; and Uruaiste on a north-east exposure grows freely, but does not bear any fruit.

Against a north-east wall 10 feet in height Mr. Roberts has planted a large collection. Marie Louise d'Uccle, a portion of the tree on a south-east aspect also, always bears well, and Mr. Roberts strongly recommends this as a market variety, as it is certain to bear a good crop. Doyenné du Comice does not bear so well as on a south aspect. Beurré Bosc is one of the best and freest of Pears; on the other hand, Gansel's Bergamot next to it bore a poor crop. Conseiller de la Cour bears fairly well; Nouvelle Fulvie does very well; Glou Moreceau does best on an east aspect; General Tottleben does not crop freely, nor does Duchesse d'Angoulême; while Pitmaston Duchess is very good indeed; Beurré Diel failed to bear, but British Queen gave a good crop; Thompson's does not bear so well as on pyramids in the open ground; Winter Nelis crops fairly well; Van Mons Léon Leclerc is good; Urbaniste has no crop; Beurré d'Anjou, a few; Prince Consort does well on this aspect; Beurré Hardy is a tardy cropper; Crasane bears well; Easter Beurré does not do well; Zephirin Gregoire is a capital bearer; Beurré Superfin had only a few; Beurré d'Arenberg had very fine fruit; Baron de Melo bore well; Beurré Bachelier had very fine fruit; Josephine de Malines does not even flower on this aspect; Doyenné d'Alençon does not produce fine fruit; Vicar of Winkfield does fairly well; Comte de Lamy is a charming little Pear here; Fondante d'Automne also bears good fruit.

There is an excellent collection of Pears as pyramids. Chaumontel bears moderately, but does not ripen well, and evidently should be on a south wall; Van Mons bears well, and is one of the best; Easter Beurré bears freely; Glou Moreceau, very free bearer; Napoleon, very fine; Morel, very late, a spring Hesse, which it greatly resembles when fully ripe, and is a very heavy bearer; Louise Bonne of Jersey does well as a pyramid; Catillac bears well and the fruits acquire a very fine colour; Thompson's does well; Seckel does moderately well; Fondante d'Automne bears uncommonly well; Jersey Gratioli well; Marie Louise is very good; Bon Chrétien furnishes a very good crop, some of the fruit being particularly fine; Beurré de l'Assomption, good quality, quite equal to Williams, nearly as large in size and earlier; Nouvelle Fulvie is a large bearer; Pitmaston Duchess does well as a pyramid and is fine in flavour; Beurré de Capiamont always bears well; Beurré Rance, a large crop, always bears well; Winter Nelis the same.

It may be remarked that the trees against walls have been planted six years; they are all on the Pear stock, and nearly all of them were root-pruned two years ago. The pyramid trees are some of them of large size, having been planted a good many years ago; while some have been planted only during the past two or three years. R. D.

VINERY BORDERS.

WITHOUT a well-prepared border for the roots of Vines no one can expect to have uninterrupted success in Grape culture. Next to a good border comes a suitable house, and for all practical purposes the lean-to form is the best, affording, as it does, a good long rafter. In order to secure the latter, a high back wall and a rather wide house are essential, conditions under which the best Grapes are produced. Good Grapes, I know, may be grown for a few years where both roots and branches are restricted, but I am alluding to Vines that may be expected to remain in a thoroughly satisfactory condition from twenty-five to thirty years.

With respect to the border, a very important point should be remembered, and that is that the depth must be in proportion to the width. If the width is only 10 feet the depth should be 3 feet, or, in other words, a narrow border should be deeper than a wide one. I prefer one 30 feet in width and 18 inches in depth to a narrower and deeper one, but if I could only secure a space 20 feet in width, I should make the depth 2 feet. In estimating the space I, of course, include the inside border, and I am decidedly in favour of planting inside, whether there is an outside border or not. Borders should never, however, be constructed altogether inside, unless there is every prospect of the roots getting all the moisture that they require. Inside borders need large quantities of water to sustain the Vines in a satisfactory condition for a number of years. Therefore, in all doubtful cases, it is best to have both an inside and outside border, and the front wall should be set on arches, so that by planting close to the wall inside the roots may go outside, where they will be independent of the cultivator as regards moisture. I am in favour of a rather large root-run, and then one need not be afraid to depend entirely upon a good loamy soil, and a fair proportion of brick-rubble to secure healthy growth and full crops of good fruit.

Charcoal is not of much use in borders, and I am not prepared to advocate a large outlay in bones or other ingredients of a like character. I do not say that I would not use a limited quantity of half-inch bones if they were to be had, but I prefer to place my faith in good loam, when it can be had in sufficient quantity and fibrous in character. I mix one cartload of brick and lime rubble with four times that amount of loam, and I have no reason to complain of the sustaining property of this mixture. Twenty years' experience has fully convinced me that loam taken from the blue lias formation is unsuitable for Vines; that taken from the red sandstone is best. The latter not only sustains the plants for a longer time in vigorous health, but their growth from the first is more satisfactory. A sufficient quantity

of some opening material should always be used along with the loam to keep it from getting into a close, sour condition. I do not, however, agree with using too much rubble, but a limited quantity is essential for keeping the soil in a healthy state. Vine roots do not object to come in contact with half a brick or a lump of old mortar; this is evident from the fact that the greatest amount of roots is found near such materials. Manure in Vine borders is unnecessary where a loam of a substantial character can be had; in fact it often does more harm than good, inasmuch as it encourages growth that is too strong to become hard or solid, and if used at all freely it sours the soil and renders it unfit for the roots. If the loam should be considered deficient in strength, a good layer of half rotten manure laid on the surface as soon as the border is completed will afford the roots all the nourishment they want in order to give them a good start, and the fertility of the soil may be kept up by repeating the application every winter. If turfy loam is used (and it is best), 6 inches must be allowed for sinking, and not less than 4 inches for other descriptions of soil.

As to draining borders, I maintain that Vines are more likely to suffer from draining too much than too little. Unless the position is very low and damp it ought not to be drained at all, and then only sufficiently to carry away any water that may soak into it from the surrounding ground. There are very few districts in England where the rainfall is in excess of the requirements of Vines; therefore to facilitate its departure from their roots is to rob them of their needful supply of moisture. Inside Vine borders should never be drained unless under very exceptional circumstances. Where it is thought desirable to lay down a drain for outside borders, one along the front will in most cases be sufficient, and that must have a proper outlet or it will do more harm than good. As regards the bottom of the border, what requires to be done to it must depend entirely upon circumstances. Where the subsoil is bad and within 2 feet of the surface it is desirable to put a layer of concrete over it to prevent the roots from penetrating it, but in the majority of cases it will be better to depend upon lifting the roots once in every eight or ten years, so as to be sure of their being kept out of the bad soil. This is not a serious undertaking; if half the Vines are lifted at one time, the loss in the crop will not be great.

The best black Grapes for early forcing are the Black Hamburg, and the best variety of this sort is the Frankenthal. There can be no mistaking this fine Grape when one has once seen it, for it produces large and evenly-shouldered bunches, and the skin of the berries has a hammered appearance. The Mill Hill Hamburg is a more hardy variety, but its bunches are usually short and too heavily shouldered to be handsome. The best white sort for early forcing is Foster's Seedling. It is a good-bearing and free-setting Grape, but it should only be planted in the proportion of one to three of the Hamburgs. For cool vineries the Black Hamburg and Buckland Sweetwater are the best. The last-mentioned is a fine Grape, but it requires to have a portion of its roots in an inside border. For an intermediate vinery the Madresfield Court Muscat is a valuable Grape when one can master its cracking propensity, which is rather difficult to do; otherwise it has a noble appearance, and is a delicately flavoured Grape. Alicante is an accommodating sort, and is, I think, the easiest of all Grapes to manage. It produces huge bunches of a jet-black colour, but in flavour it is only third-rate. The Muscat of Alexandria is the best flavoured of all white Grapes, and it is a fairly good keeper. The two best flavoured and best keeping black sorts are Lady Downes Seedling and Mrs. Pincee Muscat. The last is but little inferior in flavour to the Muscat of Alexandria. J. C. C.

Market Pears.—"R. D." tells readers of THE GARDEN that Beurré de Capiaumont is a dessert Pear of good quality. If he had said it was a good paying variety, he would have

spoken the truth. Further he adds that Beurré Diez is a dessert Pear of the highest quality, which it is not. I have sold both in Covent Garden Market, and grown both, and my opinion is that they are not even second class.—A PEAR GROWER.

OUTDOOR GRAPES.

THE danger incidental to any effort to popularise the cultivation of outdoor Grapes is, that some may be induced to regard it as a sound trade. That would indeed be a grave error. Compared with good, cool vinery Grapes at 1s. per lb., or of good imported Grapes at 4d. and 6d. per lb., the best home-grown outdoor Grapes would not fetch more than 2d. per lb., and even then only after good cultivation combined with thinning the berries, and the best crop that could be produced at 2d. per lb. could not pay for such expense and trouble. Those who know what the prices paid to growers will probably think that the grower of such outdoor Grapes would be fortunate if he obtained 1d. per lb., especially if 2d. per lb. is the retail price. If we compare the produce of any given south aspect house, wall, or wood fence—indispensable associations for the production of fairly ripe Grapes outdoors—with what a similar area will yield in Apricots, Pears, or even Tomatoes, and all these products first-rate in quality and saleable, we shall find that the latter far excel in value that of Grapes of any kind, and at the same time they are more reliable as croppers. If it be pleaded that outdoor Grapes may be profitably utilised in the making of British wines—and that may be so—it is evident at once that not only is the knowledge of wine-making domestically almost extinct amongst us, but also that even the best can hardly hope to compete with the cheap products of the Continent. Home-made wines are at the best acidulated sharpness, neutralised by ample quantities of foreign sugar, combined with the illusive sparkling of carbonic acid gas. Probably much foreign wine is no better, but it is hardly worth while to encourage such a domestic industry. Outdoor Vines may be grown with us for two reasons: first, to see how near it may be possible to induce certain kinds under highly favoured conditions to approach fruit-quality found in vineries; and secondly, as house, wall, or fence coverers. Vines have the advantage that they can run up and cover elevations not accessible to other fruit trees. Garden walls also have a very pleasing look where Vines run up the piers and along the tops of the intervening spaces, forming pretty frames in which are set Peaches, Apricots, Pears, or Tomatoes, or perhaps Camellias or Roses. These are purely forms of incidental cultivation. Without doubt, black Grapes are the most pleasing for such purposes, as the coloured bunches of fruit, even though not really ripe, are more pleasing to the eye in connection with the green foliage than white Grapes. Of course, we have no black kinds which ripen so thoroughly in the open as the White Sweetwater and Royal Muscadine do, excepting, perhaps, the little Black Cluster or the Parsley-leaved variety; but I have found Black Alicante, Hamburg, and Royal Ascot to colour admirably outdoors, the former fruiting with great freedom. Fruit of this kind, even though well coloured, is so excessively sharp, that it can in no sense be termed palatable, although perhaps equal to many of the Canadian Grapes. A. D.

"Veronica" and outdoor Grapes.—There has been a good deal said about Grapes in THE GARDEN of late. Those who say good Grapes may be grown in the open air in England would help their arguments greatly by telling one where good fruit may be seen. Those Leicester Grapes were probably encountered by "Veronica" at that period of vigorous sense when the crunch of a green Gooseberry is a welcome sound! If "Veronica" goes back to the reasons for calling Lee's nursery the "Royal Vineyard," he may prove much, but not throw light on Grape-growing on open walls in our own day. Really eatable Grapes should be grown in more than one favoured county before people generally are advised to plant. I think Mr. Marnock's opinion worth a good deal, and

Canon Ellacombe's too. I have seen many little Surrey and Kent gardens during the past few years, and never saw a really good Grape; but it is extremely rare to find that any attention is given to the Vines.—W. R.

UMBRELLA-SHAPED FRUIT TREES.

A FEW years ago this plan of training was very popular, but now one rarely meets with trees so treated. The fact is, a tree trained in the form of an umbrella is, to say the least of it, unnatural. Strong shoots spring up in the centre and starve the depressed and most fruitful branches; the fruits become speckled, small, and worthless, and although this was partly got over by removing the shoots in the centre, trees thus trained were not satisfactory. A few years ago I had some such trees come under my care, and the little fruit which they bore was so deformed and worthless, that it was difficult to determine to what variety the trees belonged. The first row happened to be Beurré Bose, one of the best of market Pears. In its case I left all the young shoots to grow for another season without any pruning, and by the end of the second year the trees had fine heads bristling with flower-buds. These we thinned out, and cut away all the old spurs and useless wood from the centre, and by repeating this process we have now some of the finest and most fruitful trees I have ever seen. The crop, both this and last year, amounted to about three bushels each tree, all fine marketable fruits without speck or blemish. Now, beyond not being pruned, thereby retaining a much larger amount of wood and leafage than hitherto, these trees received treatment not different from that to which they had previously been subjected. Their roots were neither lifted nor pruned. They were merely mulched, and the surface of the ground was lightly forked. Now they have made heads as large as we like to have them, viz., accessible in all parts from a pair of folding steps about 4 feet high. We now stop them in close, for all the shoots are of equal strength. It is surprising how such training as the umbrella form ever became popular. The shoots require no bending down to render them fruitful. J. G. H.

Forking amongst fruit bushes.—Much harm is often done by forking amongst small fruit bushes, the digger often considering it to be impossible to kill a Currant or Gooseberry bush, and at this season, when manure is spread over the soil above the roots, it is frequently forked or dug in regardless of the damage done to them. Indeed, I have known youngsters to be put amongst fruit bushes to dig when they could not be trusted anywhere else. There is, however, a right and a wrong way of manuring fruit bushes, and the right way is never to mutilate roots, or as few of them as possible. The finest small fruits I ever saw were growing on bushes where no fork or spade had been used for years. They, however, received a mulching of manure on the surface after they were pruned in winter, and this treatment is that which they like above all others. Raspberries, too, are very impatient of having their roots disturbed, and mulching them is the only safe way of dealing with them.—CAMBRIAN.

Raspberries in odd corners.—There is a continual demand for subjects which will grow and prove profitable in odd corners and waste places, and the Raspberry is better adapted for such positions than any other fruit with which I am acquainted. The rubbish heap here is a little way removed from the kitchen garden, and underneath trees. The soil is anything but good; nevertheless, some old Raspberry roots which had found their way into it have become established, and not only grow luxuriantly, but fruit profusely every year. I know of instances of the same kind elsewhere, and from the satisfactory manner in which they grow in such cases it is to be regretted that anyone should give up good ground to Raspberries. In some parts the woods abound with them; this is notably the case at Drumlanrig, as I can well remember when a boy there assisting to

gather bushels of fruit from them, and I have never seen any better coloured or more juicy Raspberries since then. When "doing up" Raspberries in the garden there are generally many suckers to remove, and if these are planted in odd and waste corners their owners will soon be astonished at the result.—J. MUNN.

ORCHIDS.

THE DOVE ORCHID.

It is mentioned in THE GARDEN that this interesting Orchid has lost favour with growers, because it does not bloom freely. With me it is the freest blooming Orchid I have, and I find no difficulty with it in any way. Last year I had a plant of it that the year before made three large bulbs. On these three bulbs I had five flower-spikes which stood 5 feet 10 inches in height and carried over thirty flowers each, which lasted three months. Those first opened were very large, but they got smaller towards the top. All, however, made excellent button-hole bouquets. I know of no flowers that last so long after being cut as those of this Orchid. I have often sent them through the post long distances, and yet they come out fresh, and have been used for button-holes for a day or two afterwards. I certainly should not advise plants of this Orchid to be grown in 6-inch pots, a size which some have recommended for it. Some of my bulbs would well-nigh fill such pots; still, it is interesting to know it will flower in such small pots. Until within the last year or two I had but one plant; I have now broken it up into some eight or ten plants, and they are growing well, but too late to make the bulbs which I should like them to make for flowering next autumn. I find that even the oldest bulbs will throw up growth either on the top of the bulb or at its base. I have bulbs which I know to be eight or nine years old that have thrown up growths. When I had two or three small bulbs sent me some ten or eleven years ago, I knew nothing as regards their cultivation, and cared little about them; they were potted much as I potted *Paneratiums*, with which they were associated, and no two plants in the stove have given me more satisfaction. The soil used for the *Peristeria* was perhaps a little rougher than that for the *Paneratium*. It was much the same as that used for *Phaiuses*. The latter were grown in 12 inch pots, and each plant gave me nine spikes of bloom, which I have not had since; but it must be remembered I have not grown them plunged in bottom heat. I know that I am not following the rules of those who teach us how to grow such plants, but it is a fact that *Phaiuses*, like *Eucharises*, do best in bottom heat until, at least, they have made their growth. I have not tried the *Peristeria* in bottom heat. Possibly it would suit it to start it in that way. I committed a mistake last year in regard to the soil in which I potted it; I used too much peat. My loam is very bad, and I thought I would try more peat, but the results are, that my plants have not done so well, and the bulbs are small. My plan is to pot high, place a heavy coating of Moss on the top of the soil, and to give weak manure water once or twice a week. I cover the big, white, worm-like roots as they make their appearance through the Moss with more of the same material. If the plant is in a large pot the bulbs get proportionately large. Never let the plant want for water at the roots, and give a gentle dewing overhead after bright days. Shade but moderately while the plant is growing, and do not be afraid of moisture around it; expose it to the sun and a drier atmosphere afterwards, and give less water, so as to induce rest. If I had to start a bulb just sent me, I should pot it in very rough soil consisting of two parts sandy loam, one part leaf-mould—not fine, but rough—one part Mushroom manure, some charcoal, and a few inch bones placed in a well-drained pot. I would give but little water until it had started fairly into growth. I would keep the atmosphere moist, but I would not syringe overhead until the foliage was a good size. If surfaced with Moss, as stated above, it will be found that the plant will grow all the better for it.—J. TAYLOR, *Huddrick Cottage, Shrewsbury.*

The excellent illustration of this interesting plant in THE GARDEN (p. 374) should, I think, in-

crease its popularity. In no case have I seen it better cultivated than at Belmont, near Taunton, where there is a large specimen of it, which flowers every year in a most satisfactory manner. Every year the bulbs increase in size and numbers, and the flower-stems rise to a height of 4 feet and 5 feet. This plant makes its growth in a high temperature in which it gets plenty of atmospheric moisture, and it should be given a liberal supply of water at the roots. Then follows a good rest in a lower temperature, with a reduction in regard to moisture both at the roots and in the atmosphere.—J. C. C.

FERNS.

VARIEGATED MAIDEN-HAIRS.

VARIATION amongst Ferns is chiefly confined to the forms of the genus *Pteris* and to species of Maiden-hair. Some fifteen years ago variegation was detected in *Adiantum cuneatum*. Part of a plant of it was streaked and splashed with pure white, and some of the pinnules were regularly marked. The variegation in this case being very pure, and the ground-colour on which it appeared being intensely green, the effect was very striking. The plant was put aside, but by some means or other disappeared, and, I presume, was lost. Some four years later a robust-growing variegated seedling of *Adiantum concinnum latum* made its appearance, but owing to the naturally pale yellowish green tint peculiar to the foliage of that species, the streaks, which were numerous, but of a creamy colour, were not sufficiently distinct to make it a plant worthy of attention. Next came a prettily-marked form of *Adiantum decorum*, the pinnules of which were all freely streaked with a greyish white colour; but, though very interesting while young, it assumed when old a certain dingy appearance, which precluded its being propagated and distributed. *Adiantum Veitchi* frequently shows symptoms of variegation, and I have often noticed in various places plants of that species whose pinnules were partially streaked with creamy white, but, notwithstanding the fact that in several instances these striped pinnules were carefully selected and their spores sown separately, none to my knowledge ever produced really variegated seedlings. Some five years ago I received from the Continent two fronds of *Adiantum formosum*, both of which were copiously marked with yellow. These markings, however, did not partake of the character of either stripes or spots; on the contrary, the fronds were more or less splashed with a sort of stone colour, and if the effect thus produced was not exactly beautiful, it was nevertheless very striking, and certainly quite unusual. This species of Maiden-hair being readily propagated by division of the fleshy underground rhizomes peculiar to this Australian species, I fully anticipated that, even if seedlings should fail to reproduce the splashed character inherited from the parent plant, we should ere this have seen this curious plant distributed, but I have heard nothing about it since. The variegated form of *Adiantum macrophyllum* raised at Montmorency, and alluded to lately in THE GARDEN, is, however, a much more striking plant than any of those named above. It is therefore to be hoped that it will reproduce itself true from spores, as in this case propagation by division of the crowns is a slow as well as a risky operation. The reason why I consider a variegated form of *Adiantum macrophyllum* of greater value than any of the other species just named is, because the pure white streaks on a bright green ground are sufficiently numerous to render the plant attractive, but not at all sickly looking; and also because its pinnæ, instead of being minute, like those of *Adiantum cuneatum*, *decorum*, *concinnum latum*, *Veitchi*, &c., are of very much larger di-

mensions, and therefore possess a degree of effectiveness which is not shared by species with small pinnules. When in a young and partially developed state, the foliage of the species from which this new form has sprung is very pretty, and deservedly much admired on account of a bright pink tinge which it has, and which is particularly noticeable in the variegated form. Let us hope that in this case the variegation, which is so bright and so distinct, will prove constant; and that, on account of its easy culture and rapid growth, this beautifully variegated Maiden-hair will before long be included in most collections, where it cannot fail to form a striking and pleasing contrast with foliage of Maiden-hairs of a darker hue. S.

FIRST IMPRESSIONS OF ALBANY, WEST AUSTRALIA.

THE following extracts from a letter written by my brother, who has recently gone out to West Australia, may possibly interest some of the readers of THE GARDEN: "The most glowing accounts which we had of this place were not in the least overdrawn. It was early morning when we dropped anchor, and so we missed the view of the outer harbour—King George's Sound. For the first few days we had unfavourable weather, cold and showery; but now (October) it is lovely—pure, bright sunshine, most gladdening and inspiring. No wonder this is such a paradise of flowers. I have likened the place to Oban, that is, of course, taking a general outline view of it. The town nestles at the foot of two, fine bold hills, with great granite rocks cropping out here and there. Large crags in profusion exist close up to the town. Except in Stirling Terrace, the houses are scattered here and there, and the vacant blocks of land are fenced in roughly with split Jarrah—everything is Jarrah: wardrobes and clothes-props, pews and telegraph-poles, kerbs (in the streets), and logs for the fire. We have not seen a coal fire since we left England. The rough fencing I am describing is universal; brick walls are unknown, so are iron palisades, and consequently these half-fledged towns have the untidy appearance peculiar to the colonies, but there are saving clauses. Out of the window I look across the main street, 100 feet wide. Half of it is a good, hard, well kept road; the other half is a grassy bank sloping down to the boundary fence; such a mass of great Arum Lilies runs along it as would open your eyes if you could see it. Great patches of them are plentiful all over the town; such beauties they are, too. There is a corner of two of the principal streets near where we are staying—such a picture. A great clump of these Lilies and a fine *Pelargonium* almost cover up the fence. *Pelargoniums* of different kinds take the place of Nettles. A lilac one is very common, and grows 10 feet or 12 feet high. One of our fellow passengers brought out a box of *Pelargonium* cuttings, which he tended with great care. He meant to introduce this useful plant to the colony. Imagine his disappointment, on landing at Freemantle, to find *Pelargonium* trees in all the back yards and out-of-the-way corners. Here they bloom all the year round, and grow in nothing but sand, too. I measured a bush of *Heliotrope* growing under the windows of the house next to the one I have taken and found it to be $4\frac{1}{2}$ feet thick and 5 feet high, and finely scented. Fruit trees, I am told, do not answer here. They have been tried and have failed. I have inspected some of them; they were put in as an experiment about fourteen or fifteen years ago, and it is admitted that they bore abundantly for some time. They are now full of bloom, but 'don't bear as they used to do,' and no wonder. They have never been pruned since they were planted, and have rambled up like wild Apples. The fruit does drop off, and can be picked up without much trouble, but as for pruning, good gracious! who is to do it? Fig-trees are a success and bear well. We look out upon a weird tract of partly civilised 'bush,' but far away in the distance we can just see very fine mountain peaks. Our garden, we are told, is famous for its productive powers. There are Peach, Apricot, Pear, Mulberry and other trees in it showing promise

of good crops. Peas and Beans are in full bloom. We have a few small Rose trees with fine foliage and good looking buds, a mass of a charming white climbing Rose, one or two specimens of a variety of Aloe or Yucca, evergreen Pelargoniums, and many beautiful flowers strange and new to us. People here do not care about gardens for two reasons—they won't take the trouble to put seeds in the ground, and all round about is a most exquisite garden, with flowers in endless profusion. At every step we take, even in the limited area we have seen yet, we come across a new Grass, or some queer, odd shaped blossom of a pretty shape or colour. It is, however, beyond my power to give you an idea, even of the flowers, which we have here." T. E. F.

FLOWER GARDEN.

SHOW AND FANCY DAHLIAS.

WHAT is a show, and what a fancy Dahlia? It is only those who grow Dahlias for sale or exhibition who can give answers to these questions. A Dahlia that has a white or bluish base, and has the petals tipped with purple, red, scarlet, &c., is classed with the show varieties; but one that has the ground colour purple, red, scarlet, yellow, &c., and is tipped with white is a fancy Dahlia. All flowers having stripes or flakes of colour on any ground are also classed among fancy flowers. One of the best definitions of a fancy Dahlia with which I am acquainted was given a quarter of a century ago, when the dividing line between the show and fancy varieties was more clearly demonstrable than it is in the present day. It ran thus: "To the composition of a fancy Dahlia, two (or more) distinct colours are essential, if the variegation is in the form of stripes or flakes, as in the case of Carnations. This arrangement of colours, whether the light or the dark preponderate, is in itself sufficient to constitute the sub-division distinguished as striped fancy Dahlias; but if the variegation consists in the edges or tops of the florets differing from the general or ground colour, then the relative position of the colours determines whether the individual is a fancy flower or otherwise. Thus a white, yellow, or any pale variety, edged, tipped, or laced Dahlia with a dark colour, after the manner of the Picotee, is denominated simply an edged, tipped, or laced Dahlia, and is placed in the show section; but when this disposition of colours is reversed, *i.e.*, when the florets of a dark flower are tipped or edged with a light colour, the variety so marked is termed a tipped fancy Dahlia." Whether this definition is sufficiently clear to be understood by readers of THE GARDEN is open to doubt; but it is understood by those who grow collections of both fancy and show varieties. The fact is, the development of the fancy Dahlia (the first of the type having originated in France or Belgium) is of a much later date than the show variety; and, for a time, they were inferior both in size and build. It was some time before they were recognised as up to show form, but when classes were made for them in schedules of prizes, it was found expedient to exhibit them by themselves. But mainly owing to the efforts of the late Mr. John Keynes, the fancy Dahlias, during the last fifteen years, have so increased in size, substance, and form, that they are now on a level of quality with the show flowers so called; more than that, the original lines of distinction between the two have become so obliterated in course of time, that it is now becoming difficult to say what is and what is not a fancy Dahlia, and if experts find it difficult to correctly classify flowers, the outside flower-loving public must be considerably at a loss to do so.

This fact is being so borne in upon the minds of some of the promoters of the National Dahlia show, which is held annually in September at the Crystal Palace, that at a meeting held at the Botanic Gardens, Chelsea, a few days ago, proposals were made to abolish the distinction between show and fancy Dahlias in the schedule of

prizes for next year. It was suggested that the show and fancy varieties should be fused in one group for exhibition purposes; and that they should for this purpose be formed into two main divisions—self and shaded and parti-coloured flowers. Some were for going a step further, and for putting aside all distinctions, leaving exhibitors to show what they pleased—show and fancy both, or only one of these. This proposal was largely supported by the trade growers, but it was by no means favourably entertained by the amateur exhibitors present. Eventually a compromise was arrived at, and it was agreed that the nurserymen's classes should be open to all varieties included under the head of show and fancy, and a new class was formed—one for seventy-two Dahlias, in not less than thirty-six varieties, and not more than two blooms of any one variety. This will enable those who take an interest in the matter to judge of the effect obtained through exhibiting show and fancy varieties on the same stand. There will be classes also for forty eight, twenty-four, and twelve blooms, in which any blooms can be staged. In the amateurs' classes throughout the schedule the old distinction between the show and fancy Dahlias will be maintained.

In order to further illustrate this new classification, open classes will also be provided for. Six blooms of dark Dahlias, distinct; six light ones, six tipped ones, and six striped ones; these will not only introduce what promises to be an interesting feature, but also enable those interested in the Dahlia to gather some idea of the best flowers of the particular types required. A new class is also provided for six varieties of Cactus, or decorative Dahlias; six blooms of each to form a bunch. The single Dahlias shown in bunches have proved such an attractive feature that it has been determined to create a new open class for twenty-four varieties, and that for six varieties, hitherto open, will be reserved for amateurs. The promoters of the Dahlia show at the Crystal Palace are to be commended for their courage in breaking away from the old traditional method of classifying Dahlias. Such a step was necessary; and it is to be hoped it will be carried still further another season. At many country shows, tipped flowers, whether show or fancy, are exhibited among the latter, and it is a course sanctioned by custom. This proves that the term fancy is not generally understood, and in the face of a clearer definition of the term than has yet been given, its entire abolition is decidedly necessary in schedules of prizes. But dealers in Dahlias are at full liberty to classify them in their catalogues in any way they please, and to divide them into as many sections as they see fit to do so.

Under the old classification, the following list, furnished by Mr. Harry Turner, gives the best thirty-six show Dahlias, fancies being, of course, excluded, *viz.*, Burgundy, Clara, Constance, Flag of Truce, George Rawlings, Georgiana, Goldfinder, Hope, Henry Walton, Herbert Turner, Imperial, Hon. Mrs. P. Wyndham, James Cocker, James Stephen, James Vick, John Bennett, John N. Keynes, John Standish, Joseph Ashby, Jos. B. Service, Lady Gladys Herbert, Miss Cannell, Mr. G. Harris, Mrs. Gladstone, Mrs. Langtry, Mrs. Harris, Mrs. Shirley Hibberd, Harry Keith, Mrs. G. Rawlings, Prince Bismarck, Prince of Denmark, Ruby Gem, Sunbeam, Seraph, T. J. Saltmarsh, and William Rawlings. For the benefit of cultivators of small collections of Dahlias, I give the following as the best twelve selected from the above, *viz.*, Clara, Constance, George Rawlings, Hon. Mrs. P. Wyndham, Mrs. Langtry, Mrs. Gladstone, Miss Cannell, Mr. G. Harris, Sunbeam, Prince of Denmark, Mrs. S. Hibberd, and Prince Bismarck.

And as the schedule of prizes of the next National Dahlia show at the Crystal Palace will contain classes, as stated above, for flowers of similar character, but distinct in variety, it is well to name a dozen good and constant self and shaded flowers as follows: Clara, George Rawlings, James Cocker, Imperial, John N. Keynes, Mr. G. Harris,

Joseph Ashby, Mrs. Gladstone, Prince Bismarck, Seraph, Prince of Denmark, and Sunbeam. As prizes are also to be offered for tipped Dahlias, it will be well to give a list of these, and the best twelve of the show class will be found in Constance, Goldfinder, Hon. Mrs. P. Wyndham, John Bennett, Miss Cannell, Mrs. Langtry, Mrs. Harris, Mrs. S. Hibberd, Ruby Gem, T. J. Saltmarsh, Henry Walton, and Mrs. G. Rawlings. The best twelve tipped fancy Dahlias are as follows: Fanny Sturt, Laura Haslam, Miss Browning, Mrs. N. Halls, Mrs. Saunders, Peacock, Jessie McIntosh, Lady Antrobus, Mrs. Carter, Maid of Athens, Mrs. Frisleton, and Miss Rodwell. As there is a class for striped Dahlias also, it may be remarked that these must be looked for exclusively among the fancy flowers, and the best dozen is as follows: Charles Wyatt, Duchess of Albany, Gaiety, George Barnes, Henry Eckford, Hugh Austin, Henry Glassecock, John Forbes, Rebecca, Rev. J. B. M. Camm, Professor Fawcett, and W. G. Head. In the class for light Dahlias, self, yellow, and white, and blush, buff, pale pink, and delicate lilac flowers can find a place, and a good selection of twelve will be found in Clara, Condor, Emily Edwards, Ethel Britton, Flag of Truce, Mrs. Gladstone, J. N. Keynes, Muriel, Seraph, and Sunbeam.

Nor must lists of the best fancy Dahlias be omitted. A first-rate twenty-four will be found in the following selection: Charles Wyatt, Duchess of Albany, Edward Peek, Fanny Sturt, Frederick Smith, Gaiety, George Barnes, Grand Sultan, Henry Eckford, Henry Glassecock, Hugh Austin, James O'Brien, John Forbes, Laura Haslam, Mandarin, Miss Browning, Mrs. N. Halls, Mrs. Saunders, Peacock, Professor Fawcett, Rebecca, Pelican, Rev. J. B. M. Camm, and W. G. Head. The best twelve, selected from the foregoing, are Charles Wyatt, Duchess of Albany, Gaiety, George Barnes, Henry Glassecock, Hugh Austin, John Forbes, Miss Browning, Mrs. N. Halls, Professor Fawcett, Rebecca, and Rev. J. B. M. Camm.

R. D.

NOTES ON HARDY PLANTS.

Stonecrops.—I grow about sixty varieties of Stonecrops in two small, square beds, and from July to the end of the flowering season they are literally alive with bees, large flies and painted butterflies. Whilst on Stonecrops, may I speak of two distinct and late-flowering kinds; first there is the charming, dwarfed, fat-leaved and mealy *Sedum brevifolium*, which has white flowers of a pleasing tint, somewhat in the way of that of *S. album*. This is not one of the hardiest of Stonecrops, but it will endure our lowest temperatures if kept dry, and therefore it is well adapted for growing in stony chinks where there are overhanging ledges, but wherewithal it should not be shut off from sunshine. The other variety is the one commonly known as *S. atro-purpureum*; this is a tall, big-leaved kind, not unlike *S. spectabile* in form and size of leaf, but the corymbs are not so flat. The flowers are very peculiar. I do not think that I could compare them to anything better than a shield of golden filigree. The corymb is nearly the size of the palm of one's hand. The leaves and stems are of a fine purple colour, suffused during summer with a glaucous hue. This is a Stonecrop, so far as I know, seldom seen; anyhow, I have never seen it except in one of the many collections I have visited. As a quaint and effective plant it may certainly be recommended, whilst the flowers, so singularly beautiful, are not only capable of enduring rough weather late in the year, but they form chaste material for personal adornment. The plant is as hardy as can be, but I should observe that before it can flower freely it has evidently to get well established at the root. During summer several parties made a note of this plant for bedding purposes, owing to the distinct form and colour of the foliage. To my mind, however, the somewhat top-heavy stems would not favour its use in that way, but still, by pinching, it could be kept dwarf.

Megasea purpurascens when in full leafy beauty is one of the brightest bits of colour in the garden; bronzy red, yellow and vermilion are

colours which may all be seen on one and the same plant, and where numbers of plants are grouped together the effect is most attractive. The red vies with that of the cardinal Lobelia. As I have said before in THE GARDEN, such results can only be had under special treatment. I may mention, however, that several clumps of the same stock are grown under other conditions, with the view of getting more rapid growth, bigger foliage, plump crowns and large scapes of bloom in spring. At present the foliage on those plants is as green as that of a Cabbage; the conditions of culture are deep, rich soil, a somewhat moist position, and a little side-shade from the mid-day sun. For bright autumn foliage the plants should be set in a thin soil, very porous, and be exposed to all the sunshine possible. Plants so treated, I need hardly say, do not flower like the others; in fact, though I have grown the variety for more than ten years, I never had a good scape of bloom on such plants as were grown in poor soil. I grow some seven varieties of *Megaseas*, and of these there is certainly not one to be compared with *M. purpurascens* for beauty and intensity of colour. It is, however, a shy bloomer unless very liberally treated.

Primula capitata.—I mean the true mealy, wrinkled leaved and finely-toothed species, and neither of the forms of *denticulata* nor of *esbmeriana* which are sometimes called *capitata* and supplied from trade sources. One of its most commendable qualities is that it flowers in succession until late in the year, but as to the size of the heads and pips which it is capable of producing, I must confess I was in ignorance until a flowering specimen was kindly sent me two days ago by Mr. Wolley Dod. The scape was as stout as an ordinary lead pencil and 15 inches high. The farina was abundant, and the scent like that of a bunch of *Polyanthuses*. Other scapes were in a forward state and many less developed. The plant had soil adhering—evidently a rich retentive loam and leaf mould. The specimen was not nearly a year old, seed having been sown last February. This is, without doubt, the way to cultivate *P. capitata*.

Cheiranthus Allioni is the name under which a most charming dwarf Wallflower came to me above a year ago; just at present I cannot give its history, but I hope soon to be able to do so. Having fully tested it both in the open garden and in pots fully exposed (which I always consider a more severe test of hardiness than open-ground planting), I can speak as to its capabilities to withstand such trials as those of last winter, and it seems as if it would be a good perennial. Compared with *alpina*, it has a less dense habit, fewer leaves, but they are much longer, distantly and distinctly toothed, and of a deep green hue. It is about the same stature, but more slender. The flowers are a deep orange-yellow and not variable, at least not in the dozen or so of plants which I have flowered. Compared with Marshall's variety, the flowers are far deeper in colour, but they are arranged quite differently, not clustered, but in lax spikes more like those of the common Wallflower. I may add that the colour nearly resembles that of the brilliant annual, *Erysimum Peroffskianum*. It is a spring bloomer, but there was a good sprinkling of flowers all summer on the stronger plants.

Tropaeolum tuberosum.—When I wrote about this rampant grower blooming sparsely I did so from a specified standpoint—that of cultivating the plant under such conditions that it might be wintered out of doors. In Yorkshire, unless grown in a hot and dry situation and in poor soil, my every year's experience is that the flowers are few and late compared with the amount of growth made. I can well believe that plants in partial shade, and growing in heavy clay, as stated by "Greenwood" (p. 468), might, in a dry summer like the past, flower well, for is it not the case that, under and near trees, the land is invariably in an extra droughty condition when the weather is at all dry? And likely enough the tops of the plants would find their way up to the sunshine.

* * The plant flowers freely in many parts of the southern counties.—ED.

Aster spectabilis.—This, I think, is a good variety in all respects. It is in the style of *Amellus* and its varieties; if the heads are less than those of *Amellus*, they are much more highly coloured, or the purple has less red in it. I do not know another *Michaelmas Daisy* so blue, and I have been seeking for the highest and most distinct coloured varieties for three years. The one sent me as "*Mr. Dod's bluest*" is truly handsome, but it does not approach *spectabilis* as a blue flower, and, indeed, is a very different *Aster*.

Hepaticas.—It is all very well to grow these into large clumps, and nobody can question that, in that condition, when in flower, they are most effective, but it is just as certain that where *Hepaticas* do well, they outgrow their healthy condition in a few years. We often speak of clumps a foot across; when we do so, I suppose we mean that the flowers and foliage form cushions of that diameter. The actual clumps or cluster of crowns of such clumps may not be more than from 6 inches to 8 inches across, and under suitable conditions they may grow to that size in four years. At the end of that time, however, it is a question whether it is wise to leave them undivided; besides, all *Hepaticas* have a habit of growing too high above the surface, and it is well to place them deeper at intervals. It has long been our rule to do this, and we always see our finest *Hepaticas* on two-year-old divisions.

Christmas Roses.—It has frequently been argued as to which is the best time to divide and replant *Christmas Roses*. If we would permit ourselves to be guided by what we may observe in the way of root-action, I do not think we should hesitate in doing the work at a time which, I daresay, to many will appear somewhat unreasonable—*i.e.*, just previous to the flowering period. I know well that many would object to cut up their plants at the moment they were anticipating a floral treat. That, however, is not the question; the question is, as to when the roots may not only be safely, but better divided for their subsequent healthy growth. If the roots are examined at the present time, there will be found a set of young succulent roots bristling from immediately below the junction of the leaf-stalks. These are the parts we want to catch, and, without breaking, place in new and well-prepared soil. If we succeed in doing this, we shall not be annoyed with plants remaining dormant for a year or more afterwards; but, in most cases, if the divisions have been judiciously made, there will not only be a good plant, but the flowers will come forward in a natural way. It is unwise to attempt such operation, except with the healthiest plants. I have just had occasion to remove some divisions that were planted only a fortnight ago, in order to clear a space for the men to dig out some large shrubs, and it was pleasing to see what vigorous root-growth there had been in that short space of time. I daresay we could hardly have had finer weather for the season during the period—plenty of moisture, a fair share of sunshine for November, which, with the leaves off the trees overhead, had its full effect on the *Hellebores* in the freshly-dug soil. J. W.

Three good wall plants.—The walls of the flower garden at Penrhyn Castle were lately rendered particularly attractive by the number of flowering shrubs with which they were clothed. Three of these, including *Lapageria rosea*, *Abelia rupestris*, and the small-leaved *Myrtle*, were grand in the extreme, and assisted in a marked manner to impart a gleam of floral sunshine, so to speak, to the wintry landscape. Not long since I counted quite a hundred flowers and more on the *Lapageria*, and they hung in such an easy and conspicuous way, that even the most unobservant of visitors were tempted to stop and admire them. The pretty, deep green, five-nerved leaves, too, showed off the large, campanulate, deep rose-coloured blooms to perfection. The *Lapageria* may, I think, be considered to be almost perfectly hardy, for it has stood in its present position at Penrhyn for a number of years, and quite unprotected. The Chinese *Abelia rupestris* likewise makes a good ornament for any garden wall, its pretty pairs of pinkish white flowers and reddish tinged

calyx-lobes rendering it of special interest. Whether or not it is to be considered hardy, I cannot say, but here it does well, and when in flower rivets the attention of most passers-by. It is perhaps unnecessary for me to allude in terms of praise to that charming shrub, the small or Box-leaved *Myrtle*, but I do so in the hope of extending its culture, for certainly as an ornamental and neat wall-coverer it stands in the first rank amongst such plants. To see it as it has been for the past half-year or so is a treat both rich and rare. I fancy somehow that this small-leaved form is a later flowerer than the typical plant; such, however, is the case here. Let everyone who wants a good and pretty wall shrub, plant this *Myrtle*.—A. D. WEBSTER.

THE PAMPAS GRASS IN SUSSEX.

A STately mass of Pampas Grass in full plume is always a beautiful sight in a garden, and particularly if so placed that the surroundings heighten its effect. In such a position is the noble specimen in Mr. Gatehouse's garden at Chichester, who kindly sent us a photograph of it, taken last season by Mr. Malby. It was then exceptionally fine, the great mass of plumes being nearly 10 feet high. It is planted in a part of the garden snugly surrounded by trees. Close to it is a stone-edged water basin and fountain, so that this corner is a pretty feature of the garden. The ring of flowering plants around the base of this Pampas is decidedly a mistake; such a stately plant as the Pampas needs no embellishing, and it never looks better than when seen rising from a lawn with room to spread out its Grass in a graceful way. The soil about the plant can be now and then enriched in the same way as when a circular bed is made around it. Mr. Gatehouse's Pampas is of the best variety, the one that produces large spreading white plumes. There is such a great difference between the good and the bad varieties of the Pampas, that care should be taken to get the best form, seeing that the plant always forms an important permanent feature of a garden, if it succeeds, and one that takes a long time to develop, and which is so difficult to replace.

Carnations and Picotees.—Anyone having a collection of young plants of Carnations or Picotees in a cold frame should look over them occasionally, to see that all decayed and decaying foliage is removed, and it is good practice to occasionally lightly stir the surface soil, *i.e.*, if not frost-bound. Mr. E. S. Dodwell, in his book on the Carnation, lays down the following rules for the guidance of young beginners in winter: "Give plenty of air; never, indeed, close the frames or house day or night, excepting during the severest frosts; and thoroughly cleanse every plant from decaying foliage and dust. In my experience, no severity of cold has been injurious to Carnations or Picotees unless the plants have been previously made tender by injudicious confinement, but guard sedulously against cutting icy winds. During long-continued severe frosts, one, or at most two, mats will be ample protection. These should be allowed to remain on during the daytime to prevent excitement from the brighter light usual at such seasons. Do not, however, exclude air; tilt the lights of the frames and open the windows of the house on the leeward side." In potting up layers, it has been discovered that a small whitish maggot, not unlike in appearance the Apple maggot, but much smaller, is doing serious damage to many of the plants. It would seem from appearances that the eggs, or whatever it may be from which the marauder springs, are deposited in the leaf, and when the pest emerges into activity it bores its way through the sheath of the leaf, and eats its way along the centre inside. It appears to enter the shoot of the plant in much the same way, and gradually finds its way to the base, completely destroying it, as it rots off at the collar close to the soil.—R. D.

GLADIOLI IN AUTUMN AND WINTER.

I CANNOT agree with "Delta" when he says that he would rather grow Gladioli in the east than in the west of England, and especially when he says that they ripen earlier and better in the east than in the west. My experience is that early ripening is not advantageous, but the contrary. It is my belief that Gladioli are weakened more by being kept out of the ground too long than from any other cause. The impatience which the bulbs display by starting into growth, when stored in dry sand and kept in a cool place, shows that it is not natural for them to rest so long. When thus treated they begin to make roots, and even leaves, early in February, although not harvested until the middle of November, and often later than that. I have even had them exposed to 10' of frost before they were lifted, and without any harm being sustained. This tendency to start into growth so early is, no doubt, against them when transferred to cold, damp ground in spring, yet it evidently points to the conditions which they require. I am aware that "Delta's" advice to store them in paper bags is the proper way to keep them dormant, and thereby prevent the necessity of planting until late in spring, but that plan of storing does not appear to me to be Nature's way. In this opinion I am supported by the behaviour of bulbs left all winter in the ground and efficiently protected. These are always the first to make their appearance in the spring; they produce larger flower-spikes, and keep healthy and vigorous all the summer. I shall not soon forget the luxuriant condition of a large bed of Gladioli which I saw at Powderham Castle, near Exeter, in early autumn three years ago, and on previous occasions. The plants were in the most robust health, and producing grand spikes of flower, with very few, if any, failures. If I remember rightly, Mr. Powell told me that he only took up the bulbs when they wanted dividing. They were wintered in the ground under a thick layer of leaves and litter. We must not forget, too, that the climate of Devonshire differs a good deal from that in other parts of the country. At the same time, such an instance serves to show that the more natural the conditions under which we can keep the bulbs in winter, the better. I do not mean to say, however, that they can be kept safely in the ground in any but the most favourable soil and climate; they cannot be trusted even here in Somerset unless well protected, and then more rot through damp than actual cold. With regard to soil, I am of "Delta's" opinion that they do better in a fairly heavy soil than in a light one; the ground,

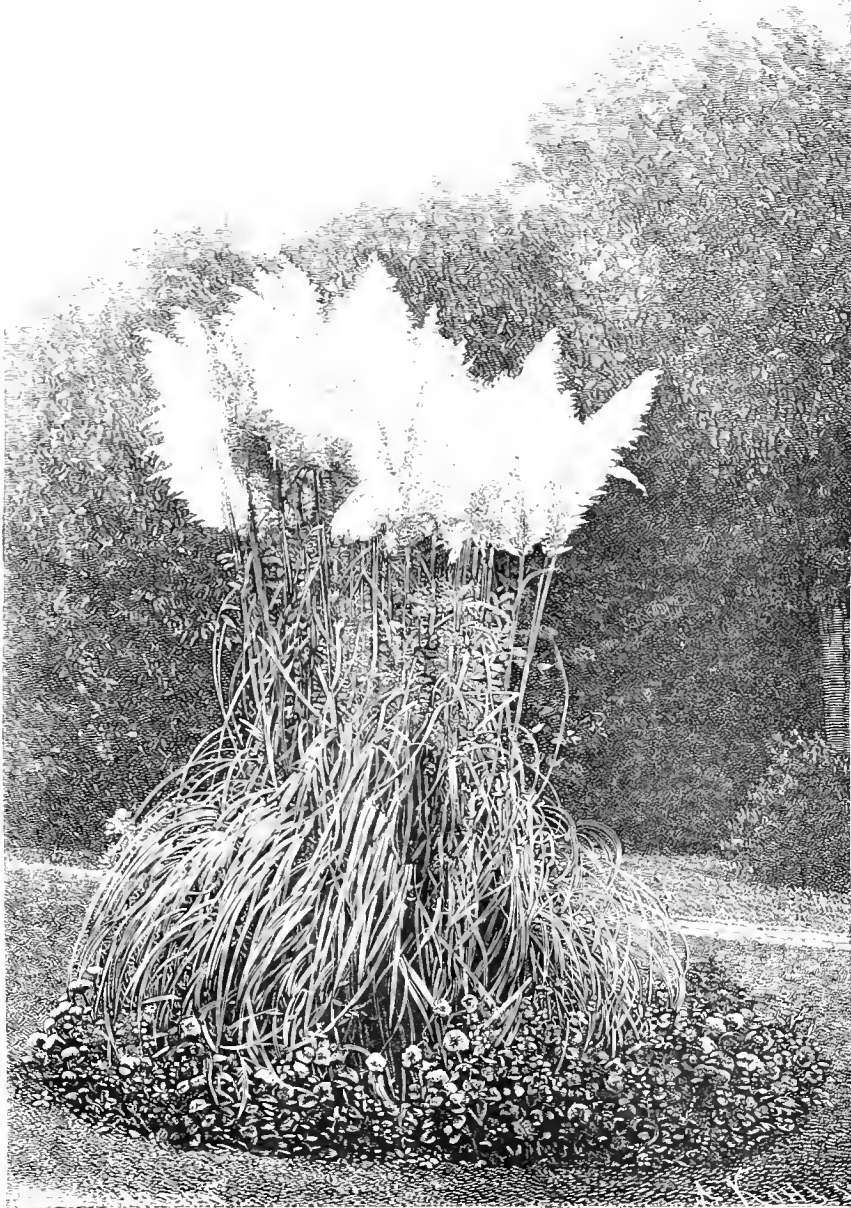
too, should be lightly manured with rotten hotbed or farmyard manure early in winter, and deeply dug up so as to get the surface well pulverised before the planting season comes round. J. C. C.

White Everlasting Peas.—In reply to Mr. Poc's enquiry (p. 563) as to the certainty of these reverting to the pink form, allow me to state that there could be no doubt about the matter, as they were planted in a small enclosed garden separated

summer can ill afford to dispense with it, and therefore some little trouble taken to keep it true is well repaid.—J. GROOM, Gosport.

REMARKS ON HELLEBORES.

It is to be expected, and also wished, that Hellebores should at this season once again claim some notice in THE GARDEN. Two such notices appear in last week's issue (p. 580). "G." is fully justified in all he says concerning the beauty and value of *H. niger maximus*. I would remark only that the roseate tint on the sepals ought not to be made an invariable accompaniment, but that, beautiful as that tint may be, the most perfect growth produces pure white. Secondly, he would omit *niger* in his nomenclature, but I think that would be a mistake, since *niger* is as essentially descriptive of one group as *orientalis* of another, and *viridis* of a third, &c. The next notice is by "O." I do not remember that "O." has hitherto taken any part in the many discussions concerning Hellebores of recent years, but he must excuse me if I suggest that he ought to give some authority for differing from those who have come to an agreement as to species, names, colours, &c. First, as to crosses. I am not aware that crossing has been generally restricted, as he says; a much more general crossing than he mentions has been carried on with most interesting results—persistents with non-persistents, as well as like with like; but when he particularises a cross between *orientalis* and *niger*, I am sure all Hellebore growers would be glad to hear of anyone who has been successful in obtaining appreciable characteristics of *niger* by crossing with any other Hellebore. I pass by the idea of making *niger maximus* rather than *niger* the type of the group, but I must say a word in favour of *niger minor*, which is not only very pretty, but valuable, as being by far the earliest in bloom. Then, again, *H. orientalis* is not deciduous, but truly persistent in its foliage. *Abchasicus* is not green, but purple, with a white variety; whether or not *atrorubens* is the same plant is doubtful, but both belong to the persistent group, and *purpurascens* is different in every particular, belonging to the non-persistent section. I make no comment upon the time of flowering, as that depends on locality and season. My only motive in making these remarks is to save those who are only commencing to grow Hellebores from being more and more confused by those who write on the subject. South Devon, T. H. ARCHER-HIND.



Pampas Grass in Mr. Gatchouse's garden at Chichester, Sussex. Engraved from a photograph for THE GARDEN.

by walls from any other of the Pea tribe. They all produced white flowers the first season after I purchased them. If they had been seedlings, I should not have been at all surprised, as it is pretty conclusively proved that seeds of the white form produce a rather large percentage of red-flowered plants. The white is such a desirable plant, that those who require white flowers in

Dracæna indivisa out of doors.—Although this plant is so largely grown under glass, I am

enabled to say that it is quite hardy in our southern and western counties; at least, we have some plants of it that have stood out of doors fully exposed, without any protection whatever, during the past three winters. The soil around their roots has been hard frozen on several occasions, yet not a leaf has been browned. This *Dracena* is elegant in habit, and well adapted for forming central objects in large beds, or groups in the flower garden, or for single specimens on Grass. Anyone having plants of it that are getting too large for indoors should plant them out in May, so that they may make their growth out of doors and get well acclimatised before winter sets in. Sheltered nooks in shrubberies, or rather recesses on the lawn, make capital places for single specimens of this kind of plant. Tall examples that have long been indoors are exceedingly useful for backgrounds to groups of sub-tropical plants, such as Tree Ferns, Palms, &c., plunged out in summer. They may either be left out altogether, or brought into the conservatory in winter. Large specimens may be kept in good health in comparatively small pots by giving them occasionally a little concentrated plant-food, either in a liquid or dry state; and I need scarcely add that such vigorous-growing plants require plenty of root-moisture, for on the green healthy look of the leaves depends the effect which they produce.—J. G., *Hants.*

5536.—**Daisies on lawns.**—Nothing is better or surer for extracting Daisies than a common three-pronged kitchen fork. Stretch a line across the ground when soft, and root up the Daisies over a given breadth, and roll well after weeding. My lawn-tennis ground was almost a sheet of Daisies. I found when they were extracted that the Grass soon filled up the bare spots. A few Daisies are sure to be left and can be taken up whenever seen. Hurry's Extractor is useful for isolated weeds, not when they grow in patches. Watson's Lawn Sand is a rich manure; it kills nearly all the Clover and some Daisies. Long-rooted weeds, like Dandelions, are only enriched by it; it certainly gives the Grass a beautiful colour. Vitriol dropped on each Daisy kills it, but is apt to poison the ground and prevent the Grass from filling up the blanks.—J. H. W. THOMAS, *Bolton, Carlow.*

— For killing Daisies I can confidently recommend the new destroyer, *Belleide*. It not only destroys Daisies, but other offensive weeds. It is in the form of a powder, and is applied by means of a dredger; it is found by experience that it is best used during moist weather, but if used when it is dry the spot where it is applied should be sprinkled with water five or six days afterwards. In the case of strong plants of Daisies it is best to cut away the leaves and apply the *Belleide* to the stumps; two or three dressings will soon kill the stoutest leaves. In applying it, it is best not to allow it to become sprinkled upon the Grass surrounding the weeds, but should this happen, and the Grass is burnt a little, it will soon recover, for the *Belleide* fertilises the surrounding Grass though it destroys the leaves; and the powder should be kept perfectly dry until it is used. I have seen the *Belleide* used with such good effect at Gunnersbury Park, that I have no hesitation in commending its use. It is by no means an expensive preparation.—R. D.

The Neapolitan Cyclamen.—This is the name of a plant that is invariably found doing duty for *C. repandum* or *C. hederifolium*. The latter name is perhaps the commonest in gardens, and is partly right, but, according to the latest authority on this genus, it was made to include both the spring and autumn-flowering kinds, and in consequence has been dropped altogether, neapolitanum being substituted for the autumn-flowering species and *C. repandum* for the spring one. Several good distinctions of a permanent character exist by which they may be readily recognised; *C. repandum* has the leaves developed when the flowers appear. The latter are rosy red with a bright purple spot at the base, and without an auricle at the mouth; *C. neapoli-*

tanum produces its flowers in autumn before the leaves appear, and it is not until they are going off that the leaves begin to develop. The segments are distinctly auricled at the base, and they are white or reddish coloured and have a violet or purple spot. It is a very charming plant when grown in quantity, and just the thing for a woodland walk. Indeed, it has been naturalised in some parts of the country, and notably in Cornwall, Kent, &c., where it is said to produce enormous tubers a foot or more in circumference, each producing one or two hundred flowers. It has numerous synonyms—*autumnale*, *pyrenaicum*, and *ficariaefolium* being those that are best known. *C. africanum*, another autumnal flowering species, is somewhat rare, but as it is a native of Algeria and produces its leaves just when our hard weather sets in, it would probably not prove hardy in exposed places. *C. europeum*, a well known garden plant and perfectly hardy, flowers from August to October; the leaves are produced along with the flowers, which are usually bright red and very fragrant. It is useful for the rockery, where in sheltered places it flowers profusely. The soil should be free, as also the drainage, and care should be taken at planting time to see whether the tuber is entirely covered or the upper surface left exposed. Some of them root only on the lower half, while others root all over their surface.—K.

PLANTS SUITABLE FOR WALLS.

THE removal of an old shrubbery in order to form a herbaceous border, some three years ago, laid bare an old wall that answered as a background for the border in question, and as it was advisable to clothe this wall as quickly as possible and make it an attractive feature, climbers were planted thickly against it, and allowed to ramble for two or three seasons almost at will. The effect of this last summer, now that nearly all are at the top of the wall, has been excellent. One or two mistakes were made in the choice of subjects, and these have led me to conclude that climbers might with advantage be divided into three or four classes as follows, viz., for flowering and general effect, for cutting and general decorative purposes, and solely for hiding bare and unsightly places. Plenty of flower as well as foliage was required on the wall just alluded to, and the mistake made was in using with other things Banksian and Maréchal Niel Roses. Maréchal Niel does not take kindly to outdoor culture with us, and the Banksians are too strong to mix well with other things. For covering purposes they, however, have no rivals, making yards of annual growth, evergreen to all intents and purposes, and flowering freely when well established. Nearly the same remarks apply to *Ceanothus*, the flowers of which are produced in profusion all through the summer months. The evergreen *Honeysuckle* is also a capital plant for the same purpose. Two plants that are very dense in habit, and also very useful for cutting from, are *Escallonia macrantha* and the variegated *Alaternus*. I would give the last-named a corner wherever there was one to spare, as it is one of the most useful plants we have for vases, and all the year through it is a mass of glorious variegation. It grows very fast, and is in every way a most desirable wall plant. We did not care for deciduous things, but worked a few in carefully and at wide intervals apart. Amongst these were *Chimonanthus fragrans*, *Benthamia fragifera*, and *Forsythia suspensa*. *Deutzia crenata* fl. pl. is a great favourite, and one whose flowers do admirably for button-hole bouquets. In naming a few things that may be planted, I may say that the general effect will be greatly enhanced by allowing them to ramble and intermix both flowers and foliage. Stray branches of *Ceanothus* mix well with *Safrano* and *Gloire de Dijon* Roses, and the white and red *Pyrus* look well mixed together. Another good combination is the variegated Japanese *Honeysuckle*, making itself at home amongst the branches of an old Judas tree. All the above are of easy culture, and by means of them flowers

would be found on walls from very early spring until late in the autumn. With hardly an exception, climbers do best in a moderately stiff loam. The growth is short-jointed and stocky, the foliage more dense, and the flowers produced in greater profusion than in light soils. No hard-and-fast rule can be laid down for pruning these plants. When once planted, the object is, of course, to clothe the walls as quickly as possible, and to attain this end all strong shoots should be laid in their entire length each year until they have reached the top. After treatment must necessarily be influenced by the circumstances of the case. They should have their own way as much as possible, and the knife should not be used more than is absolutely necessary. E. BURRELL.

GARDEN FLORA.

PLATE 577.

ITALIAN BELLFLOWERS.

(WITH A PLATE OF *CAMPANULA ISOPHYLLA*, AND WHITE VARIETY.)*

LITTLE need be said in praise of a genus represented by some of its various forms in almost every cottager's garden, and abundant in our meadows and copses. The section, however, to which we now wish to direct attention is confined to sunny Italy, and is not so common in gardens as the natives of colder climates. In speaking of these Bellflowers, Mr. Moggridge says: "It is a curious fact in the distribution of plants that all the species belonging to the section of *Campanulas* with erect seed vessels, and usually rotate or salver-shaped flowers sixteen in number, are almost all limited to Italy, Greece, and the immediately adjacent regions, except *C. argentea*, which extends as far as Armenia and *C. macrochiza*, a huge, peculiar-flowered species, native of Spain." Besides those just mentioned, there are *C. trichocalycina*, *elatinoidea*, and others, all equally beautiful, and deserving the attention of all hardy plant growers. Other characteristics of the Bellflowers of this region are the abundance of milk and the brittle or succulent character of the plants generally, and also the semi-arborescent habit of a few of them. Although natives of Italy, however, they succeed well on overhanging ledges on the rockery. The sunnier the position the better the result, and during the growing season especially water should be given unsparingly. The following represent those in cultivation at the present time:—

C. ALLIONI.—This is a very rare, although an exceedingly beautiful, dwarf Bellflower. It appears to be grown in most gardens with indifferent success, and is annually becoming scarcer. In Mr. Ewbank's garden in the Isle of Wight, however, it seems to find a congenial home, and not only keeps alive, but increases, and I am told flowers freely. It increases by means of succulent underground stems, and unless plenty of room be provided and fresh soil in which to push its newly-made roots, it will not succeed well, as when restricted as regards space it forms quite a network of roots and soon exhausts the soil. It forms little rosettes of leaves close to the ground, and produces from each stemless flower, resembling both in shape and colour those of the common Canterbury Bell. It should be grown in a light, porous soil free from limestone, and kept continually moist during the growing season. It flowers early in spring, and is a native of Mount Cenis and other parts of Italy.

C. FRAGILIS (Brittle Hairbell).—This is a beautiful little dwarf species, with a very descriptive name, as all who have had anything to do with it know. The stems, and even the leaves, are extremely brittle, and if not carefully handled break like slender pipe-stems. It is a near ally of *C.*

DEIGNED FOR THE GARDEN BY MISS LOWE, at Woodcote, Wimbledon.



HIBISCUS ...

isophylla, from which it differs chiefly in having more slender, slightly ascending, often procumbent stems, smaller ovate lance-shaped stem leaves, and sepals with a prominent midrib twice as long as that of the other. It is also very abundant in milk, and although this is a characteristic of the Order, it is quite a striking feature of this particular species. It is perfectly hardy



Campanula fragilis.

on the rockery, although we invariably lose it on low or flat beds; its thick leathery leaves render it capable of withstanding any amount of drought. Its stems are ascending or procumbent, from 12 inches to 15 inches long: glabrous, or, in the variety hirsuta, hairy, the hairs being the main difference between the two. The lower leaves are set on longish stalks, kidney-shaped, with toothed margins, dark and shiny green. The flowers, which are numerous, are large, open, somewhat bell-shaped, pale blue, and in a rare variety white. It is often used for hanging baskets. It is a native of Naples and Sicily, and flowers with us during the summer months. It is increased by means of cuttings, taken off with a heel or by division of the root. C. Barrelieri is synonymous, or at best only a slight variety.

C. ISOPHYLLA.—This is a charming and profuse flowering species, and, although a native of the sunny shores of Italy, it is quite capable of withstanding the severe cold of our climate. It was introduced to cultivation some few years ago by Mr. Traherne Moggridge, and is figured in his "Flora of Mentone" (tab. 80). It is now pretty widely distributed in English gardens, and makes a most ornamental rock plant. In order to see it to the best advantage, however, it should be planted so as to overhang dry sunny ledges, or else allowed to scramble freely on slopes with a



Campanula Rainieri.

southern exposure. As a hanging basket plant for the greenhouse it is now being extensively used in gardens, and the effect of the two forms, blended as they are seen in the accompanying plate, is in every way excellent. Its flowering season, as indeed that of most of its congeners, extends all through the summer months, and, in the case of indoor plants, much longer. The

stems are often sub-erect, though generally quite procumbent, woody, and perennial. The leaves are roundish, cordate, with crenated margins and set on longish stalks. They are slightly hairy and of a more or less succulent character. The flowers, which are collected into compact terminal heads, are salver-shaped, large and very handsome, lilac or white. This Bellflower is found on a promontory of Caprazoppe, between Noli and Finale, and, as regards distribution, presents a very curious case of restricted area, being found only on a small strip of coast, about two and a half miles in length, between the places just mentioned. "It is difficult," says Mr. Moggridge, "to understand why this Campanula should be so restricted in its area, and the more so as it produces large quantities of seeds, which germinate freely, and are so minute that they could be transported any distance." In cultivation seed is also produced freely, by which means it is readily propagated. It is also increased by means of cuttings taken off about the end of July or August, and placed in a cool pit or frame. It thrives best in a rich open soil, flowering most freely when exposed to full sun; indeed, so freely are the flowers produced under the above conditions, and so fresh does it look all through the summer months, that we consider no garden, however small, should be without it. A synonym of it is C. floribunda.

C. LOREYI (Lorey's Hairbell).—This is also called Pollini's Bellflower in the *Botanical Magazine*, on account of that author having first described it in the "Catalogue of the Verona



Campanula Loreyi.

Garden," in 1812. It is a hardy annual, with a fine graceful habit. It grows from 9 inches to 1 foot in height, and produces large bluish violet blossoms in the greatest profusion. As a hardy annual it well deserves a place in the mixed border, where it should be sown in large masses, as then it shows itself off to much better advantage than in small patches. If allowed to scatter its seeds spontaneously they will germinate, and produce young plants in the autumn, hardy enough, in most cases, to stand the winter, or it may be sown in the open ground along with other annuals in spring. Its flowers, which are large, are blue-violet, and in the variety milky white. The calyx divisions are very narrow, and show themselves between the divisions of the bell (see annexed illustration). The leaves are few, narrow, crenated, or toothed round the edges. It flowers all through the late summer and autumn months. It is a native of Mont Baldi, in Northern Italy, and was first introduced, it is said, by Fischer, when at the Gottingen Botanic Gardens.

C. RAINIERI (Rainer's Bellflower).—The form of this species, represented in the annexed illustration, and the one generally grown in English gardens are, according to our experience, difficult to manage. The ordinary form is very dwarf, the leaves rarely rising an inch above the ground, while the flowers, which are large in proportion, little exceed them. It rarely flowers freely,

although in the open perfectly hardy. The other form attains from 4 inches to 6 inches in height, and forms a cushion which produces a profusion of flowers all through the summer and early autumn. The leaves, as well as the flowers, are much larger than those of the type, the whole plant being more robust, and in all its parts larger. It should be disturbed as little as possible, as it takes a considerable time to recover even when moved carefully. It, however, strikes freely from cuttings. It makes a charming rock plant in a rich, light soil, with plenty of sunlight. It is a native of Northern Italy.

C. VERSICOLOR.—This plant was first figured under this name in Andrews' "Repository"; since then slight forms of it have been described under the names of C. Rosani and Tenori; indeed, under the latter name one often finds this plant in gardens. It varies greatly in the colour of the flowers; in some they are pale blue or lilac; in others darker with an indigo or violet coloured eye; this form is called bicolor in nurseries. It is, without doubt, not even excepting C. pyramidalis, one of the most showy species belonging to this extensive group. On rocky places in Italy it forms a grand sight, clinging, as it does, to the rocks by its thin stringy roots, upholding large masses of stem and leaves together with innumerable flowers. It grows very well in the ordinary border, in which it assumes an upright habit. The stem and leaves resemble those of C. pyramidalis; the latter are thick and leathery in texture, however, and with distinct flowers produced on short stalks. It is little more than biennial, but ripens seeds freely in warm summers. It is a native of Italy, and flowers in July and August.

D. K.

FRUITS UNDER GLASS.

STRAWBERRIES.

WHERE Strawberries in name only are wanted in March and April, one or two batches of plants will now be under treatment, but where Strawberries in reality must be forthcoming, the first week in January is quite early enough to make a start. Preparations for housing must, of course, be put in hand some little time in advance, as I take it for granted that these insect-breeding plants are to be brought forward in pits or Strawberry houses in preference to early vineries and Peach houses. Just now a white frost of unusual duration and severity has got more or less into the surfaces of the balls, and it will not be prudent to attempt top-dressing or cleansing the pots until they are thawed, as the slightest bruise may prove injurious to the crowns. But the plants having been fixed upon, they may be removed to a place from which frost is excluded, and when free they may be dipped in sulphur water and top-dressed ready for placing on the shelves. In modern Strawberry houses the crown of every plant is placed close to the glass, and gentle warmth from the pipes produces a temperature quite high enough to commence with under a free circulation of air, but in these structures even a good ridge of fermenting leaves or short manure is a great help, as it does away with the necessity for constant syringing to counteract the drying influence of the hot-water pipes. In places of this kind 40° should be made the minimum on frosty nights, 45° to 50° when the weather is mild, and 52° to 10° higher may be allowed through the day. No hard-and-fast line must, however, be adhered to, as few plants better repay patience, and none with which I am acquainted so completely collapse under undue haste through the early stages of their growth. The cardinal points to be observed are careful watering with tepid water, as the roots must never be allowed to become dry, gentle syringing on bright, fine days, and a constant circulation of air that will prevent the possibility of the foliage becoming drawn before the plants come into flower. Once the spikes are clear of the leaves and days become longer and lighter, early closing with sun warmth—it is too early to call it heat—will favour their elongation, when the chances will run for rather than against their production of

bold, perfect flowers, followed by a good set of fruit. When very early plants are perched upon lofty shelves in Peach houses, it frequently happens that the flower-scapes stop short and unfold a few flowers close to the crown. Warm diluted liquid from the start may help them, but ammonia from fermenting materials, which feeds the foliage as well as the roots, is the best of all stimulants, and for this reason alone a separate house or pit should always be devoted to them. When forward enough, the Chrysanthemum grower's vigilance should be devoted to the removal of all weak, superfluous flower-buds; the foliage should be pressed down with the hand to let in light and air; and the atmosphere being sweet and buoyant with a little more fire-heat and air, the camel's-hair brush will do the rest. It is not now the time to recommend the best sorts for forcing, as stocks, good, bad, or indifferent, are established in the fruiting pots; but it is more than gratifying to find the craze for endless variety is passing away, and fruit as well as plant growers are paying more attention to well proved sorts which, under good management, can always be depended upon. It is not, however, too late to look ahead, as strong maiden plants, where this important part of culture has been neglected, may still be planted in mild open weather for producing runners next season. It is not, perhaps, the best time, but one of our best Strawberry growers, Mr. Douglas, has said plants may be put out whenever the ground works well; and having myself worked up stocks in a very short time, I can endorse his valuable opinion.

Successions.—From this time forward batches consisting of one or two kinds should be taken in every fortnight. If space is limited, they may be placed in light, shallow pits or frames containing a little latent heat, such, for instance, as exhausted Cucumber or Melon frames, from which the linings have not been removed. The warmth, it is just possible, may be imperceptible, but yet it may be sufficient to give the roots a start. Then, again, there are few country places in which Oak, Beech, or Chestnut leaves cannot be obtained, and gardeners who make the most of everything are well acquainted with their value. These, placed beneath the pots or used outside for linings, in many gardens do one-third of the forcing; but the most complete substitute for a Strawberry house is a sharp-pitched Melon pit with a flow and return pipe running along the front. A pit of these kinds we have just fitted with shelves 16 inches from the glass. Fresh-raked Oak leaves, thrown rather loosely in until they touch the shelves, serve for bottom-heat and moisture, and the plants thrive and fruit admirably in it. When they commence flowering, all the most forward are drawn and placed together at the warmest and driest end, unless we have better accommodation, and when set they are transferred to the hottest structure at command.

Late kinds intended for giving heavy crops in May and shaking hands with early sorts out of doors should now be safely plunged in cold pits, where they are to remain until their work is finished. Space being limited, the plants may be plunged almost close together, when every alternate row can be drawn out for keeping up the supply in the forcing houses; but those intended to ripen their fruit in the pits should not be disturbed, as the moisture contained in the leaves draws out the crock roots during the winter, and, it is needless to say, these are of immense value in the spring. When pot plants are well plunged they do not require much attention with water, particularly where the lights are thrown off every day in mild weather and well tilted when heavy rain is falling; but being so highly sensitive under the damaging influence of drought, mistakes should always be made in favour of exposure and moisture.

THE ORCHARD HOUSE.

Very early trees started in November will now be showing the colour of their flowers, and a tolerably correct opinion can be formed of the way in which they are likely to pass through the most

important, if not the most critical, stage of their culture. If the blossoms are bold, plump, and plentiful, it is reasonable to suppose the roots are satisfactory, and they have not felt the want of water. On the other hand, if only a few are swelling, and the wood buds are pushing forward, the prospect of a full crop of good fruit may be considered the reverse of promising. The first set of trees will now stand a slight rise by day, but no alteration from 45° to 50° must be made through the night, and the syringe may be more freely plied on fine mornings. The second must be coaxed forward by very slow stages, and upon the principle that half a crop, or a late crop, is better than a failure. Meantime, an effort should be made to find out what matter of detail has gone wrong, in order that the loss of a season may not be repeated. If the earliest trees have not been fumigated, two moderate smokings should precede the opening of the first flower. Fly may not be in sight, but it is a subtle enemy which springs up when fumigating would prove fatal, and for this reason this trifling operation should never be neglected. Fermenting material being in favour, this also must be renovated, for, much as Peaches need periods of rest, they always set best in a slightly increased temperature with a nice circulation of air. Fire-heat, of course, will do all that is required, but warmth and moisture playing about the crocks and rising through the branches not only economise, but counteract its drying influence. Moreover, it is now a well known fact that forced fruits of all kinds often suffer through being kept in too dry an atmosphere when the delicate organs of fructification are parched up under its life-shortening influence. Watering through all the early stages, especially during the dark dull months, requires extra care. The water used should be quite equal to the maximum temperature of the house, and whenever a tree is watered it should have enough to thoroughly moisten every particle of soil. A few days may pass before the operation will have to be repeated, but one person should always perform this part of the work, and whilst guarding against making the balls wet and sour, on no account should the roots ever feel the want of water.

Succession houses with a few may be the earliest with many; in either case, the first week in January is a favourable time for making a start, and having the season with instead of dead against Nature all the best mid-season, together with a few whose chief merit is earliness, may be introduced. If the house has been used for Chrysanthemums, I should suggest smoking before the plants are removed, as these and aphids invariably go together. A thorough washing of the glass and woodwork should then precede housing. The trees having been plunged in the open air, they may be free from the larva of insects; but, prevention being better than cure, they should be carefully laid on their sides and well washed with soap and water. The pots also must be well washed, as nothing looks more slovenly than a dirty pot, and examine to see that worms have not been busy amongst the crock roots. If autumnal top-dressing has been neglected, it may now stand over until the trees are in position. Not so the material, as this should be mixed, the better to incorporate the stimulants, some time before it is wanted. Good rotten manure, stiff loam, burnt earth, and bone-dust supply all the trees need until the fruit is set, and this in a dry state cannot be too firmly pressed into the pots. A good watering will then unite the old and new, and the house, after being closed for a week or ten days, may be kept at 45° by night and 50° to 55° through the day; not with closed ventilators and windows, be it understood, but with a nice circulation of air to strengthen the flowers and prevent the wood-buds from getting too forward. Peaches and Nectarines, it may be assumed, will form the chief, if not the entire, occupants; but if it be a mixed collection, Plums and Cherries must have the coolest and most airy quarters. Strawberries, too, may be introduced, provided they can be placed close to the glass, near to the ventilators, and where they can be freely syringed. Cleanli-

ness in the preparation of these must be strictly enforced, and a portion of the rich top-dressing recommended for stone fruits will greatly help them.

PEARS.

Where these are grown in the orchard house none but the best varieties should be introduced, and those principally which do not attain their fullest flavour in the open air in ordinary seasons. If space admits, Williams' Bon Chrétien, Jargonelle, and a host of first-class early and autumn Pears may be grown on until the end of June, when they should be placed out of doors to swell and ripen. But space being available, the amateur may inquire why they are to be turned out. Simply because the chances are ten to one against the fruit being worth eating if they are kept under glass until it is ripe. Those who doubt this theory may convince themselves by comparing fine samples of Bon Chrétien taken from a south wall with medium-sized russet-coated fruit from a pyramid or standard. Indeed, they may test still later sorts, like Marie Louise and Pit-maston Duchesse, by the same rule, and they will find medium-sized fruits from pyramids and espaliers infinitely superior to large, waxy-looking specimens from south walls, especially in hot, roasting seasons. The orchard house under good management ensures a set of fruit and protects it until spring frosts have passed away; but this danger over, the most suitable position is a warm, south border, where, plunged to the rims, well mulched, and liberally watered, the crop will not only be early, but unique in flavour. Passing from the early to the late sorts, one might select a number of varieties which rarely mature their fruit properly in nine-tenths of the gardens north of London, but give them a place in the orchard house, or, better still, a house to themselves, and the quality of the fruit grown would be equal to that of the fine samples imported from the Channel Islands. Take, for instance, Easter Beurré, the old Brown Beurré, Bergamotte d'Espereu, Chaumontel, Passe Colmar, Passe Crassane, and Duchesse d'Angoulême, all of them old varieties, which few of the new ones can surpass in flavour; yet how seldom do the majority of growers find them good enough for the dessert. A good dessert variety is undoubtedly useful for stewing, but knowing that these sorts are capable of standing against all comers when properly ripened, an effort should be made to raise them to their proper position. Other varieties there are which come fairly good in good gardens, but then, sites for half the gardens in the country have been selected for convenience, not for successful culture, and the owners of these might safely include Beurré Diel, Beurré Rance, British Queen, Doyenné du Comice, Josephine de Malines, Madame Millet, Knight's Monarch, Winter Nelis, Thompson's, and the old Glou Moreau. All or nearly all these varieties do well on the Quince, especially when double grafted, and handsome pyramids loaded with blossom buds can be obtained at a very moderate price. Autumn, no doubt, is the best time to pot, but trees of this class can be lifted with balls and potted at any time before the buds burst. The most suitable pots for Pears, which should always be plunged to the rims in the soil, are those now made with perforated sides, and for the following reason, once established in them they can be kept in a fruitful state for years. Being perforated, it is almost impossible to over-water; consequently, whilst giving copious supplies of diluted liquid, the soil never becomes sour and unhealthy. Being perforated, numerous fine roots or rootlets find their way into the friable loam in which the pots are plunged, and although they never produce a gross habit of growth, they force up a never-failing supply of food when the fruit is swelling. The compost for Pears in pots cannot be made too rich; therefore good loam from the red sandstone, old mortar or hair plaster, bone dust, and well rotted cow manure should be thoroughly incorporated some time before the trees are potted. It should be well rammed when dry and watered home, when, the border being ready, the pots may be plunged and mulched for

the season. Although Pears that are thoroughly established will stand a fair amount of forcing, always with plenty of air, newly potted trees should not be subjected to this treatment, as the early growth would be taken out of the system and the crop would be lost. On the contrary, late Pears, like late Plums and Cherries, should have full air throughout the winter and spring, daily protection from cutting draughts when in flower, and gentle fire heat in dark, dull weather to prevent the pollen from becoming pasty or the petals from perishing. When set and past the dropping stage daily syringing and afternoon closing with moderate solar heat will be essential to size, but, the finest quality being the main point, full air must be admitted in hot weather and throughout the autumn months. W. COLEMAN.

Eastnor Castle, Ledbury.

NOTES.

OLD DOUBLE WALLFLOWERS.—One of my earliest of gardening experiences was admiration for the old double Wallflowers, crimson-brown—almost black, indeed, and of rich velvet-like lustre—and yellow, which an old villager in Leicestershire used to grow splendidly years ago. He had served under Wellington at Waterloo, but when I first knew him he was king of the Cabbage family in our locality, growing plots of all sorts of Cabbage plants, &c., for the supply of the local markets, farmers, and cottagers in the neighbourhood. So noted, too, was this old pensioner for his fine Wallflowers, that I never heard him called any other name than that of "Old Gilliver," or now and then "Gilliver" Hubbard, if more than ordinary respect was intended. I long laboured under the erroneous, but pleasing, impression that his toothless old wife was the "Old Mother Hubbard" of the dog and the bone fable. Even when disenchanted by an older boy who jeered me out of my faith, I remember I was none the more happy—indeed, felt all the poorer, although my historical knowledge was undoubtedly improved. Old Hubbard grew his Double Bloody and Golden Drop Gillivers (*i.e.*, Wallflowers in this case) under a sunny old mud wall, and a shilling a dozen was his price for well-rooted young plants. As "T. G." says, the modern double German Wallflowers are coarse and lumpy, and by no means comparable with these ancient cottage garden or English double Wallflowers when well and strongly grown. We have now in flower another double yellow which we call the double Rocket Wallflower, which rarely, if ever, goes out of flower. It has smaller and paler yellow rosettes than the old Golden Drop, and as one flower decays another succeeds it on the same axis, so that each of the little side stalks of the spike produces three or four flowers in succession. On warm, dry soils it flowers very freely in November and December, or later during mild weather.

NEW CHRYSANTHEMUMS.—The Continental growers intend making hay while the sun shines, and one grower alone, viz., M. Simon D'elaux, of Toulouse, has just issued a list of about a hundred new varieties. As a rule, we are now having at least 200 new varieties sent to England every year, and the most difficult point is to determine which of these are really distinct and useful additions, and which are not. No one amateur can afford to throw away his well-tried old favourites and to grow even half of the new sorts which are pulled so extravagantly by their raisers; hence the question arises, what is to be done? As it is, there seems no help, even the much-talked-of Chrysanthemum Society being powerless in questions of this kind. Of course, one can wait until the varieties are grown and shown by the trade growers, and then select only such as are certificated, or such as are seen to be really fine; but

in this way one loses time, and so pays dearly for the knowledge gained. One well-marked sign of the times is that a larger and larger proportion of the Continental seedlings are coming out under English names, so that unless some record be kept, it will be difficult to know the origin of the French kinds. Long ago with Chrysanthemums, as with Roses, a French name, as a rule, meant that the variety so named was a French seedling, but in neither Chrysanthemums nor in Roses does this now hold good. The raiser's name helps us now-a-days more than anything, and deserves careful record—a labour which belongs to the Chrysanthemum Society more than to any other body. As it is, both their catalogue and their medal might be much improved. Only yesterday I asked a friend if he would join the Chrysanthemum Society. "No," he replied; "it has too much of the trade about it for an amateur like myself;" and I am afraid a good many amateurs are of the same opinion.

THE FREESIAS.—Our first little batch of these lovely flowers is now in blossom, that is to say, the earliest buds are expanded, and I am a little puzzled by them. Last year we had only the pale sulphur-tinted variety which came to us as F. Leichtini, and this year all so far have produced white flowers, like those of F. refracta alba. Has anyone else observed Freesias to change their colour from year to year? These bulbous plants are so delicate and beautiful when strongly grown, that the wonder is they are not more often seen. Certainly their flowers are nearly as fragile as they are lovely, but when they are cut and placed in water at once, every bud on the spikes opens out fresh and fair, so that although the individual blossoms are rather short-lived, a spike goes on opening its flowers for a fortnight or longer in a warm room. We have hitherto failed, by growing the bulbs too thickly in the pots, but this year, with six or eight bulbs only in a 6 inch pot, the results are better, the spikes being very strong and branched several times. A little weak manure-water and a little extra heat, just as their flowers appear, help them wonderfully, and they like all the light of this murky season. I wish some one who knows the genus well would tell us how many species or varieties there really are, and what are their distinctions as seen in the garden.

THE BUTCHER'S BROOM.—This is a plant well worth growing in quantity, for its fresh dark green growths, which endure for weeks or even months, if need be, when cut with long stalks and brought indoors. It is by no means a quick-growing shrub, but when planted in quantity in woods and plantations it yields abundant supplies of its dark green sprays. In Italy, and also in the south of France, I am told the peasants cut the tough, flexible stalks of this plant, and utilise them as withies for securing their Vines. One of the finest of all the hardy species of *Ruscus* is *R. racemosus*, which has of some been supposed to be the victor's Laurel of the ancients. It grows well in Devon and in Cornwall, as also in Ireland, yielding glossy Bamboo-like growths, 3 feet to 4 feet long, and these as cut and placed in pots or bronze vases form very lovely ornaments for the house. It is usually called the Alexandrian Laurel, while the larger growing *R. androgynus* is the Greater Alexandrian Laurel, wild in Madeira and the Canary Islands. Our own species (*R. aculeatus*) is the Butcher's Broom, a name suggestive of its former uses, but, plebeian as its name may be, its sprays, when covered with dark red berries, are very beautiful, and endurable to boot.

CHRISTMAS ROSES.—One can withstand a good deal at this festive season, but at p. 580, your

correspondent, "G.," as I think, treats the beautiful *Helleborus atrofolius* a little unfairly. He says, "When pure and unsullied, there is no more lovely flower for the decoration of the hair than this Christmas Rose, and not one in a ball-room would ever suspect its humble origin!" I am sorry that the pretty old custom of wearing flowers in the hair is not now thought fashionable by ladies generally, and I fail to see the point of any suspicion as to the origin of this Christmas Rose. Probably "G.," like many others, yet clings to that old and exploded notion that no hardy flowers are or can be thought so fine as are those of the hothouse! Is not the origin of all plants the same? Are not all plants, whether Austrian Hellebore or Indian Dendrobe, Eucharis of South America or Philippine Phalenopsis, every lovely species in the world, indeed, are they not absolutely wild somewhere or other, and thus is not their natural origin the same? "Humble origin," indeed, as if there could be any real difference of origin between one wild plant and another. Hardy flowers may be different from tropical ones, for the culture of which hothouses are unfortunately necessary in our climate, but each has the same origin, and the question of their beauty is not to be governed by climate, nor by hothouses being essential to their culture here in England. There are a good many amateur gardeners in England to-day who value their Christmas Roses as highly as they do their Orchids or Eucharis flowers, and there are ladies who wear them bravely, or who use them beautifully, without a thought as to their origin, except it be that they are grateful that so much of flower beauty is obtainable from the open-air garden.

THE PATCHOULI PLANT.—All amateurs who are fond of sweet-scented foliage, and possess a warm house or plant-stove, should add a plant of *Pogostemon Patchouli* to their collection. It is a dwarf shrub, with rough leaves somewhat like a *Salvia*, and when crushed slightly in the hand yields a delicious whiff of perfume. It is most pleasant, like Sweet Brier, when a faint whiff catches one unawares, and if its leaves be touched in the morning, its fragrance may be detected throughout the day. A single plant placed near other scented flowers, such as Orchids, Freesias, Roman Hyacinths, &c., gives a tone to them, and adds quite a new charm to their sweetness by half-concealing its source. A Lemon leaf crushed in the hand does the same, and is more generally liked than any other perfume. If the leaf of a Lemon is not handy, then there are two or three plants which may be used as substitutes, viz., the Lemon Grass, the old Lemon-scented Verbena (*Aloysia*), or the leaves of the Citron-scented Blue Gum (*Eucalyptus citriodorus*), or even some of the Lemon-scented Pelargoniums. The true Allspice tree is much liked by some, but is too pungent, so to speak, for many people of keen sense of smell, who find it to be disagreeable. The Patchouli was one of the favourite plants of the late Miss F. J. Hope, of Wardie Lodge, Edinburgh, who alludes to it in her interesting book on "Gardens and Woodlands." VERONICA.

Azaleas planted out.—With reference to Mr. Cornhill's remarks on this subject in THE GARDEN (p. 573) I may state that I only know of one instance in which this plan is regularly practised, and that is at Yeovil, by Mr. Davis. Twelve months ago last autumn when I called upon him he showed me his stock that had been planted out all summer in a specially prepared piece of ground, and no plants could be more satisfactory than they were; they had made good growth, the leaves were abundant and of a dark green colour, and flower-buds had begun to form at every point. The compost consisted of peat and a liberal

sprinkle of sand, and the surface of the bed was a little lower than the surrounding ground. I understood Mr. Davis to say that he had practised the same plan for several years, and that he had better results by it than by keeping the plants in pots. Plants much cut in through furnishing cut flowers make as much progress in one year under the planting out plan as they do in two in pots, and they never fail to yield good crops of flowers annually.—J. C. C.

INDOOR GARDEN.

LEAF MOULD, MANURE WATER AND SULPHURING PLANTS.

ALLOW me to ask you two or three questions respecting matters with which I am unacquainted. (1) What is the best way of making good leaf mould? I have plenty of Oak leaves ready. (2) What is the best manure water for (a) *Cinerarias* (b) *Primulas* (c) *Roses* in pots or planted in a greenhouse? How can one tell about the strength it should be? (3) When sulphur is sprinkled on plants to cure mildew, how long should it remain there before it is washed off?—M., *Eton*.

* * (1) The hard fibry leaves from Oak, Beech, and Spanish Chestnut make the best leaf-mould for potting purposes. Select a quiet secluded spot in your shrubbery, but not too near the hungry devouring roots of old trees, and make a firm square stack of the Oak leaves, of which you say you have plenty. Lay a few sods of turf or branches on the top to prevent disturbance by wind and time will do the rest. Repeat this operation every year and you will have a continuous supply of the best leaf-mould that man can make. If fermentation takes place you may commence using at the end of six months, otherwise the stack will contain the greatest quantity of fertilising matter when a year old. (2) The drainings from farmyard manure heaps, cowsheds, and piggeries cannot be surpassed for horticultural purposes generally, and the plants you name will thrive on it amazingly. If one or all of these sources exist, make an underground tank and conduct all the drainings into it, but guard against the admission of flood or storm water. The tank, it is hardly necessary to say, should be made of bricks laid in cement or well puddled beneath and round the sides to prevent the egress of the liquid and the ingress of spring water; it should also be covered for safety and to keep in the ammonia. Many people defeat the object they have in view by using their stimulants too strong, but your animals being well fed a fair and safe proportion will be one of liquid to six of pure soft water. Try it this strength on a few inferior plants, and if they thrive give it once or twice a week all round. It may be well to put you on your guard against the too free or frequent use of the drainage from stables, the strongest and most dangerous liquid the amateur can take in hand; therefore, this being allowed to mingle with the other, one in eight will be found quite strong enough. We save all the drainings from our houses in air-tight tanks, and use one pint of the liquid to four gallons of water. Excellent liquid can be made by putting one to two pecks of the excrement from sheep or deer into a bag and sinking it into a fifty-gallon cask with the head knocked out. When exhausted and the water becomes colourless, replenish and dilute the first supply, as the great secret of success in the use of all stimulants is bound up in the two words little and often. (3) If sulphur is properly applied to plants, *i.e.* dredged or distributed with the sulphurator evenly over the upper and under sides of the leaves of the plants affected, it will destroy the spores of the fungus in a few hours. Its presence if unobjectionable will, however, do no harm; therefore, your plants being badly affected or the house being subject to mildew it may remain for twenty-four hours or more, when it should be syringed off and repeated at intervals if necessary. But why allow fungoid growths to enervate your plants? Ventilate freely, avoid a cold stagnant atmosphere, do not let your plants suffer from a deficient supply of water at the roots,

and syringe every part of the house occasionally with clear sulphur water. Still following the old adage that prevention is better than cure, dredge dry flowers of sulphur beneath the plant stage, on the pipes, but not on old-fashioned flues, anywhere out of sight, and there let it remain.

Eastnor Castle, Ludbury. W. COLEMAN.

Italian Hyacinths.—Seldom is anything said respecting these for house decoration. I, however, find them to be very useful for that purpose, especially the white and double rose, every bulb of which is sure to throw up two spikes. I decorate the house or conservatory while the first spike lasts, and the second always comes in nicely for cut bloom. My Italians follow close on the heels of the Romans, but the Italians come away together better than the Romans. They have more foliage, but require a little tying up. Of *Scilla sibirica* I grow a goodly quantity, it is so valuable for putting round a short spike or two of either Roman or Italian Hyacinths in small glasses. I could never make any use of it in pots, but, grown in 3 inch pans and planted rather thickly, it throws up a lot of bloom for cutting. Nearly every bulb last year threw up five spikes each. I gathered them weekly just as I wanted them. Mine are now beginning to push up some odd spikes. Some Hyacinths, such as Robert Steiger, whose foliage is curled outwards, are much more elegant for rooms than stiff, upright-leaved ones.—WEST HALL.

The genus *Hovea*—This is an old and much-neglected genus, consisting of beautiful greenhouse shrubs, the flowers of which are, in nearly every instance, blue or purple. They are plants of rather straggling habit, which the cultivator must rectify by constant finger-and-thumb pinching during the growing season in order to induce the production of laterals, and thus lay the foundation of a bushy plant. The best soil for *Hoveas* is a compost consisting of three parts peat, one part light loam, and a fair proportion of sand. As in the case of all other hard-wooded plants, the drainage must be effective. Amongst species the following are the most showy: *H. Celsi* is a free-growing plant, which requires much attention in order to induce it to form a handsome bush; its beauty, however, well repays any amount of labour that may be necessary to accomplish this end. Its leaves, which are alternate, are very deep green on the upper side, but paler below. The flowers, which are pea-shaped, are of a beautiful blue colour, with the exception of a white spot at the base of the standard. A well-managed specimen of this plant is a grand object, either on the exhibition table or in the greenhouse, and its flowers last long in beauty. They are produced in April, May, and June. *H. pungens* is a more twizy species than *Celsi*, but not less beautiful. The leaves, which are linear, are furnished with numerous large, bristle-shaped stipules at the base. The flowers are axillary; the standard rich blue, shaded with violet, and there is a white spot at the base. The wings are brownish purple. It blooms during May and June. *H. purpurea* is a robust-growing plant with downy stems. The leaves, which are alternate, are ovate-lanceolate, about 1½ inches long, dark green above, clothed beneath with a light, brownish-coloured down. The flowers, which are axillary, are numerous; the standard is purple, and the wings are tinged with brown. It blooms during May and June. *H. villosa*, which is nearly allied to the preceding, has shaggy leaves on the stems and branches. The leaves, which are alternate, are linear, dark green above, and clothed on the reverse side with a dense covering of long, shaggy hairs. The flowers, which are axillary, are lilac-coloured. It blooms during April and May.—W. H. G.

Canary Islands. The writer (a botanist) purposes spending February at Tenerife and Grand Canary, and will be glad of any information as to the habitats of rare plants in these islands. Webb and Berthelot's "Flora" is now fifty years old and probably very imperfect, but there may be more recent lists of plants scattered through botanic periodicals. Should any such exist, the writer will be glad to know where they are to be found.—F.

THE GREAT SNOWSTORM.

THIS year Christmas departed after all with a crown of hoar-frost on its head. Sunday opened with fitful showers that collected their forces into a steady downpour of rain throughout the afternoon and evening. Between seven and eight o'clock the rain crystallised into soft, floppy flakes of snow, which hardened into greater dryness as the scarcely perceptible and silent east wind dried them as they fell. The snow, however, fell on a wet, sloppy base as it succeeded the rain without any interval. Neither was there any perceptible or audible wind. The snow fell heavily in huge flakes on a still earth out of a heavily laden sky, and it fell so fast, that about ten o'clock it lay on branch and bough and over the rain-soaked ground to a depth of about 6 inches. And still it snowed and snowed faster and more persistent, and in larger, heavier flakes than ever. Soon after midnight the wind arose, and it blew during the night with such force, as to drift the heavy and soft snow into large drifts a yard or more in depth. The wind also proved the salvation of many a tree and shrub—for though in many cases it failed to dislodge the snow, which hugged them closer and closer the more it grew in weight, and in consequent destructive force, yet the wind, which reached a full half gale at times, did shake off the crushing weight from not a few trees in exposed positions, and thus saved them from the impending destruction that overtook many others that failed to get rid of their sudden and crushing burden. In the morning the snow in the open reached a thickness of 10 inches. It was then thawing rapidly as well on the surface as at the base; so it is safe to reckon that at least a foot of snow fell here—an almost unprecedented fall in the time. Nor does the mere thickness of the snow exactly measure its destructive force, for there is a great difference between the weight of snow of differing characters. Frozen flakes seem light as feathers, as well as to resemble them in other qualities; but sloppy snow, compared to these, may almost be said, without hyperbole, to be as heavy as lead; and hence possibly the snow on the evening of the 26th and early morning of the 27th may probably be found amongst the most destructive that has ever occurred to trees and shrubs. The disfigurements of both are the most marked features in the garden and pleasure grounds; but in the park it has dealt some very destructive blows to the Cedars of Lebanon. A good many boughs are also snapped off various Conifers in the pinetum. Most of these are snapped straight across, as if they might have been rods of glass. Not a few branches of deciduous trees and shrubs are also broken off sharp across, as if they had been sawn off; and a very curious example of the force of the snow on deciduous shrubs is furnished by a tall Lilac, which is borne right down and torn up by the roots through the sheer weight of the snow on its leafless top.—D. T. FISHER, *Bury St. Edmunds*.

— We have sustained much damage from the snowstorm, which has been very destructive. Trees of every size, shape, and species are broken down, twisted, and in some instances quite dragged out of the ground by the roots through the weight of the snow. Several of our great Cedars have large limbs broken off. An old tree of *Pinus Mugho* is broken right in half; few trees indeed seem to have wholly escaped, but evergreen species have suffered the most; in almost every case they are quite weighed down to the ground with snow or broken off. I fear it will be a long time before we recover from the damage done in so few hours. Yesterday (December 26) it was raining most of the day, but towards six o'clock it commenced snowing, and kept on until daybreak this morning. The snow is fully 7 inches deep and of a very heavy character.—W. HOLMAN, *Redleaf, Panshurst*.

— The early part of Sunday (Dec. 26) was almost incessant rain, followed, about half-past three in the afternoon, by snow, which continued to fall till late in the night, by which time there were between 1 foot and 2 feet of snow on the ground; and, owing to its being very soft, it ad-

hered to the branches of trees and shrubs, so as to be early in the evening quite dangerous to pass beneath trees of any kind. In the morning it was deplorable to see Elms, Oaks, Birch, and many other forest trees sadly broken in the park, and many uprooted. Laurels, Rhododendrons, Yews, &c., were bent to the ground; some were uprooted; but the destruction did not end with timber trees. On visiting the pleasure grounds the sight was truly alarming. Several handsome old Scotch Firs situated here were almost wrecked, as were also some evergreen Oaks situated near them; large limbs were broken down to the ground, and others were split by the weight of the snow, coupled with the high easterly wind which accompanied it. Several Cedars of Lebanon situated in the garden and in the park adjoining were sadly disfigured, many large limbs being torn off at the base, and many smaller ones split, thus disfiguring them for a very long time to come, if indeed they ever perfectly recover.—C. WARDEN, *Clarendon Gardens, Wilts.*

— One of the heaviest and most violent snow-storms which we have experienced for some years occurred on Sunday afternoon and evening last. A cold, sleety rain had been falling all the morning. At three o'clock snow began to fall, and the wind rose to a regular gusty gale and continued to do so until past midnight, at which time the snow also ceased to fall. Fortunately, the cold was not severe—the thermometer did not fall below 31 at any time during the night. The morning revealed sad destruction amongst trees and shrubs, especially Evergreens. Young Conifers were lying flat on the ground, and huge branches of Cedars had been broken off by the weight of the snow. Pyramidal-shaped trees suffered least, Wellingtonias having scarcely a branch injured. Laurels, Hollies, Sweet Bays, and Arbutuses have suffered a good deal. It is difficult to measure the depth of snow, owing to the drift, but I think 8 inches may be set down as a good average.—TARNTON, *Somersetshire.*

— The snowstorm of Sunday night did us grievous damage: the snow was of that sticky kind that holds on and loads the tree. We saw it coming on at dusk and feared greatly. About nine o'clock it was heartrending to hear the poor trees breaking in all directions; outside of human troubles this is one of the most piteous things I know, and of an interest almost human. It is like seeing people drown and unable to give help. Next day saw dreadful wrecks among the poor Scotch Firs, many absolutely done for, and hardly any without more or less of mutilation.—J., *Swrby.*

— After a pouring wet morning snow began to fall here on Sunday at 5 p.m., and increased so rapidly that the ground was soon covered. At 10 p.m. it was 6 inches in depth, and the storm continued in full force till midnight. The average depth to-day (the 27th) is 14 inches, and everything presents a very wintry appearance. I never saw such havoc wrought amongst Conifers as has been wrought on this occasion. One of the handsomest Cedars in North Bucks, which has adorned the grounds here for many a year, has been wrecked, and a grand old Stone Pine in the rectory grounds, which had been braced together to preserve it, has lost two of its best limbs. Bays, Laurels, Junipers, and all kinds of Evergreens have also been more or less injured.—G. BLOXHAM, *Buckhill, Blotchly, Bucks.*

QUESTIONS.

5540. **Woodlice on fruit.**—Can some reader of THE GARDEN suggest anything to prevent woodlice and other insects injuring fruit which stored away in a cellar? Chase's Beetle Poison is of no use for that purpose.—R.

5541. **Moss on lawns.**—My lawn has got covered with Moss. Would ashes or bones put on it destroy the Moss? and what time of year is the best to attack it? There are great quantities of flower roots planted on the lawn, and I do not wish these destroyed.—W. M. D.

5542. **Christmas Roses.**—Can "O." (p. 586) afford any proof of his statement that cross-bred Helleborus have ever been raised between *H. orientalis* (Lenten Rose) and *H. niger* (Christmas Rose)? I have repeatedly tried this and similar crossings, but could obtain no result, and I know of at least

two other growers who assure me that in no case could they obtain crosses between the two sections of the genus Helleborus. *H. guttatus*, *H. atro-rubens*, and *H. orientalis* inter-cross freely, and we have many seedlings now coming into flower.—F. W. B.

TREES AND SHRUBS.

UNSIGHTLY ARAUCARIAS.

PERSONS often seek information as to the best means of restoring to health diseased and consequently unsightly specimens of *Araucaria imbricata*. The cause of this now too common malady is imperfectly understood, and the best means of coping with the disease is consequently just as imperfect. Having had a rather wide practice amongst trees, I may be allowed shortly to state my opinion of the evil, as well as suggest means of restoration that have been found of great avail, in numerous cases at least. The first and principal cause of the *Araucaria* so frequently turning unhealthy in our gardens and grounds is due to planting in unsuitable soils and under the shade and drip of other trees. Far too frequently it happens that in planting the *Araucaria* little or no attention is paid to the soil in which it is placed. A hole is dug, a barrowful of what is termed good soil placed in it, and the tree planted; and, what is as bad, if not, indeed, worse, a wrong impression that the *Araucaria* requires coddling and shade, causing it to be placed in too close contiguity to other trees. If you want to plant an *Araucaria* that will reflect credit on the planter in years to come, choose, first of all, an open spot away from all trees and big growing shrubs, and if the soil is not of a free, rich nature, and perfectly unsaturated with excessive moisture, make it so by, first of all, thorough drainage, and, secondly, by substituting an open sandy loam for whatever the objectionable soil may be. Travel where you will throughout the country, meagre-looking *Araucarias*, with half of their branches dead and dying, frequently confront one. The cottager must have his *Araucaria*, although attached to his house there is not more than a couple of square yards of available space; and, indeed, town-folk are but little behind in this matter, for, whatever else adorns their miniature garden, the *Araucaria* must be first on the list, the position or suitability of the soil being in most cases of only secondary consideration. I have just examined about half-a-hundred specimens of the *Araucaria*, and find that where an open situation and free, well-drained soil is present the *Araucaria* does well, but let the ground be stiff, plastic, and excessively damp, and the tree planted beneath the shade of others, then the disease and its consequent unsightly appearance in the foliage is sure to follow. By far the finest *Araucarias* I know of are growing in a disused gravel-pit, the holes in which they were planted being dug large and wide, and having a couple of cartloads each of road-scrappings and decayed vegetable refuse intermingled with the rather roughish gravel. They have been planted upwards of forty years, and to see them in the perfection of health, with wide-spreading branches and lofty heads, does the tree lover good, and forcibly reminds him that, circumstances being equal, the Emerald Isle is better suited for certain species of Conifera than any other part of our country. In the woodlands of this estate the *Araucaria* does only middling when mixed up with the general run of our forest trees, for if in the least crowded, the lower branches assume a brown and diseased appearance, and the whole tree lacks the rich, healthy tone that is so characteristic of it when grown under favourable circumstances. We have been thinning an old Oak wood in which, owing to the wide distances apart at which these trees stood, a number of the Douglas Spruce, Weymouth and Cembra Pines, Lebanon Cedars, and the *Araucaria* were planted, more, perhaps, for ornament than under the supposition that they would ever become a remunerative crop. Excepting the *Araucaria*, all the other trees have done well, for the soil was a kindly, friable loam, which rested at no great depth on a shale rock, and the situation well sheltered and warm. Wherever the *Araucarias* were overtopped by the Oak branches there signs of ill-health are apparent, although where open and exposed they look well. *Penrhyn.*

Weir's Cut-leaved Silver Maple.—Mr. Ellwanger says that, though but little known, this is one of the most beautiful and remarkable trees with cut or dissected foliage yet introduced. Its growth is rapid, shoots slender and drooping, giving it a habit almost as graceful as the Cut-leaved Birch. The foliage is abundant, silvery underneath, and on the young wood especially, deeply and delicately cut. The leaf-stalks are long and tinted, with red on the upper surface. We believe it will rank at once among the most interesting and attractive of lawn trees, and may be easily adapted to small places by an occasional cutting back, which it will bear to any degree necessary as well as a Willow. It will doubtless eventually become vastly more popular than the Birch, owing to the ease with which it may be propagated. It grafts or buds readily on seedlings of the Soft Maple. A favourite way of working it is to bud or graft it at a standard height on the strongest growing seedlings; this plan adds greatly to its pendulous habit.

The Weeping Ash should not be forgotten by planters. It is a well known weeping tree of vigorous habit, its branches spreading, at first horizontally, but gradually drooping towards the ground. Its strong, stiff growth does not render it as graceful and ornamental as many of the trees of this class, but planted singly on a large lawn it forms an interesting object. It is one of the best trees for forming an arbour. *Fraxinus excelsior pendula* is a variety of the preceding, but scarcely quite so strong growing, and it is characterised by the yellowish bark of the young branches which gives the tree a peculiar appearance. *F. lentiscifolia pendula* is a pendulous variety of the Lentiscus-leaved Ash, and forms a fine ornament in a sheltered situation. It requires to be grafted some 6 feet in height, in order to show off its true character to advantage, as its branches are very slender and Willow-like compared with those of *F. excelsior*. They are, however, produced in great abundance, this variety of Ash making an excellent pendulous umbrella-headed tree.

Darwin's Barberry in wet soils.—Few know how well the beautiful *Berberis Darwini* thrives in drained bog soil. It does well in most soils, but seldom have I seen it equal to a few plants of it which we have here in a bog soil, where it makes finely branched shoots from 8 to 10 feet long in one season; and when in spring these are smothered with bloom, and surrounded by masses of Rhododendrons in all shades of colour, from white to a deep crimson, the contrast is most pleasing; the colour is so rich and telling, so entirely its own, that there seems nothing wanting to make the picture perfect. It should be planted well back or it is liable to bury things behind it of dwarfer growth; and do not forget after it has done blooming to head it well in. It makes, too, here and there grand isolated specimens. I hope this account of it will induce others who have bogs to plant it largely. It seems to thrive even where the Rhododendron looks sickly through too much wet and hard frost during winter. Why not also miles of hedging planted with it? It is both handsome and effective, and, on account of its spines, quite equal in the way of defence to Thorn or Quirk, which do not do well in bog.—T.

The Copper Beech in Hampshire.—This tree is still unvalued in the contrast it presents to the eye in the landscape, but there appears to be a difficulty in the grouping of it, so as to give sufficient effect to the contrast. Most specimens I have seen are evidently in the wrong place for this purpose. It is plentiful throughout this county, as there are very few lawns or pleasure grounds without a specimen of the Copper Beech. A departure from the ordinary routine in planting it was made some few years ago at Brookwood, by Colonels William and George Greenwood, who planted a line of them on either side of the road from Winchester to Petersfield, commencing at Woodcote and extending eastward for nearly a mile and a half; but as I have not seen them for some time I forbear giving a description at present. The finest specimen I have to record is in the rectory grounds near the house at Over Wallop, about three miles south of Gabley Railway Station; it has the large circumference of 9 feet 1 inches, and has otherwise attained the dimensions

A. D. W.

of a large tree, but unfortunately my notes give no further dimensions. Soil, clay on the chalk. Measured in 1880. There is another tree in Amport pleasure grounds, near Andover, which is a good specimen, with a girth of 6 feet 8 inches. Soil, clay on the chalk. Measured in 1880. There is a third at Boanbridge House, near Winchester. This has assumed a beautiful weeping habit, and stands alone on the lawn in front of the house. It has a fine effect, and is almost the only one I have seen rightly placed. It has a circumference of 6 feet 1½ inches. Soil, alluvial; subsoil, plastic clay. Measured in 1880.—R. S. J.

THE ORIENTAL PLANE IN GREECE.

The Oriental Plane attains to a very large size and to a great age, and more especially so in the eastern parts of Europe, where there are many and numerous instances. A very noble example may be seen growing in the village of Vostiza, in Greece, on the Gulf of Lepanto, which girthed (when I was there in 1842), at 5 feet from the ground, 37 feet 4 inches. I had visited and measured this same tree six years previously, viz., in April, 1836, when I made the girth to be exactly 37 feet at the same height. Whether in the six years it could have increased in growth 4 inches I could hardly venture to say—the difference of measurement might possibly have arisen from some excrescence on the bark unnoticed at the time, but, be it as it may, the measurements both times were carefully made with a tape line.

This tree, situated in the middle of the village, on a gradual slope, standing on a raised platform of flat stones, evidently for protection to the roots, is a striking object on entering the village, and especially noteworthy, as existing in the days of Pausanias, the Greek historian, who, living in the second century, makes mention of it in his travels (see Burgess' "Greece"), and the tree must have been of considerable size and age at that time to have made it worthy of remark, its age probably dating considerably before the Christian era, making it more than two thousand years old, and yet, when last seen by me in 1842, it was in full vigour and health, the trunk, apparently, for some way up, perfectly sound, though many of its larger limbs and branches had succumbed to age and storm. I had no means of measuring its height, but at a rough guess I should say it could not have been less than from 130 feet to 140 feet, or perhaps more.

Should this meet the eye of any of your readers who may have travelled in that part of Greece, and have noticed this tree in more recent years, or any who may hereafter visit it, and were they to record their observations as to its state and appearance at the present day, should it be still standing, which, unless it may have met with some untoward accident from the elements, I have every reason to hope it does, being much revered by the inhabitants, notes on the subject would be of the highest value. There are many other parts of Greece and also Turkey in which I have noticed the Oriental Plane of remarkable size and beauty, but I will only mention one or two places, and one of the more notable of these is along the banks of the stream running through the vale of Tempe into the plains of Thessaly at the foot of the Olympian range, where many magnificent and stately specimens fringed its banks for many miles, and were growing in the greatest luxuriance, when visited by me in 1846.

The Oriental Plane seems naturally to luxuriate on the banks of streams, and I was especially struck with the magnificence of a grove of these trees in the island of Crete, where, in a vale at the foot of the white mountains in Sfakia, a few hours' ride from the town of Khania, watered by a copious stream, and probably getting its name Platanus, as well as giving it to the whole vale, from the number of trees of this species growing there, the beauty of which is much enhanced by many of the largest and finest trees being held firmly in the grip of gigantic vines entwining their trunks for some feet above ground, as it were, with a huge cable nearly the thickness of a man's body, and afterwards stretching out in long rope-like folds, through and over the branches to their very tops, and hanging down in long pendent

festoons of bright leaves and fruit, and yet the trees seemed in good health, though they must have been held for many a long year in the grasp of these monsters. While on the subject of these trees, I may here remark, for the benefit of those who may be ignorant of the fact that there still exists in the island of Crete, or did so some few years ago, an evergreen variety of Plane tree, mentioned by Pliny and others, and authenticated by Admiral Spratt, whom I had the pleasure to accompany in one of his numerous visits to the island, but, though near the spot with him, he had not then re-discovered this rare and possibly very local production of Nature.

D. H.

KITCHEN GARDEN.

CHICORY AND MUSTARD AND CRESS.

WITH plenty of these no one need care much whether they have many good Lettuces and Endive at mid-winter or not, as with Chicory and Mustard and Cress, salads of the very highest quality may be made, and they can be easily grown in quantity, let the weather be what it may. Witloof was introduced some years ago as an improvement on Chicory, but I have not found it to be so, and have, therefore, ceased to grow it. Chicory is hardy, grows freely, and when forced produces a large quantity of delicate leaves. The seed should be sown annually in May in rows thinly, and the young plants soon produce Salsafy-like roots without much attention. These are taken up in November, placed almost as close as they will stand in 8-inch or 10-inch pots with some ordinary soil round them, and they are then ready for forcing. We wheel a few barrow loads of fermenting material into a dark shed, plunge a few pots in this, and in a fortnight or little more the roots throw up a tall cluster of cream-coloured leaves of the finest salad-making quality possible. A few potfuls are introduced into heat now and then, and in this way there is no difficulty in keeping up a constant succession. When wanted for use the crowns are cut right through, and if the latter be kept in heat after that, they will push out side-growths which will come in for use afterwards. Chicory may also be forced under a stage in a warm pit, and where no other means of keeping it in the dark exist, another pot, of the same size as the one it is in, may be turned upside down over it. Mustard and Cress, as we all know, are easily grown. Some time ago I found a patch in the shallow boxes, which we use for producing them in winter, die away here and there prematurely, and on making an examination to ascertain the cause, I found that some parts of the soil were very firm and others were loose, and it was in the latter the plants had failed. After that I ceased to use old soil of any kind to fill the boxes, and substituted leaf-soil, making it very firm all over. I sowed the seed on the surface, and did not cover it in any way, finally placing it in a temperature of 60 degrees. Here growth was rapid, and in ten days each box was an even mass of beautiful green Mustard and Cress. In leaf-soil it grows uncommonly well—better, indeed, than in anything else we have tried, and uniform firmness retains the whole in excellent condition. Our winter Mustard and Cress boxes are those which we use for bedding plants in spring. They are 3 inches deep, 1 foot wide, and 2 feet 6 inches long. By sowing from two to four of these weekly, a regular and plentiful supply is kept up, and if frost chances to catch Lettuces or Endive, they are not much missed.

J. MUIR.

The best Potatoes.—The suggestion made by "E. B." (p. 573) that readers of THE GARDEN should give the names of the sorts of Potatoes which they find to be of good table quality in different soils is an admirable one. There are some who disbelieve that soil has any influence on the quality of Potatoes, but that is not my opinion. I have given all the American sorts a fair trial, but none of them are to be relied upon. In a dry summer Early Rose and Beauty of Hebron are fairly good, but never first rate. I should mention that our soil is cold and heavy, and that it gets

more manure than is good for Potatoes. Nevertheless, the old Ashleaf, Myatt's Ashleaf, Covent Garden and Porter's Excelsior are to be depended upon. Magnum Bonum and Scotch Regent are also good. But such sorts as White Elephant, Cosmopolitan, and Woodstock Kidney are very inferior as regards eating quality, although excellent croppers. The old Fortyfold was grown by numbers of cottagers in this district last year, and produced excellent crops. As many of your readers doubtless know, there is no better eating Potato grown than this. But it is only suitable for rich land, and is very very liable to become diseased. I am surprised that Covent Garden Perfection has not become more popular than it is. It is a capital cropper and second to none as regard eating qualities.—J. C. C.

CELERY IN WINTER.

IN many gardens, especially small ones, Celery is the only salad plant to be found in winter, and, apart from its value in this way, it is also most acceptable as a culinary vegetable. No labour should therefore be spared to make the supply of it as plentiful and good as possible, but Celery which might be in prime condition in August and September will not be of much value now, as it becomes soft in the centre and not so crisp and firm as when it is approaching full size. The best Celery for winter use is that which is now only about three parts grown, and spring Celery need not be more than half grown at the present time. The winter Celery crop should extend from November until March. Its most injurious enemies are damp and frost. Deep trenches on each side of the plants will help greatly to drain off superfluous moisture from them, and where there are only one or two rows together a good bank of soil put against them (as is done in earthing up) will prevent a great deal of rain from reaching the plants, as it will fall on the sides and run off. A quantity of finely sifted ashes if placed round the plants at the last earthing up will prevent them to a great extent from decay, as the ashes do not cling to the leaves like sticky soil. All earthing up of winter Celery should be completed as soon as possible, and it is most important that the soil be prevented from falling into the centres of the plants. This is injurious at all times, but more particularly now, as damp earth will cause the interior of the plants to quickly decay. If each plant is tied up firmly with a piece of matting before earthing, and it is afterwards removed, earthing up will be more easily and safely done than when untied. I do not approve of lifting a large quantity of Celery and keeping it stored away for use. This plan is convenient if practised before a protracted frost sets in, but it does not possess any other advantage. The plants should be well protected in the trenches at such times, and this may be done by putting a good band of hay or straw round each, but it is not safe to allow this to remain on when there is no frost, as it may cause the plants to perish from damp. Timely protection is the secret of successful preservation; there is little or no use in covering them up after the leaves have been almost reduced to a pulp by frost.

J. MUIR.

Margam.

New flower cups.—Anyone who has had experience of flower shows where cut flowers are exhibited cannot fail to have noticed the want of harmony or symmetry that is often seen on the stands of competing flowers. In some schedules of prizes it is required that the stands or boards on which the flowers, such as Dahlias, Chrysanthemums, Asters, Roses, &c., are staged should be of uniform size and colour; but when this is the case the flowers are set in them at different levels of elevation, and the whole has an irregular and confused appearance, distasteful to the eye. To obviate this, Mr. Benjamin Field, of Swan Place, Old Kent Road, has brought out what he terms his Jubilee Flower Cups, for exhibiting cut flowers in, and more especially for Chrysanthemums. The cup which contains the flower is made in three sizes, for large, medium-sized, and small blooms; the widest are 3 inches, the smallest 2 inches, and they fit into the water-tube in a telescopic manner, so that the flower can be raised at any

desired height from the board. The tube, which has the cup at the top of it, has an inner tube of a smaller size, for the stem of the flower to fit into, and there is a wire loop at top and bottom to keep it secure. They are made of zinc, are nicely finished off, and will last a long time. A lady said, in our hearing, when she had examined the tubes: "What excellent things they are for placing in glass and other vases to keep flowers in an upright position for the decoration of a sitting-room," and this appears to be an end these tubes are well calculated to serve.—R. D.

PEARS AND THEIR HISTORY.*

I HAVE been asked to give some account of what I know about Pears. There is, of course, much to be said about a fruit which more than any other attracts the attention of the cultivated pomologist from the extraordinary development it has attained in our own time, the ancients having been contented with fruit certainly unequal in flavour to that which we enjoy. M. André Leroy, in his dictionary of pomology, has taken the trouble to make very learned researches regarding antique Pears, and enumerates four Greek and thirty-five sorts of ancient Rome; but he does not fix the time when these ceased to be catalogued, and gives only twelve sorts of Italian Pears between the fifteenth and sixteenth centuries, the varieties cultivated in France from Charlemagne to Louis XIII. numbering 260 kinds. Pliny names twenty kinds. Varro, Palladius, Cato, Columella, and Virgil are also pomologists and Pear lovers. The latter is very urgent in the matter of grafting Pears, but seems to have been aware of the modern axiom that "he who plants Pears, plants for his heirs."

In 1665, John Rea published the "Flora, Ceres, and Pomona," in which he gives a list of twenty-one Pears, described as being very good, one of them rejoicing in the extraordinary name of Dead Man's Pear. He describes the Winter Bon Chrétien as one of the most excellent, but requiring to be grafted on the Quince stock and trained to a wall. He also says, "that there are several good sorts of Wardens and baking Pears." In 1693 John Evelyn published a translation of the works of Monsieur de la Quintinye, a very voluminous, exact, and twaddling French author. In advising the setting out of a plantation of dwarf Pear trees, he begins with the choice of a dwarf tree to be planted alone—*Le*, the Winter Bon Chrétien, giving several reasons for this preference. "1. Because of its antiquity, and that by its singular excellence it gained the admiration and courtship of the world, the great monarchies, and principally that of old Rome having known and cultivated it under the name of Crustumium. 2. It was baptised at the very birth of Christianity itself, and consequently it should have the veneration of all Christian gardeners. 3. It should be considered of itself and with respect only to its own proper merit, which alone can entitle it to a preference." This is, at all events, a very proper decision to arrive at, but the Winter Bon Chrétien has not kept the high rank assigned to it. De la Quintinye indulges in the most extravagant expressions of esteem: "That it grows to the weight of 2 lbs., that it is considered a handsome present to persons of quality, and that it is a Pear the beauty of which has caused the ablest gardeners to labour for it with the greatest passion." I have had a good experience of Pears, but I have never known this precious Pear except by name, but it may have degenerated, or we of the present time are more particular in our tastes. Of the other varieties named by Mons. de la Quintinye, the Autumn Bergamot, the St. Germain, the Colmar, and Crassane have survived to our own time, but without holding rank as first-class fruit; he, however, highly commends the Beurré Rouge, classing this as a synonym of the B. d'Amboise and Isambert, which he says "possesses the first degree of goodness—*viz.*, a smooth, delicious softness with a fine delicate pulp," wasting many good epithets on the Winter Bon Chrétien which would have been more properly applied to the Beurré Rouge. The Autumn Bergamot is not highly commended, although our friend says, "that it has a numerous and formidable party, and, indeed, that a thousand people assert that for its tender and melting pulp, its sweet and sugary juice, and the little smack of perfume which

accompanies it, that is more valuable than all other Pears in general," remarks which a great many ignorant people make at the present day. De la Quintinye names some ninety or hundred sorts of which some of the names are expressive, as Greedy Guts, Chew Good, Daughter of God, or Fille Dieu. Some few of the sorts remain, among them the Rousselets, Chaumontel, and St. Lezin. De la Quintinye's reasons for the enjoyment of Pears are curious. He states that "the rigorous cold which lasts from November to March enjoins our placing ourselves near the fire, and that to counteract the external foreign heat then taken in, Nature has provided us with Pears to prevent the great infirmities which might happen to us from the enjoyment of so much heat. So precisely at this time she has given us an admirable quantity of tender fruit such as Bergamots, Louise Bonnes, Les Chasseries, Amberts, Virgonlees, Epines, and St. Augustines." This garrulous author provides for the plantation of a thousand trees, but states that "the planter of so many would be a curious gentleman, for how could he dispose of 12,000 Pears unless he gave them away or made perry of them?" This difficulty would not be felt now. He concludes his remarks on Pears by a list of fifty good, forty-four indifferent, and sixty-six bad sorts.

In 1729 Batty Langley, in the "Pomona," gives the names of fifty-seven Pears. Those which are named by him and still cultivated are the Brown Beurré, Autumn Bergamot, Hamplen's ditto, Crassane, Epine d'Hiver, Jargonelle, Swan's Egg, and Windsor, and among baking Pears the Black Pear of Worcester and Catillac. Mr. Langley is not enthusiastic about Pears.

Switzer enumerates eighty Pears, advising the planting of the English Bergamot, "because of its goodness and antiquity, it being not impossible that it has been an inhabitant of this island ever since Julius Cesar conquered it, and that possibly it was the Assyrian Pear of Virgil, and was, as may be deduced from this, a part of the celebrated Gardens of Alcivous." A tree of this sort in the Sawbridge-worth Nurseries is said to be 300 years old. The Pears selected by Switzer appear certainly to have been the best of that time, and he testifies to the extreme goodness of the Winter Bon Chrétien.

Philip Miller, in his "Gardeners' Dictionary," 1759, begins his list with Petit Muscat, and passes on to the Chio, Citron des Carmes, La Bellissime, bearing two crops in July and September, Jargonelle, and Cuisse Madame. The Cuisse Madame of the French is classed as a good Pear, and the Jargonelle as third rate; but Mons. Leroy describes the Cuisse Madame as a small inferior Pear, ripening about the end of August, considering it as one of the few historical Greek Pears which have come down to us. The Poire d'Épargne or Jargonelle of André Leroy does not correspond with the outline of our Jargonelle, and he does not praise the fruit, calling it good only for the season. Our true English Jargonelle when ripened on a wall is exceedingly good, juicy, and refreshing. Probably the spurious Jargonelle, which undoubtedly exists, has been introduced by those who have imported this sort from France, having been misled by the name, not being aware that the Jargonelle of the French nurseries is not the kind which passes under that name with us. Leroy says that Miller has muddled the Jargonelle, and that the confusion caused by him has lasted to our own time, the mischief arising from the Jargonelle and Cuisse Madame being classed by Mills as synonymous.

Miller names eighty sorts, and states that he has included in his list many sorts that are not worth planting to please those who are fond of a great variety. He is aware of the eccentricity of the ripening period of Pears, for he says, "I have known the fruit of a Pear tree in one year all ripe and gone by the middle of October, and the very next year the fruit has not been fit to eat until the very middle of December." All of us can endorse Miller's remarks. I have found it a very difficult matter to fix the date of ripening, and the variations noticed in 1759 find their equivalent in 1886. In reference to this matter, Miller says that "if we look back to the best French authors of fifty years ago, they put down the times of ripening of Pears a month or six weeks later than

now, and that in London it is much about the same, the time of ripening in London being quite as forward as Paris." This remark does not seem to indicate that the climate is becoming colder, as many are inclined to think. There are many writers on pomology after Philip Miller, but as far as the names of Pears are concerned we may step from 1759 to 1831, when a book was published by George Lindley and edited by Dr. Lindley, entitled "A Guide to the Orchard and Kitchen Garden." The list of Pears is here brought down nearly to our own time, 150 dessert Pears being enumerated, among them many of our old friends of 1665, 1693, 1729, 1731, and 1789, and adding to the list a number of new sorts raised from seed by Van Mons, Nelis, and others. According to Lindley many of these are not worth much, the Duchesse d'Angoulême and Beurré Diel being credited with special praise, the Marie Louise, however, not being very highly commended. In 1842 the Royal Horticultural Society published a list of 412 sorts, and Dr. Hogg, in the fifth edition of the "Fruit Manual," 1884, describes 732 sorts. André Leroy, in the "Dictionary of Pomology," has 915 sorts, and the cry is, "Still they come." The new sorts that have been constantly introduced showing that the highest standard of excellence has not yet been reached, and that no fruit is so susceptible of high development as the Pear, as it advances step by step with the higher cultivation of man; this advance being by no means rapid, as it has taken many centuries to produce a Pear of the quality of the Doyenné du Comice, this fruit being far superior to any of those noticed by Lindley in 1831.

It is curious that Shakespeare, country bred, should never have mentioned Pears by name, save once, in "Romeo and Juliet," when he alludes to the Popperin Pear, now known in Worcestershire as the Poplar Pear, still one of the common perry Pears of the county. It is evident from this meagre notice of Pears that Shakespeare's tastes were not gratified by good fruit. In "The Merry Wives of Windsor" he uses the phrase, "crestfallen like a dried Pear." The plump and juicy Pears of our century when fallen rot before they wither, but the tough perry Pears wither before they rot. Worcestershire abounds with Pear orchards, and Shakespeare, had he seen these orchards in full bloom, would surely have expressed his admiration. There is no allusion in any of his plays, poems, or sonnets to the beautiful spectacle of a Pear tree sheeted with its snow-white blossoms. Another country poet, Robert Herrick, although enthusiastic in praise of Strawberries and Cherries, never alludes to Pears. Herrick spent the best years of his life in Devonshire, which must have been almost destitute of Pear trees. Sir John Suckling celebrates the charms of a young lady in his lines—

Her cheeks are like the Katharine Pear,
The side that's next the sun.

Batty Langley notices two Katharine Pears, the Royal and the Queen.

Standard Pears are utterly unsuited for small gardens, and should be grown in orchards only. Those who are blessed with old and decrepit standard trees may renew their vigorous growth by heading them down. In three years young, healthy, and fruitful branches will replace the old and useless wood of generations. A difference is sometimes observed in the conduct of trees on the Pear stock. Some will be more fruitful and bear larger fruit than other trees of the same sort and age. This arises from the influence of the stock upon the graft. All Pear stocks are raised from seed, and great variety of course exists. The difference sometimes seen in the produce of trees growing side by side is often so great as to cause doubts of the identity of the fruit. The seeding Pear stocks imported from France are raised from the pips of perry Pears, and of these two sorts are distinguished, one with smooth bright leaves from the district of Le Mans, and the other, woolly or sage-leaved, from the province of Anjou. I believe the pips of the wild or forest Pear are employed in Germany for raising stocks.

Garden trees on the Pear stock should be either trained as espaliers, wall trees, or pyramids. Root-pruning will cause unfruitful trees to bear, and those who

* A lecture by Mr. T. Francis Rivers, Sawbridge-growth.

have them will do well to practise it. The Pear stock is not fastidious about soil. My own experience of the Quince stock convinces me that it is the most useful stock for all styles of garden training, it is adapted for espaliers, pyramids, bushes and cordons. Cordon training, although known and practised in England for some time, has been brought more prominently into fashion during the last thirty years. It is, perhaps, the most simple and productive of all sorts of training. An oak fence, 7 feet high, planted with diagonal trees, 18 inches apart, in four years will produce a large quantity of fruit, and a wall from 12 feet to 15 feet high in five to six years will produce like results. I have found that pruning twice a year (June and October) is sufficient to keep the tree in fruitful order. In the June pruning the young shoots must be stopped at the fifth or sixth leaf, and in October every spur must be pruned as close to the main stem as possible, avoiding any injury to the fruit buds, which are, of course, easily detected, diagonal cordons may also be trained to wire trellises, and treated in the same fashion: this is a very interesting and ornamental style. The single horizontal cordons and the double horizontal cordons, trained at 18 inches from the ground, form a neat and fruitful edging to side walks. The five-branched vertical cordon has five upright shoots springing from a common horizontal base. These may be planted 4 feet apart. The horizontal cordon has the branches trained at regular intervals from a main vertical stem, this form is admirably adapted for espaliers by garden walks, and is very tractable and pleasant to manage. Vertical cordons planted in the open ground 4 feet apart will give large crops of fruit. Two forms of cordon training seem to me to be very unpractical—*i.e.*, vase-cordon and the plan of training over an arched trellis, the former is more trouble to manage than a bush tree and gives no better results, and the latter is contrary to common sense, part of the tree being grown in the shade. All cordons require the same system of pruning. Pyramid and bush trees on the Quince stock are charming garden trees; the pruning is somewhat different to that practised for cordon trees; the side shoots should be pruned in June, and the leading shoot untouched until October, superfluous shoots being occasionally removed during the summer to admit the sun; the unpruned leading shoot must be shortened back in October.

Garden trees require root management, and a modified system of root-pruning should be practised with all. A circular trench about 3 feet from the stem of the tree should be dug annually if the room for the tree is restricted, in the autumn the soil in this trench should be refreshed with manure and fresh soil, and a surface dressing of artificial manure applied during the spring. For the latter purpose soot, superphosphate of lime, and guano are probably the most useful. The trench and the manure will render the planter independent of the soil. If Pear-growing is to be made a certainty, cultivation under glass must be adopted. A glass house is of course a prime necessity; it may be as plain as possible for the purposes of protection. During the spring the trees can be packed closely, for in the early period of growth they do not require much space; about the end of May, or when all danger of frost is past, many of the trees should be put out of doors, leaving enough in the house to stand 3 feet from each other. The trees taken out of the house should be plunged in a border prepared for them, and the trees inside sunk in the soil up to the rim of the pot, the sides of the pot should be perforated, but that is not an absolute necessity. The trees should be surface-dressed with manure, and watered with manure water twice or three times a week, when under glass abundance of air must be given. Culture under glass makes a crop a certainty, and requires no more attention than is given to Melon or Cucumber growing.

Protection to cordon trees trained about 1 foot from the ground may be given by planks on each side placed on edge supported by short stakes and covered with mats during severe frost. Ground vineries also form very efficient protection, but they are not so cheap as the planks.

Raising seedling Pears is always interesting from the uncertainty which attends the pursuit. I have raised some hundreds from the best sorts known, which

I have crossed in every conceivable fashion. The "Conference" Pear, which gained the suffrages of the Committee of the Pear Congress of 1885, came from a baking Pear, the Leon le Clerq de Laval, the pips of which I planted without any special design. All pips intended for seed should be taken from the finest and best developed fruit.

The sorts of Pears of recent introduction selected by the Pear Congress of 1885 were the following:—

Beurre Gifford	Emile d'Heyst
Clapp's Favourite	Ben red Anjou
Summer Beurre d'Arenberg	Marie Benoist
Madame Trevoe	Pomme de Jonghe
Beurre Dunois	Rose Crassant
Pitumston Duchess	Duchesse de Bordeaux
President d'Osmanville	Olivier de Serres
Madame Andre Leoy	Nouvelle Pulvie
Conference	l. Inconnue

And for orchards and market gardens:—

Reaon	Marie Louise d'Uccle
Fertility	Burondeau
Souvenir du Congrès	

The improvement in Pears will no doubt continue, and in 1886 amateurs will wonder that we could be contented with fruit so inferior to that which they will enjoy, even as we are no longer satisfied with the fruits which charmed De la Quintinye and his friends.

NOTES OF THE WEEK.

Lily of the Valley fruiting.—One day lately when visiting a friend near here who has a very snug garden, I was surprised to find that this Lily had produced fruit. Every spray on which there were flowers in spring was bearing berries where the flowers had been. They were largest at the bottom and smallest at the top; bright transparent red in colour, and really very pretty.—J. Muir, *Maryon, Glamorganshire.*

Masdevallia tovarensis.—At various times correspondents of THE GARDEN have objected to the system of leaving old flower-stems on this Masdevallia, as by so doing it prevents a full crop of young spikes coming forward. In this I concur, but, at the same time, I like to leave a few old stems, for while the young spikes produce two and three flowers each, the old ones furnish five or six. I enclose you two spikes left from last year, each bearing six flowers.—FREDERICK BEDFORD, *Straffan House, Co. Kildare.*

Eupatorium odoratum.—I send you a small piece of this cut from a plant on the west end of a lateinery, where it stood with impunity the whole of last winter unprotected. It has been covered with its white blossoms for these two months past, and has afforded a good quantity of cut flowers. There are also still a good many to open if the weather is sufficiently mild. Coming in at this season it is especially valuable, and would well repay a little protection in colder localities than this is.—JOHN GARLAND, *Killerton, Etc.*

National Rose Society.—It is proposed that some sort of recognition of the Queen's Jubilee should be made next Rose season by this society. At a recent meeting of its members, the proposal was made and a special committee formed. It was decided that the first £100 of the subscriptions should be devoted to the purchase of two challenge trophies, to be competed for at the provincial shows of the society, one for thirty-six blooms, open to all nurserymen, and one for twenty-four blooms, open to all amateurs. Subscriptions were announced in sums varying from one guinea to five, amounting to upwards of £40, and circulars will be shortly issued to all members, inviting their co-operation.

New hybrid Cattleya.—A drawing of a beautiful new hybrid Cattleya has been sent to us by Sir William Marriott, Down House, Blandford. It is the result of intercrossing *C. Mendeli* and *C. guttata* Leopoldi, and was raised by the late Dr. Harris, of The Grange, Lamberhurst, Kent. Prof. Reichenbach has named it *C. Harrisii* in compliment to the raiser. The flowers are similar in size to those of *C. granulosa*; the sepals are of the clearest amethyst, dotted over the surface with numerous small purple spots; the labellum is of a very deep purple-crimson, while the centre is lighter coloured. In growth the plant more resembles *C. Mendeli* than its other parent, and

some of the bulbs have borne two leaves each, about 2 inches wide and 7 inches long. The bulbs are rather flat and furrowed. The drawing sent was made by Miss Harris, who must have found a difficulty in representing the brilliant hues of the flower.

Cotoneaster affinis.—I send you a few small branches of this Cotoneaster heavily laden with berries, with which the whole of the plant, which is about 35 feet high and as much or more through, has been quite covered. The long branches are full of fruit-bearing spurs, and are laden with berries as well as the wood of last year's growth, all drooping under their heavy weight of fruit, which is produced in large clusters. As Holly berries are scarce with us this year, we have been using those of this Cotoneaster for Christmas decoration. As you will see, the plant has retained its leaves quite green up to this time, although on several nights the thermometer has been down to 20° Fahr., and some days has not been higher than 32°. It is a shrub admirably adapted to plant on the outskirts of plantations and game preserves, as it produces every year enormous quantities of fruit, of which pheasants especially are fond.—JOHN GARLAND, *Killerton, Etc.*

Pæonia Whitleyi.—"D. K.," in his excellent description of *Pæonia albiflora* and its varieties in a recent number, describes *P. albiflora* var. *Whitleyi* as double. I have a variety called *Whitleyi* single, which he does not appear to mention. I believe it is a variety of *P. albiflora*, and is known as *Whitleyi* single in several English nurseries. In a good season, such as the last, this variety is magnificent, the flowers being pure white, with a cream-coloured centre. The plant grows from 2 feet to 3 feet in height, and blooms about the same time as the other herbaceous *Pæonias*—that is, towards the end of June. Perhaps this variety may be identical with one of the varieties "D. K." has described; if so, it would be well to know that, as confusion may arise.—D.W.

Covent Garden Market.—The supply of flowers sent to this market this week has been both large and varied. Amongst the host of the good things which we noted were the red and white-bracted forms of the Mexican Flame-leaf (*Poinsettia*), exceptionally fine; white Azaleas, Chinese Primroses, both double and single, the latter extra good, especially the coloured varieties. Associated with these were also the yellow and white Marguerites, the white being perhaps the best plant grown for room decoration, producing a chaste and elegant effect in any situation. Chrysanthemums, chiefly whites, are still in good form; also Lily of the Valley, Roman Hyacinths, and Tulips of several shades. Some pretty combinations may likewise be seen, such as Lily of the Valley, red Tulips and Ferns, Roman Hyacinths, Ferns and red Tulips. Persian Cyclamens are also well represented, from pure white, through various shades of pink, rose and purple, to crimson. Various kinds of Heaths are numerous, especially the winter Heath (*Erica hyemalis*), which has seldom been seen more floriferous than it is this season. Berried plants consist chiefly of Solanums, which should sell well this year, as the Holly is but thinly berried. Cut flowers comprise Chrysanthemums in various shades of colour; Roses in abundance, Arum Lilies, Eucharises, Camellias, Narcissi, Hyacinths, Bouvardias, zonal Pelargoniums, pink, white, and scarlet, both double and single. Amongst Orchids are fine examples of *Calanthes*, *Princess Alexandra Odontoglossums*, *Lælia autumnalis*, *anceps*, and *albida*; the beautiful *Odontoglossum Rossi* in several varieties; *Oncidium Jonesianum*, *Rogersii*, and *varicosum*; the scarlet *Sophronis grandiflora*, and the Violet-scented *Dendrobium heterocarpum*. *Lycaste Skinneri*, with its large, bold, wax-like flowers, is especially noticeable, whilst *Cattleya marginata* blooms are very abundant. Fruits are numerous and good, especially the Smooth Cayenne Pine from the Azores, Custard Apples from Madeira, and Lychees and Jaffa Oranges. Pears and Apples are numerous and good, particularly American Baldwins and Ribstons. Asparagus, Sea-kale, and Rhubarb are plentiful; as are also Truffles, and small salading is in great variety and abundance.

Twin-flowered Cypripedium (J. H.).—Not an unusual occurrence, numerous instances of which occur every season.

WOODS & FORESTS.

ENGLISH FIREWOOD.

THE brightness of the glowing logs upon the hearth is one thing; the snow covered trunks upon the ground outside is another. When we see some of our finest trees and shrubs, the glory of the garden and pride of the wood, reduced by one night's storm to the value of ordinary firewood, one is a little tempted to hate the very name; it seems a poor finish for some glorious Rhododendron or specimen tree which may have attracted much notice or been of great beauty hitherto. Still, it is something to feel that one may be of use even in one's ruin, and such must be the consolation in more than one instance. The writer of the article in last week's number did not allude to one of the best woods for burning, viz., Birch, nor to the worst, Spanish Chestnut. We have fires going through the whole of the winter of nothing but Birch, and it has the advantage over Oak and several others on account of seasoning more quickly, and not retaining the sap so long when left in the log unsplit. The rough bark when dry always makes a cheerful blaze, and, in fact, the whole of the Birch is good for burning, from the smallest twig to the biggest stem. Spanish Chestnut, on the other hand, should be well guarded against; it slips in sometimes among the other cordwood, and then woe betide the hearthrug and the carpet; the finest fireguard does not seem proof against the spluttering of the sparks from it, and really serious damage may sometimes be done if no one happens to be in the room at the time. It is a good plan to have a special store of wood from any of the Cedar tribe, from which a piece or two may be thrown on the fire occasionally. It burns very brightly when dry and with a pleasant smell, often serviceable to counteract that arising from cooking, when the latter, under the guise of an accident, presents itself "even in the best regulated families." I suppose that most people know that the success of a wood fire often depends on the ashes being allowed to accumulate; but it appears necessary sometimes to give injunctions against their removal.—C. R. S. D., *Sussex*.

— Having for many years had to burn a good deal of wood for ordinary fuel, I give the preference to goodsound Oak that has well matured its growth; the size is of not so much consequence as the age. I do not include in this consideration fagot-wood, but such as is ordinarily used in the place of coal. The merits of the Oak, or, for that matter, any other sort of tree as furnishing the best firewood, depends entirely on its age. The wood of a young tree twenty-five years old and less is inferior both in heat-giving and lasting qualities to that of fifty or a hundred years older. But in all its stages the Oak is unquestionably the most valuable. The Ash stands next in the point of merit as regards heating and lasting qualities, and it has the advantage of being more easily prepared. It is this feature which I think has made the Ash so popular as fuel, but it is inferior to the Oak in any stage of growth, and particularly when it is declining in age. The bole of an old Ash tree that is much decayed is, in my opinion, of but little value for heat-giving, although it may ignite quickly and burn rapidly. I place the Elm next on the list, because in a half green state it burns freely and gives out a good heat. It requires less to ignite it when it has laid by twelve months if kept quite dry, but it is quickly consumed, and in this condition its heat-producing qualities are not remarkable. Beech I consider to be disappointing; its appearance would lead one to believe it to be a long-lasting and heat giving fuel, but it is not so as compared to Oak and Ash, and the older it is the less value it is for fuel, as in that condition it does not burn very freely. The Sweet Chestnut and Sycamore I think are of about equal merit; they are both light woods which when in a dry state burn freely, but do not last long. The above named woods are available in a greater number of places than any others we can name, if

we except the districts in which Fir plantations are numerous. In my opinion none of the Fir tribe will bear comparison with any of them; as a matter of fact, they cannot be used with safety in any living rooms on account of the sparks of fire which they send out. With regard to Apple and Pear tree wood, I should place them as equal to the Ash when in a condition fit for burning, but neither of these woods are of much value if the tree has lived long enough to die away in a gradual manner, but the wood of either from a tree that has been blown down when in its prime, and prepared and burnt six months afterwards, leaves little to be desired, as the wood burns steadily and throws out a steady stream of warmth. If I was asked to name the wood that gives the greatest heat over the longest time, I should put the Yew first, then the Holly, and next the White Thorn, but these only being available in limited quantities, in the majority of cases cannot be considered as of special value as firewood trees. Oak is in its best condition for fuel within the first twelve months after the tree is cut down; Ash is better used within nine months, and Elm six months.—J. C. C.

* * * The Ash has a precious and rare quality in burning well and brilliantly immediately after being cut. We want more light on this interesting question, and we invite further discussion upon it.—Ed.

WOODLAND NOTES.

GAME COVERTS.—These should never consist of dense masses of Evergreens, although such is the prevalent idea, for game as a whole detest in a marked degree such plantations as are surfaced with underwood. What they like best is clumps, thick as you like, of Evergreens placed at such distances apart as will allow of their feeding and sporting in the full sunlight that warms up the open ground between the various patches of covert. To meet this want we always, in forming game coverts, mark off the various clumps at irregular distances apart, and, if possible, so as to look best and most natural from adjacent walks and drives. The clumps should not be too large, say, to contain from sixty to one hundred plants in each, be irregular in outline, and at irregular distances apart. At first, and more particularly where immediate effect and covert is required, plant the Evergreens doubly thick, and when the outer branches begin to encroach upon each other remove every alternate one, thus giving the remaining ones plenty of room for full development. In the case of the Laurel and Laurustinus, pruning after a year or two had best be resorted to, for if these, more particularly the former, are allowed to grow at will, a dozen years hence will find them but bare poles with a tuft of foliage at the top, and totally unfitted for the purpose intended. To remedy such errors in game coverts is, however, not impossible, for if the long branches are pegged down firmly in a circle around the parent stem, they soon throw out numbers of shoots and in two years form excellent covert. Pruning should, however, be engaged in at least every second year, the long top branches being cut back to, say, 4 feet from the ground, thus throwing the whole strength into the production of numerous fresh shoots and so rendering the covert a perfect hiding-place for the game. Privet as a game covert rarely receives the attention it should, for most persons are under the very wrong impression that to form coverts of this plant you have only to plant and leave alone. This is not so, for in order to have profitable Privet coverts, annual pruning, and in most cases pegging down of the outer and stronger shoots, must be resorted to. Another point in the formation of game coverts that must by no means be passed over is that, in order to be successful in the management of such, plenty of light and air must be admitted to the woodlands, and to have such well-thinned out woods and plantations are all-important.

COLLECTING AND STORING TREE SEEDS.—Tree seeds in general should always be collected from healthy, middle aged specimens, not such as are crowded together or grown in a low-lying, shady nook, but from those that are fully exposed and growing at a moderate elevation. In collecting, do not cut the

branches containing the seeds from off the trees, but either gather them from a light ladder or by ascending the tree and drawing the branch towards the hand by a hooked pole. In the case of cones, the better plan is to ascend the tree to a few branches above those on which the seeds are, and by gently drawing the branch upwards with the hooked rod the cones can readily be removed without either damage to the branches or cones. See collecting by contract should never be permitted on any estate, unless, indeed, under the most careful and strict overlooking, but should be performed by the nurserymen or others acquainted with the work. A light ladder of about 20 feet long is of great value in seed-collecting, as it not unfrequently happens that the seeds are at the very tips of the longest branches, and quite out of the reach of the person who climbs the tree. In such cases one person holds the ladder with its top end resting on the branches, while the other ascends and collects the seeds into a bag or apron provided for the purpose. Now, as to storing: My advice, from a rather intimate knowledge of such work, is, do not store the seeds away in bags; there are exceptions to this rule, but they are few; but in the case of such hard woods as the Birch, Sycamore, Plane, Ash, Elm, Alder, Lime, Poplar, and Willow, place the seeds, after being thoroughly dried, if possible, in the sun-heat, in shallow boxes, and store away in a dry, airy loft till wanted for sowing. The objections advanced against storing quantities of seeds away in bags is, that dampness too frequently permeates the mass, and the vitality of the seeds is endangered thereby. Cones of the Pine tribe may be placed in baskets or boxes, the seeds being allowed to remain in them until wanted for sowing. In the case of *Abies nobilis*, *A. grandis*, *A. magnifica*, *A. Nordmanniana*, and, indeed, most of that section, the cones fall to pieces when removed from the trees, and the seeds consequently require storing away until sowing time comes round. We treat these similarly to the hardwoods above described, unless, perchance, in the case of very rare seeds, when perhaps a little extra care is bestowed. Berries of all kinds require to be placed in sand previous to sowing—at least, such is the usual method of treatment; but from this method we are now departing fast, for if ground is at all plentiful, we sow Holly berries, as well as those of the Yew, *Eunonymus*, *Skimmia*, *Cotoneaster*, and most others when collected. Of course, by so doing but very few plants appear the first season; but never mind that; the second year, if your seeds have been good, will find plenty and to spare.

SEED BEDS AND THEIR MANAGEMENT.—In certain soils the raising of seedling forest stuff is easy enough, the most difficult task being to retain them after they have been raised, and while still in the seed bed. Worms, by burrowing beneath the roots, commit much damage to young seedlings, particularly those of the Pine tribe, while frost not unfrequently raises the young plants quite out of the ground, thus causing serious injury to the tender rootlets. As an antidote to both of these evils we have of late been very successful by using fine river sand for scattering over the beds, and which when washed down amongst the soil has a wonderfully deterring influence or effect in staying the underground operations of worms, as well as preventing, to a great extent at least, the upheaving of the ground by frost, the fine particles of sand soon falling back into the ruts and grooves caused by the frost. Some two or three beds of Conifers were badly treated by worms boring under the young trees, lifting them, in some cases, bodily out of the ground, and thereby killing many. Various would-be preventives were resorted to, but nothing has so effectually stayed further molestation than a half-inch coating of fine sea sand that had been allowed to lie fully exposed to the weather for a year before being used.

ORNAMENTAL HEDGES.—In our home nursery we have tried most shrubs that, from their habit of growth, could be considered as suitable for the formation of hedges. Amongst all these, nearly thirty kinds, the Yew, Box, and Laurustinus still hold their own, and are particular favourites. What a pity it is that the poisonous qualities of the Yew preclude its use for farmers' fences, for its neat habit of growth, non-impoverishing tendency, ease of culture, and amount

of shelter it affords are all first-rate qualities in a hedge plant. For ornamental grounds or, indeed, anywhere that farm stock cannot browse on its leaves, the Yew is invaluable, and should be used largely. The Box forms a capital evergreen, ornamental hedge that is of great value for dressing grounds, the nursery, or the garden. It bears cropping well, forms a dense, stiff hedge, and is anything but fastidious about soil or exposure. As a really ornamental hedge perhaps few shrubs surpass the Laurustinus for the formation of such. Unfortunately, during severe winters it is apt to get cut down, but if pruned back in early spring, it soon recovers, and sends out numerous strong shoots, which in less than three years have attained to the size and luxuriance of their predecessors. Other shrubs that from experience we can highly recommend for hedge-making are the Portugal and common Laurels, the Barberry, Euonymus, Holly, and Arbor-vitæ.

EVERGREEN COVERT.

THE above term is commonly employed to denote such trees or shrubs as grow naturally, or are planted for covert under the shade of the taller forest trees. The kinds that thrive in such situations are not very numerous, for there are not many trees that grow well in the shade, and some of those that do grow, those depredators, the rabbits, frequently destroy in hard winters. Besides, there are some kinds of forest trees under which scarcely anything will grow, owing partially to the density of their shade and their habit of rooting near the surface of the ground.

In Oak and Ash plantations, however, there is always plenty of undergrowth, and in mixed plantations generally there is not much difficulty in getting up a good covert. Oak woods, or woods consisting principally of deciduous trees, have a naked and dreary aspect in winter if they be not relieved by evergreen undergrowth of some kind, and it is not often they are furnished to any extent in that way. Sometimes a few Spruces or Scotch Firs afford here and there a little shelter, and impart a warmer aspect to the scene, but some have an objection to these, and they are the first to be removed when thinning takes place. When travelling by the train miles and miles of woods may often be seen in which hardly a green leaf is visible during the winter months. How different the aspect of things when the wood happens to be well sprinkled with green Holly trees; and there is no better subject than the Holly for relieving a wood of its nakedness in winter.

A wood may be completely transformed in its winter aspect by planting it with Holly. When the tall trees are leafless, and the Bracken brown and dead, the Holly shines out green and glistening in all its beauty. Besides, it has a recommendation from a sportsman's point of view. The Holly is a warm tree, and the birds flock to it in winter, especially the sparrows. When snow is on the ground, if there be a bare or warm spot in the wood, it is under and around a Holly tree. The snow always melts away near it, and at such times you are almost certain to start two or three pheasants from amongst its lower branches if there be any pheasants in the wood; this we have observed many a time ourselves, and gamekeepers will tell you the same story.

Where game is reared, therefore, we should say the Holly is one of the very best subjects to plant as underwood; there are none more suitable, for it stands shade better than any other Evergreen. The common Laurel grows tolerably well also, but straggling, and it should be cut down occasionally; rabbits do not eat it, and it affords them excellent shelter. The Rhododendron, of course, is well known for being almost rabbit-proof, and it also grows under the shade of other trees, but it must not be expected to flower freely in such quarters. The Yew is another tree that grows pretty well in the shade, though it gets thin in the branches in course of time. Nothing approaches the Holly, however, and it soon grows to a large size.

Unfortunately, rabbits often bark the small plants, but I have not seen them meddle with anything but the outside branches of the older trees. Where rabbits are to be feared, planting should always be

deferred till April or May, when all danger from their attacks is over; besides, that is the best season to plant Hollies. Tolerably large plants with bushy bottoms are preferable to those of other shapes for planting in the woods. For this purpose the best plan is to grow the trees in the home nursery for a year or two, giving them plenty of room, and afterwards remove them to the woods. They may be planted anywhere under the trees, but at the same time the most favourable spots as regards light should be selected for them. S.

THE WOOD OF THE BEECH.

THE Beech, says a writer in the *Timber Trades Journal*, is one of the most useful British timber trees, although others are much more costly. It is well adapted for indoor work, but is less suited for use out of doors. In its natural state it is largely used for cogs and where hardness is required, and when properly treated in felling, drying, and preparing, it is not superseded by any other kind of English wood. The Holly, the Hornbeam, the Thorn, the Crab, &c., are often substituted for the Beech, but if treated in the following manner it maintains a decided superiority over these: When the Beech is to be used as mentioned, it should be felled during the months of December and January, but a few weeks prior to felling, several gaps should be chopped in the tree near the roots, in order to allow it to get rid of its sap freely. As soon as possible after felling it should be cut up as required, and put under cover in a perpendicular position. Often it is utterly spoiled by being laid aside horizontally, in which position it cannot dispose of its sap; consequently its hardest properties are destroyed, and it is thereby rendered practically useless for the best purposes for which it is required. The growth of the Beech is very rapid, and it attains its prime in about from sixty to eighty years. Up to this age it is seldom deceptive when grown in plantations. If, however, it is permitted to grow much older than this, it often becomes black-hearted, and this condition is followed by rotteness and shakes. In this state the wood is worthless for manufacturing purposes.

The Beech is generally deceptive when hedge-grown, the reason being that its early growth requires great tenderness and protection. Grown thus, it is exposed to blemishes of various kinds, and these turn black, the stain remaining in the wood ever afterwards. When stains occur the wood is valueless for steaming. About three-fourths of the Beech is now steamed, as this process greatly improves its colour. The more sap it contains the better it will steam, and a skilful person can give the wood a very bright hue by careful steaming. If it is allowed to lie several months after being felled it can seldom be used for the best purposes to which steamed Beech is put. Steaming does not improve its strength as it improves its appearance; it rather reduces this quality, though strength is seldom required where steamed Beech is used. We may here mention that joiners, when buying planes, frequently ask for red, or, as they call it, "male" Beech, in preference to the white or "female" Beech; but if they were better acquainted with the process of steaming they might possibly reverse their preference, for it is by this process that the red hue is produced.

The Beech develops a great quantity of sap, and feeds itself very much from its leaves. During a dry spring it will scarcely move its bud, but after a shower of rain it is soon in full leaf. Its growth always ceases early in the autumn. When required for steaming it should not be felled when in full leaf, but in the months of October and November, and again in April and May, when it contains most sap.

The best qualities of Beech are grown on red or light land, and when protected by other stronger kinds of timber trees. The quicker it is grown the larger it is bated, and the finer it is flowered and grained. It seldom attains to a large size in the open, and on account of the smallness of its roots it is more liable to be felled by the forces of Nature in open situations than most other trees would be. In cutting up Beech timber when fresh and full, half an

inch to 1 inch should always be allowed for shrinkage. There is only one other English timber, the Lime, which shrinks so much in drying. There are two kinds of Beech; one kind bears fruit and the other does not, and in the opinion of some the fruit-bearing tree is the softer of the two.

UNDERWOOD PLANTATIONS.

IT is only in exceptional cases that underwood is to be recommended in plantations grown for profitable timber. In some districts, according to a writer in the "Scottish Arboricultural Transactions," a considerable revenue may be derived from underwood, but when thoroughly looked into, it may be found that the gain is merely apparent, being to a great extent obtained at the expense of the timber crop. On the other hand, there are many neighbourhoods where there is comparatively no demand for underwood of any description; and where such is the case, the growing of underwood adds to the expense of management, and is detrimental to the standing trees. It is certain that ground cannot carry two crops at the same time without one of them suffering. Where there is a heavy crop of underwood, it must absorb much nourishment from the soil, and deprive the timber trees of a great portion of the food necessary for their healthy development. Further, the roots of underwood form a network in the soil, which should be left entirely for the spread of the roots of the trees. The same reason may be adduced in favour of nursing hard-wood trees with Firs instead of hard-woods, as the latter not only throw out growing shoots from the stools, but their roots continue to spread, and thus deprive the trees of the full benefit of the ground in which they are planted. Another objection to the growing of underwood amongst hard-wood trees is the amount of shade caused thereby, shutting out in a great measure sunlight and air, and thus defeating the objects of thinning plantations. In these observations I do not condemn the growing of underwood under all circumstances, but merely in conjunction with a crop of hard-wood trees. It must be admitted that there are exceptional cases where it is advantageous to grow underwood in hard-wood plantations, as in very exposed districts; but then only round the margins, and in well-selected masses throughout the plantation. Underwood may be grown for cover in game preserves, or in clumps for ornamental purposes, and along the sides of drives or rides, but for the reasons above set forth in most other cases it is open to serious objection. It has been said that the ground should be thoroughly drained before planting, especially where there is any tendency to wetness. In most cases open ditches are preferable in hard-wood plantations. They should not be less than 2 feet deep nor more than 30 feet apart. Open drains should also be run along the sides of all plantation roads and drives. All open drains require to be inspected periodically, as they are soon filled up by the falling in of the sides, growth and decay of herbage, &c., and it is especially necessary to overhaul them after every thinning, as many will be choked by the branches of the fallen trees. The distances at which hard-wood trees should be planted depend upon the soil and situation of the proposed plantation. In all cases it is necessary to calculate the size they are likely to attain in such soils and situations. Trees, if planted at too great distances apart in exposed situations, are liable to severe checks from cold winds, &c., and do not attain the height they would do if planted more closely, and sheltering one another. Thick planting is the safest method to adopt, provided thinning is attended to in proper time, before the trees injure one another.

Timber measuring.—"A. P." is correct in the simple method of measuring a cylinder. But are all trees of a cylindrical shape? If I understand rightly, the definition of the word "cylinder" is a roller-like body, solid or hollow, of uniform circumference. Therefore if this be true, we cannot call many hard-wood trees cylinders, and as for cross-cutting trees to meet this rule it would be a useless consideration. Therefore, in my opinion, we had better adhere to Hoppus's "Practical Measurer."—YOUNG FORESTER

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"This is an Art
Which does mend Nature: change it rather; but
THE ART IS-SELF IS NATURE."—*Shakespeare.*

PROFITABLE ASPARAGUS CULTURE.

It is stated that Asparagus was one of the first of culinary vegetables whose growth was accelerated by artificial means, and that before the middle of the seventeenth century the London markets were supplied with forced Asparagus at a very early period of the year. About sixty years ago, a good authority stated that at that time Asparagus was brought into Covent Garden from the beginning of November onwards in greater perfection than to any other market. At that time the supply was probably exclusively English. Cheap and ready means of transit from continental countries was not then thought of, and the demand for it was very limited indeed compared with what it is now. Fresh, sweet Asparagus, forced or otherwise, is one of the most esteemed of vegetable productions, and it ought to be better known than it is that Asparagus requires a less degree of heat to produce it in perfection than almost any other vegetable. Of course, the method of forcing it is very different from that of Seakale; for instance, we can force the latter in the Mushroom house, in a warm cellar, or wherever there happens to be heat and darkness, but we cannot in that way deal with Asparagus. It is, nevertheless, very easily forced, but those unaccustomed to deal with such matters may easily do irretrievable damage to the roots. I have been tempted to take up this subject because of its importance to cultivators of small gardens. There has been of late a strong feeling in favour of allotments for cottagers and others, but all such changes must be gradual; I have, however, no doubt that any labourer anxious to obtain ground to cultivate would find no difficulty in doing so. I have known labourers who have managed a large plot of garden ground and done well with it, but they carried the produce to their customers themselves; their highest attempt at producing vegetables was early Cauliflowers, Celery, and out-of-door Cucumbers. Nothing seems to be grown except such as would produce immediate profit. This Asparagus will not do, and consequently it is not grown in small gardens. I have, however, a notion that where land is cheap Asparagus culture might be made profitable even in a small way. Each allotment garden ought to be furnished with two or more frames with glass lights. It is certain that those who possess such frames have a great advantage over those who have to depend for their own and market supply of vegetables wholly from the open ground. Asparagus is easily raised from seeds, and three-year-old plants when well managed will do well for forcing. Anything older, up to thirty years, will do equally well.

I am not about to allude to any expensive system of forcing by heated pits, &c., but merely to point out the value of ordinary garden frames for the purpose of keeping up a supply of good Asparagus. The best fermenting material, if it can be obtained, is a mixture of equal parts of manure and leaves; but either of them may be used separately. The heap should be built up to a height of 3 feet, or more; but if the manure is fresh, it ought to have been turned over twice, at intervals of five or six days, before building it up in a heap. If it is likely to get too warm, it is necessary to wait until the first violent heat has subsided; after that level the surface and tread down. The next process is to place over

it a layer, 2 inches or 3 inches deep, of ordinary garden soil; on this pack closely the roots, which have been carefully lifted from the ground. From 100 to 600 roots may be packed into a three-light frame according to their size. Some fine mould should again be shaken over the crowns, covering them to the depth of about 3 inches. I would like to add here that where turf can be cut, it may be laid over the manure with the grass side down.

It is a good plan to sow over the surface some Radish seeds, and in this way the frame will produce two crops at one time. It will depend a good deal upon the heat in the bed whether the glass lights should be kept close or tilted at the back, which is the best way to admit air if necessary. If there is not much heat the buds will come stronger than they otherwise would do, and the frame may be kept close, except for a few hours at mid-day in fine weather, when the lights may be tilted an inch or so at the back. It must not be forgotten that air and light are essential in order to give strength, colour, and flavour to the shoots. Air is also very beneficial to the young Radish plants, which will grow very rapidly, and may be almost as valuable as the Asparagus. On frosty nights mats may be thrown over the glass; these will make a difference of quite 5° or more in the temperature of the frame. In some cases the heat of the bed subsides suddenly, and growth is thereby much retarded. I have found it to be an excellent plan to build the manure over a layer of fagots a foot thick; in the event of the heat unexpectedly subsiding, linings of hot manure a foot thick placed round the frame and carried up the wood of it will bring the heat up again. The heat also works in amongst the fagots and upwards through the manure.

When Asparagus is forced in frames it is easily blanched, if need be, by covering the glass night and day with thick mats, but in that case small salads, such as Radishes, cannot be grown in the same frame. The almost universal taste in this country is for the buds, as they are termed, to be well coloured by exposure to light, and, as much as possible, to fresh air daily. In cutting the shoots, it is well to remove the soil a little with the fingers, in order that the buds which have not yet appeared above ground may not be injured. Water is seldom required at mid-winter, but in the early spring months it may be necessary to water the beds, if they are likely to become over-dry. Those who may obtain large garden allotments would do well to turn their attention to Asparagus, not only for forcing on hotbeds, but as a paying crop from the open ground. There cannot be any reason why we should not be able to compete with French growers in this matter. This is on the assumption that each grower should be his own salesman.

If a supply of good Asparagus was forthcoming, it is likely that a good demand for it would follow. As a rule, country towns are very inadequately supplied with good vegetables, and such as are to be obtained fetch good prices. The reason is obvious: large growers send everything to London. Small growers would not do this; they would dispose of their bundles of Asparagus either to private customers or to the greengrocer in the next town or village. London has been and always will be supplied by the large growers. The holders of allotments will therefore have to make a market for themselves, and this can only be done gradually. J. DOUGLAS.

Quercus Daimyo.—This is one of the noblest of all Oaks, and one of the rarest among the species cultivated in this country. It surpasses all others in the size of its leaves, which often

measure over a foot in length and half as broad as long. The leaf is deeply lobed, broader at the top than at the base, and of a pale green. Being Japanese it cannot be strictly called a hardy tree except in the southern counties, but even in the most favoured parts of the country it will probably never grow into a big tree. But the foliage is so large and handsome that it is worth growing even if it only got a few feet high. It is best to plant it in a sheltered nook where it would show off its great leaves and yet be protected. It retains its old leaves till the spring, and some would think this a drawback, as the foliage has a rusty look in winter. It is catalogued by a few tree nurserymen under the name of *Q. Daimyo*, though its correct name is *Q. dentata*.

ORCHIDS.

THE CIRRHOPETALUMS.

THESE constitute a somewhat large family of small growing Orchids, some of which are exceedingly beautiful, although they appear to have lost favour to a great extent with Orchid growers. A few years ago many of them were to be found in our plant stoves, the Kew collection being specially rich in good examples of plants belonging to this genus. They are all dwarf in habit, and thus occupy but little space, more especially as they thrive best in small hanging baskets, and in such a position their umbrella-shaped trusses of singular flowers are displayed to the best advantage. The baskets in which these plants are grown should have a few pieces of light drainage material (such as charcoal) placed in the bottom, and the remaining space should be filled with fibrous peat, from which all the particles of fine mould have been shaken. Over this should be spread a thin layer of growing Sphagnum Moss, upon which the plants should be firmly pegged. They enjoy an abundant supply of water; during the growing season the plants must even be taken down and dipped in water two or three times during the week. But in winter very little will be sufficient for their requirements; indeed, we have found them benefited at this time of year by entirely withholding water from them for a short time. Great care must, however, be taken to avoid the shrivelling of the pseudo-bulbs, or the plants will be permanently injured. They enjoy heat and moisture, and if well exposed to the sun's rays they are sure to bloom freely. Before the flowers expand they should be moved to a shady situation in order to prolong the beauty of the blooms, which are thin and fragile in texture, whilst the leaves are thick and leathery. Amongst the most beautiful kinds that we have grown are *C. chinense*, which has a creeping rhizome or stem, and small ovate pseudo-bulbs, each bearing a bluntly-oblong, thick and fleshy leaf. The umbel of flowers measures from 3 inches to 4 inches across; the upper sepal and lip are purple; the lower sepals much lengthened and bronzy-yellow in colour. As evidence of the singularity of its blooms, a writer, in first describing this species, thus expresses himself:—

We have here a plant from China, one of whose lobes is so like a tongue and chin, and so unstable, as to be in a state of continual oscillation. The flowers are arranged in a circle, and all look outwards, and on whatever side the umbel is regarded, it still presents to the eye the same row of grinning faces and wagging chins.

C. cornutum is another grotesque kind, the flowers of which are yellowish white and purple, tinged with emerald-green and dotted with purple. They are usually produced in early autumn. It comes from Northern India and thrives in a cooler atmosphere than any of the other kinds, but does not object to a high temperature during summer. *C. Cumingi* is a small-growing and somewhat delicate plant, but the extreme beauty and peculiar structure of its reddish purple flowers well repay the extra care which it requires to maintain it in a healthy condition. The blooms appear about midsummer. It comes from Luzon. *A. fimbriatum*, from Bombay, usually blooms in spring; the pseudo-bulbs are clustered, not set

upon a long, creeping stem; the petals and upper sepal are red in colour and beautifully fringed; the prolonged connate lower sepals are greenish yellow. In *C. nutans* the flowers droop; they are sulphur-yellow in colour, and appear in great profusion towards the end of summer. It comes from Luzon. *C. auratum* is another elegant species from the island of Luzon, and produces its flowers in spring; these are pale yellow, suffused with crimson, and bordered with golden yellow; its large, umbrella-like trusses of flowers are produced very freely. *C. Macraei* is a species with small, clustered pseudo-bulbs, its umbels of bloom being produced during July and August; the upper sepals and the petals are reddish brown, tinged with purple, the lower sepals being yellow flushed with purple. It comes from Ceylon. *C. Thouarsi* produces a creeping stem, and its umbels of flowers appear in July and August; the small upper sepal and the petals in this case are yellow dotted and freckled with reddish purple; the lower tongue-like sepals are of a bronzy orange hue. It comes from Java. *C. Pahudi*, another Javanese kind, is a bold, robust-growing plant, the crown-like truss of flowers of which is much larger than that of any of the previously-named kinds, and from the peculiar manner in which the long upper sepal and the petals are turned back, it has a very striking and singular appearance. The colour is reddish brown, dotted with deep red and purple. It blooms about mid-summer. *C. Meduse* is more curious than beautiful. It is a free-growing plant, and one which should be grown in a pot; the scape is erect, bearing upon its summit a large, dense, globose head of flowers, which are pale yellow, freckled with pink; two sepals of each flower are lengthened out into thread-like filaments, several inches in length, a circumstance which has caused it to be called the Medusa's Head. It blooms during the summer months, and comes from the neighbourhood of Singapore. W. H. G.

Angræcum bilobum Kirki.—This is a little gem among Orchids, combining quaintness and beauty in a remarkable way. The following description from a plant now in flower in the Kew collection may interest Orchid growers. It is stemless, the leaves about 4 inches long, forming a tuft of about half-a-dozen. At the ends they are split, so as to form two distinct lobes; hence the name. The flower-spike is short, and there is only one flower on the Kew plant. This is about an inch across and pure white; the spur is 2 inches long, slightly twisted, as slender as a mouse's tail, and fawn-coloured. Sir John Kirk sent home this variety from Zanzibar a few years ago, but the original *A. bilobum* comes from New Guinea.

New variety of *Lælia anceps*.—In Baron Schroeder's Orchid collection at The Dell, Egham, there is now in flower an exceptionally fine new variety of *Lælia anceps*, which, so far as is known, has never been equalled in size of flower or splendour of colouring by any among the multitude of forms that have flowered in this country of late years. In form of flower it most resembles that unique variety *Dawsoni*, which is always regarded by orchidists as an ideal flower, as regards shape. This new form, however, eclipses *Dawsoni* in size of flower, and looks more like *L. elegans* in this respect. The sepals are deep rose-coloured, deepening towards the tips to an intense crimson, a colour which also extends to the lip, the splendour of which is enhanced by a clear yellow blotch in the interior. This is the first time in which this plant has flowered since it was imported by Messrs. Sander among a large number, and it is doubtful if another so remarkable will be flowered from the same importation.

***Cypripedium tonsum*.**—Probably only a *Cypripedium* fancier would look upon this newcomer as an acquisition. To speak plainly, it possesses no great amount of beauty, but it is distinct. It is different from any other *Cypripedium* with which we are acquainted. It most resembles that new variety of *C. Lawrenceanum*

which lately appeared in a Belgian garden, and named *Hyeannum*. *C. tonsum* has a very large flower and handsomely mottled foliage, even equal in that respect to *C. Lawrenceanum*. The dorsal or uppermost sepal is broad sap-green in colour, lined with a deeper green and edged with white. The lateral or side sepals are green also, and marked irregularly along the centre with a few dark, almost black, spots. The pouch or slipper is brownish red, lined with the same colour, but brighter. It is, we believe, a hybrid, and, if so, we should guess *C. Lawrenceanum* and *C. Dayanum* are its parents. It has been certificated, we believe, by the Horticultural Society of Ghent, but what merit the committee could have seen in it compared with others of a similar stamp is not clear, judging by the specimen of it which we saw in bloom a few days since.

***Catasetum longifolium*.**—This is one of those strange-looking Orchids in whose flowers one fancies he sees a resemblance to some kind of animal. In looking at the specimen in bloom in the Orchid house at Kew the other day, the spike of flowers looked to me like a shoal of small brown fishes facing me with open mouths. There are a score or so of flowers on a spike about a foot long, and each bloom consists mainly of a distended pouch with an open mouth of a sort of coffee-brown colour, and the short, erect sepals of the same colour look like ears, and the fringe which surrounds the pouch adds to the unflower-like appearance. This singularity would not be thought much of, perhaps, by those who like showy flowers, but the interest attached to it compensates for lack of high colour. It is one of the many weird denizens of the Demerara forests.

The pink *Sophranitis*.—The rose-coloured variety of *Sophranitis grandiflora* ranks, in the estimation of Orchid growers, on a par with such rarities as the pure white *Cattleyas* and albinos of other coloured-flowered Orchids. Until we saw it in bloom in the Handsworth Nurseries the other day we thought that Mr. Peacock, of Hammer-smith, was the only possessor of it. It needs no description, as it is the exact counterpart of a fine form of the scarlet *S. grandiflora*, except in the colour, which is a delicate rose. Artists perhaps would describe it as a rose-madder. It is one of the daintiest little Orchids we have seen for a long time, and the effect of several flowers on a plant, as at Handsworth, may be better imagined than described. It is singular that this rose variety has not turned up oftener, considering the large quantities of *S. grandiflora* that have been imported. An excellent coloured plate of this variety was given in *THE GARDEN*, drawn from Mr. Peacock's plant. It is singular that no mention is made of this variety in Williams' "Orchid Manual."

***Ansellia africana*.**—One might visit a dozen Orchid collections at this season and not see this noble African Orchid in flower; yet one cannot term it a rare species, but for some reason it is not grown successfully. At Kew, where, we believe, it receives no special attention, several plants of it are among the best things in bloom in the warm house. It is a stately growing plant having thick stems a yard or more in height, each furnished with a few long and strongly ribbed leaves and terminated by large, loose panicles of flowers which droop gracefully owing to the number of the flowers, often as many as half a hundred. The flowers measure about 1½ inches across, the sepals and petals being yellowish white heavily spotted and barred with dark brown, almost black, in fact, while the lip is of a bright yellow. It is an evergreen species and more of a ground Orchid than an epiphyte; hence, needs a substantial compost like other terrestrial Orchids. It is an old introduction and was named by Lindley over forty years ago. It is said to grow wild on Palm trees in Sierra Leone and Sir John Ansell, after whom Lindley named the genus, discovered it at Fernando Po. There are two varieties of it natives of Natal, named by Reichenbach *gigantea* and *lutea*, but these we have not seen. A third variety is that named by Baker

nilotica, which is even finer than the type, having larger and more richly marked flowers; this variety is extremely rare and we believe it only exists in the Kew collection.

***Sophranitis grandiflora*.**—For brilliancy of colour this little gem has still few equals, especially as now seen in some of the London nurseries. Another Orchid now in bloom remarkable for exceptional colour is *Ada aurantiaca*, the nodding racemes of rich orange-coloured flowers of which have a character and charm peculiarly their own.

***Cattleyas* at Chelsea.**—Amongst the best of winter-blooming *Cattleyas* which are now enlivening the Orchid houses in Mr. Bull's nursery are *C. Trianae*, of which there is almost endless variety, and all beautiful. Especially good amongst them are the forms called *vesta*, *picta*, and *alba*. Of *C. Percivaliana*, a variety called *marginata* is a decided acquisition. The numerous forms of *C. chocoensis* are also rich in colour, but, owing to the partially closed lip peculiar to this section, the brilliancy of the markings is somewhat hidden—a fault from which *C. Walkeriana* is exempt. The blooms of this, however, seem out of place at this particular season.

***Lady's Slippers* at Holloway.**—These appear to be favourites with Mr. Williams, seeing that they are grown here in such abundance. Amongst them the following are perhaps the most useful, viz., *C. insigne*, an old acquaintance, but one which still holds a foremost place as regards utility; the best forms of it are *Maulei*, *albomarginatum*, and *punctatum violaceum*. The variety of *C. venustum* called *spectabile* is also very attractive. Next comes that gem amongst Slipper-worts, *C. Spicerianum*, with chaste and prim flowers, in some instances two being upon one stem. *C. Harrisianum* appears to increase in beauty from year to year. *C. Boxalli* unites the beauties of *C. insigne* and *C. villosum*, for whilst the dorsal sepal resembles somewhat that of the former, the pouch-like lip and the peculiar varnished appearance over all put one in mind of *villosum*. Other kinds which are indispensable are the beautiful scarlet-pouched *C. Sedeni* and its equally pleasing variety *candidulum*, whilst *C. Schlimi*, with its charming white and rosy flowers, although somewhat small, is ever welcome. In the grand flowers of *C. selligerum* we have combined the beauties of *C. barbatum* and *C. levigatum*. Amongst other kinds noted here were *C. calophyllum*, *Dominianum*, *Leeanum*, *Sallieri*, and *Lindleyanum*.

***Spiranthes colorata*.**—This bright winter-flowering Orchid is probably best known under its older name of *Stenorhynchus speciosus*. It is not a common plant, nor is it one of the stock plants in nurseries, but as a beautiful January-flowering plant it is, we consider, most valuable, and as it may be grown as easily as any ordinary greenhouse plant it is the more desirable. It does not look much like an Orchid, and in an Orchid house it looks out of place. It is a dwarf plant, with broad roundish leaves of a pale green. The flower-spikes rise about a foot high, and the blossoms are borne in a dense cluster at the top. The flowers are small, but the bracts which envelop them are, like the flowers, of a pretty coral-red colour—a colour distinct among Orchids. The plant lasts in beauty for several weeks, and, being a cool-house Orchid, is none the worse for a long stay in the conservatory, or even in the drawing-room. It is easily grown, likes a fibry, loamy soil to grow in, as its fleshy roots require strong food and abundance of water during summer. There are two forms of it: one, which is considered the type, has unspotted leaves, while the variety *maculata* has its leaves blotched and lined with silvery-white markings, and this variety we think the most beautiful. It is now one of the brightest plants in the St. Albans Orchid Nursery, and also at Kew. A coloured plate of it was given some time ago in *THE GARDEN*, drawn in Sir Trevor Lawrence's garden, where it is a favourite and grown to perfection. It comes from South America.

COOLHURST, SUSSEX.

DESCRIBING Coolhurst from recollections of a June day's visit is refreshing at this dreary season. The first impressions of this delightful place as it appeared on a bright summer morning, are still strongly imprinted on the memory. The garden was then gay with colours of every hue, sweet with fragrance, and alive with the song of birds and the hum of insects. From the masses of brilliant colour the eye stole through the glades and vistas, beneath noble trees or rested on the broad expanses of lawn not yet browned by the midsummer's sun. The garden is, in every sense, in harmony with such a quiet country home as Coolhurst is. It is one of the oldest and best residences among the many sprinkled about the weald of Sussex. The caprices of modern fashion in gardening have not been followed here; you see the garden to-day probably as it existed fifty or a hundred years ago. Its present owner, Mr. C. Scrase-Dickins, will doubtless still preserve it in this state.

Here are no pretentious terrace gardens, and the only "bedding-out" is done in a little stone-edged parterre garden and quite in good taste with the rest of the place. The house is Elizabethan, not old, but the creamy white stone is so lichen stained as to give it an antiquated look, and the Welsh Poppies, yellow Fumitory and wall Ferns that grow about the crevices at the foot of the walls make the place look more venerable than it really is. The house looks well from all points, and on every side is surrounded by trees. On the front the lawn gradually slopes to the park, from

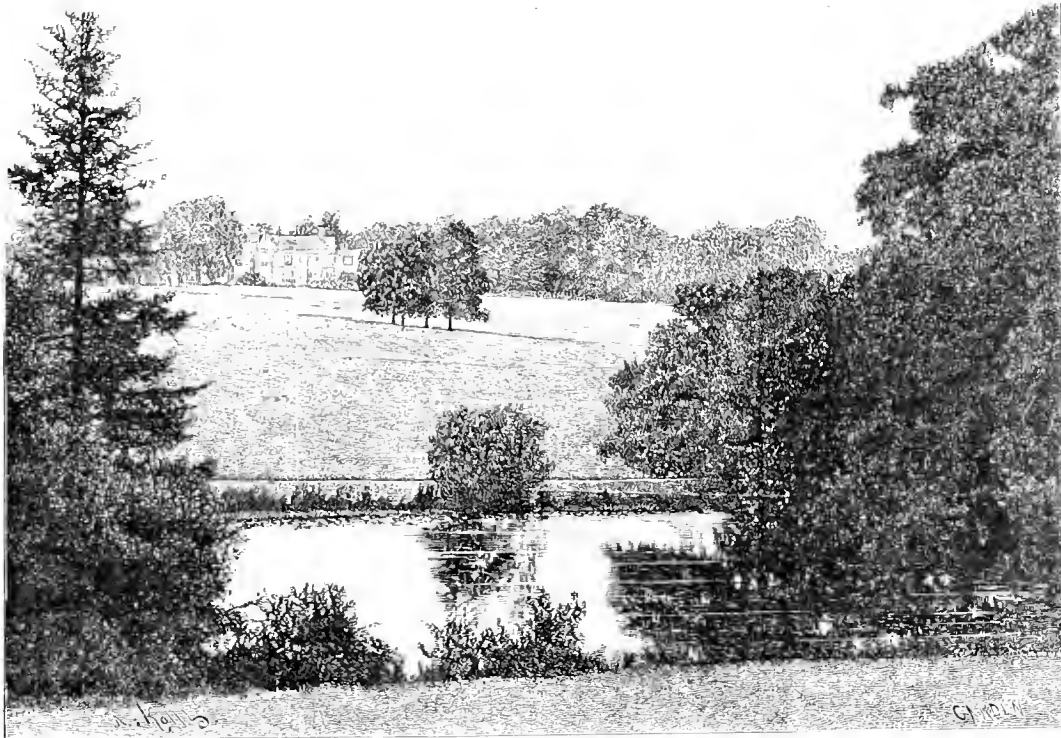
which it is separated by a Ha-ha, and so skilfully has this fence been made, that from the house one does not suspect its existence. The park falls gently to the lake, beyond which is a dense wood, chiefly Oak, and this ever-changing wood as regards colour forms a beautiful mid-distance feature. The lake view, too, is charming. Its surface was crowded with Water Lilies, both white and yellow (Nuphar), but, lovely though they are, they are apt to become troublesome weeds when they increase so rapidly, as they do here. The most interesting feature belonging to the park is the many fine Hawthorns which it contains, picturesque old trees long since past their prime, but still capable of adding great beauty to the park in May and again in autumn by means of their crops of ruddy haws. Most remarkable among them was a tree of the variety named pendula, whose branches droop on all sides, and when in bloom produce a grand effect.

The interest of Coolhurst depends much upon

its trees—not native trees, but trees introduced from every country whence we get trees. Coolhurst is probably the most richly planted estate in Sussex, and ranks with such celebrated places as Syon, Highclere, Fulham Palace, Westonbirt, and other places where foreign trees were planted extensively during the last century. The Coolhurst arboretum is probably indebted for its tree wealth to the famous "tree-planting bishop," Dr. Compton, who was related to the Coolhurst family, and who doubtless helped to enrich it. Bishop Compton was the means of introducing some of our noblest North American trees, such as the Tulip Tree, the Magnolias, the Hickories (Carya), Acers, and Thorns. The foreign trees at Coolhurst are mostly North American. Among the finest are False Acacias (Robinias), whose huge gnarled-barked stems form an interesting feature on the lawn. Among others are the Black Walnut (Juglans nigra), the Hickories (Carya), deciduous Magnolias, such as *M. cordata*

vigorous than *S. pentagyna*. Of Conifers there are, of course, crowds of fine specimens; the Canadian Hemlock Fir thrives to perfection, and so does the Californian *Cupressus macrocarpa*; *Pinus insignis*, too—trees which about London are not satisfactory. There are some very fine trees of *Cryptomeria japonica*, which appears to thrive best of all the Conifers. In the wood beyond the pleasure grounds some specimens were pointed out to me that would tell a tale in a timber yard, and it is Mr. Scrase-Dickins' opinion that this Japanese tree is one that will ultimately prove to be one of the best timber trees in this country. It is rapid in growth, is not particular as to soil, and produces excellent timber—in fact, it is one of the principal timber trees in Japan. I must stop at the pleasure grounds, though there is abundant interest in the woods around, where foreign trees have been intermixed with the native. But before I leave the trees, I must note one or two pictures I saw in

the way of hardy climbers, rambling over some of the trees. One was the Traveler's Joy, running over an Evergreen Oak, festooning it in a most charming way. In September when in bloom, and later when in feathered seed, one can imagine the effect of it. Another, and perhaps the prettiest flower picture I saw here, was the *Clematis montana* running over a roof of one of the out-buildings, completely smothered with its starry white blossoms. From the roof the rope-like branches leapt to a Portugal Laurel, which it garlanded in the same beautiful way. A hint I got from this sight was that this *Clematis*



Coolhurst, from above the lake. Engraved for THE GARDEN from a photograph.

and acuminata; Snowdrop Tree (Halesia), Amelanchiers, Persimmon (Diospyros), all of which are represented by old trees. Among foreign European trees, none are so conspicuous as the Evergreen Oaks, which thrive well in this part of Sussex, and help to give the gardens a snug winter aspect. The Silver-leaved Lime (*Tilia argentea*), a Caucasian tree, is one that is seldom seen, but at Coolhurst it is a first-rate tree. When there, a slight breeze upturned the leaves and showed their silvery under-surfaces, as it did also those of the *Pyrus vestita*, whose leaves are likewise of silvery whiteness beneath. One of the rarest shrubs here is *Stuartia pentagyna*, a most beautiful North American plant, that bears white flowers as large as those of a Camellia. This *Stuartia* must have been planted many years ago, as it is now a small tree, perhaps as large as ever it grows. The other *Stuartia*, *S. virginica*, and its near relative, *Gordonia pubescens*, exist, I believe, in the Coolhurst arboretum, but are less

likes a north aspect, for on that side the branches were thickest and the flowers most profuse, though the plant was growing in a border on the south side. Before an exotic tree was planted at Coolhurst, and perhaps before a residence existed there, the spot must have been remarkable for native trees, for finer specimens than exist in this place could not be found in Sussex, a county remarkable for fine trees and woodlands. Beeches are the prevailing trees, and some ponderous specimens stand out on the lawns, their wide-spreading limbs overhanging the walks and making charming shady glades through which the brilliant tints of Rhododendrons and Azaleas in the distance are intensified. Fine, however, as are the Beeches, the Oaks are still more remarkable, especially as regards size. Other native trees which arrest the attention of the tree-lover are the fine groups of Scotch Fir, bonnet-headed in many cases; the old Birches, those by the lake being particularly beautiful; Sycamores, which

in the park are of great size; Yews, which are invaluable; the Mountain Ash; and among rarer kinds the Wild Service (*Crataegus terminalis*), of which there are some remarkable examples. These are dotted about and grouped in a variety of ways, some of the groups being most picturesque mixtures of deciduous and evergreen trees, each allowed to grow at will.

The glory of Coolhurst in early summer is most certainly the arboretum, which is crowded with American shrubs of every kind, and which grow in the greatest luxuriance. From the middle of May till the end of June the place is lit up with brilliant colour such as can only be obtained in open-air gardens by means of shrubs, such as *Rhododendrons* and *Azaleas*. When there in June last the place was aglow with the fiery tints of *Azaleas*, and the air seemed filled with their spicy fragrance. Instead of the stunted dwarf *Azaleas* with which one usually meets, you see here bushes 7 feet or 8 feet in height with wide-spreading branches, the flower-twigs of which are arranged in tabulated tiers, which is the natural growth of these shrubs, as described by those who have seen them in the swamps and shady woods of North America. It is difficult to account for the great luxuriance of the *Azaleas* and *Rhododendrons* here. It may be the soil, which is loamy, but most probably it is the genial, moist climate experienced in this part of Hampshire which seems so favourable to the growth of exotic trees and shrubs. The whites, yellows, scarlets, and pinks of these *Azaleas*, seen in association with greens of different shades, seemed to me to be the most gorgeous floral sight one could imagine or expect to find in an English garden. There is a prevalent idea that hardy *Azaleas* will not succeed in shade, but a visit to Coolhurst would soon convince one that such is not the case; indeed, they seem to thrive as well here as in the famous peat gardens of Surrey.

The *Rhododendrons* are quite as remarkable as the *Azaleas*, but in some way lack the charm which the latter possess. They are grand certainly, but they have not the elegant and picturesque growth which belongs to the *Azaleas*, though when allowed to grow as they like, as here, they become less formal and lumpy. In some parts of the pleasure grounds and adjoining woods there are long vistas of *Rhododendrons* 10 feet or 12 feet high, and their effect when in flower may easily be imagined. Besides ordinary hardy *Rhododendrons*, Mr. Scrase-Dickins has planted out several Himalayan species supposed to be only half-hardy, but here they appear to be quite acclimatised. For instance, there are great bushes of such kinds as *R. campanulatum*, *R. Thomsoni*, *R. niveum*, and *R. arboreum* growing as vigorously as the Pontic and Catawba hybrids. The evergreen growth at this place consists mainly of *Rhododendrons*, but all kinds of so-called American shrubs help to enrich it. During winter, *Andromedas*, *Vacciniums*, *Pernettyas*, *Zenobias*, *Kalmias*, either form little groups by themselves, or are made to intermingle with the *Rhododendrons* and *Azaleas*. In *Azalea* time the *Kalmias* were only in bud, so that the flowering season of such shrubs extends to midsummer. Another noteworthy shrub of the Heath family is *Gaultheria Shallon*, which has become quite naturalised in the woods, and a capital undergrowth it makes; probably it would make excellent game covert if one could get enough of it.

The white Chinese *Azalea* (*A. indica*), common enough as a greenhouse plant, has become perfectly acclimatised here. Some years ago Mr. Scrase-Dickins planted out a few bushes of it by way of experiment; these have proved to be quite hardy; they grow most vigorously, and not only

grow, but flower profusely. Those who have spare plants of this white *Azalea* would do well to boldly follow this example, provided, of course, that they are south of London and in a sheltered locality. The little *Azalea amena* is also planted out here, but this is generally known to be hardy enough to stand our winters out of doors.

In the conservatories and greenhouses one may find many out-of-the-way plants, as in the case of the open-air trees. In the conservatory attached to the house are several rare climbers, most beautiful of all being the old *Bignonia Chamberlayni*, which also enjoys the more modern name of *Anemopaegma racemosum*. It is extremely handsome in flower. In shape and size the blossoms resemble those of the hardy *Bignonia grandiflora*, and are borne in clusters of half-a-dozen or so. They are of a soft primrose-yellow, an uncommon colour among greenhouse climbers. It was shown a few weeks ago at South Kensington, where it was recognised only by a few as an old favourite which has dropped out of general cultivation. There is also in this house the graceful and bright-coloured *Cantua dependens*, another climber once much grown, but now confined to comparatively few gardens. Commoner climbers, such as *Taesonnia Van Volxemi*, also festoon the roof, and one may see the choice white variety of *Daphne indica* growing uncommonly vigorous. It was from this conservatory that the specimens came of this white *Daphne*, from which the plate for THE GARDEN was prepared some time since. The kitchen garden is one of the old-fashioned kind, substantially walled in with borders of hardy flowers, and containing the usual complement of plant and fruit houses. There is a capital collection of Orchids, among which there are fine specimens of good old kinds, which now-a-days fetch fancy prices. The present gardener, Mr. Kemp, who was with the late Mr. Cunningham, of Orchid renown in Scotland, is well known to be one of the best Orchid growers in the country, and, being quite an enthusiast, takes a pride in the collection, and in pointing out to visitors the choicest specimens. There were many in bloom when I was there, though the full flush of the Orchid flower season was on the wane. In the entrance-hall of the house there was a grand specimen of the rarely seen *Cattleya lobata*, bearing three spikes, and fourteen flowers altogether. It had been in the hall six weeks, and Mr. Scrase-Dickins assured me that this protracted stay in the house in summer did not materially affect the health of this or many other Orchids. I much admired, too, the handsome vases in the hall and drawing-room, containing untrained specimens of Indian *Azalea*—great bushy plants, informal in outline, yet not untidy-looking, and smothered with bloom. The prim training which gardeners practise on Indian *Azaleas* quite spoils their natural growth; they are not to be compared in beauty to untrained specimens. It is satisfactory to see that a collection of bulbous plants is likely to become one of the specialities of Coolhurst, and it is to be hoped that Mr. Scrase-Dickins will become a second Dean Herbert among bulbs. He seems to be particularly fond of them, and he is continually adding to his already rich collection. Being secretary to the Daffodil committee, he has acquired a deep knowledge of Narcissi, and he ought to grow a representative collection of them. Another speciality at Coolhurst is single *Camellias*, of which there is undoubtedly the finest collection of seedlings in Europe. A plate of a few of these appeared in THE GARDEN last year, and at the time Mr. Scrase-Dickins told us all about them. W. GOLDRING.

Christmas Roses.—I am profoundly ignorant of *Hellebores*, but find in a note-book the following description of a flower which I noticed in North Italy last March. Perhaps

Mr. Archer-Hind or someone else will kindly say to which variety it is to be referred. I fear I made no note of stem or leaves, which seem to be necessary criteria of *Hellebores*. "Between Menaggio and Porlezza (Como-Lugano) fine, strong-growing *Hellebore*: flower large and cupped, pure white, with slight flush of buff-pink. Noticeable for its pink stigmatic and tufted yellow anthers."—G. H. ESCLEHEART.

NEW PLANTS OF 1886.

THAT the year which has just closed has not been in any way behind its predecessors in the production of new plants is sufficiently evident by a glance at the long list of flowering and fine-foliaged plants that have been certificated by the Royal Horticultural and Botanical Societies. Certain sections, such as Orchids, stove and greenhouse plants, and ornamental foliaged plants have been well maintained, and the production of good Ferns has also been above the average; hardy herbaceous plants have also received some valuable additions.

Among flowering plants adapted for greenhouse culture, *Amaryllises* occupy a prominent position. *Her Majesty* is a bright crimson flower of large dimensions and of good substance and shape, veined with a deeper hue; *Crown Princess* of Germany produces large and perfect flowers, the ground colour of which is white, feathered and striped with scarlet; it is very distinct and robust in habit. *Duchess of Albany* is dark crimson, ornamented by a pure white band in the middle of each petal; *King of Crimsoms* is a vivid coloured flower of excellent form and substance, and well worthy of a prominent place in every collection, notwithstanding the fact that it is of smaller dimensions than those of most of the others described. All these *Amaryllises* belong to that class which flowers from March to June. The autumn-flowering kinds, which form a class entirely distinct, comprise such grand varieties as *Mrs. Lee*, *Autumn Beauty*, &c., all offshoots from the old-fashioned *A. reticulata*. *Lady Mayoress* produces abundantly in November large, perfectly shaped crimson flowers, ornamented by reticulations of the same colour, each segment being further adorned in the middle by a broad band of pure white.

Amongst *Begonias*, the tuberous section is by far the most popular, but other kinds possess, for the most part, the advantage of flowering during autumn and winter. To the latter class belong *B. Imperial*, a variety which bears large flowers of great substance and of a lovely shade of crimson; *B. Marchioness of Lorne*, a pretty cerise-coloured sort; and *Louis d'Or*, a beautiful yellow; these are three of the best single-flowered kinds. Among double sorts brought out during last summer may be mentioned *B. magnifica alba plena*, a grand creamy white; *B. Queen of England*, a beautiful full flower of a bright salmon tint; *B. Paul de Vieq*, a lovely variety of a peculiarly soft, rosy colour; and *B. Mrs. Plunket*, a plant of extra good habit, and with remarkably well-formed flowers of a blush and buff colour. Amongst autumn and winter-blooming sorts *B. rosea gigantea* is a very good variety. It forms compact specimens, which in autumn become completely covered with brightly coloured flowers. By far the best of last year's production is, however, *John Heal*, an interesting kind, the result of crossing *B. socotrana* with a tuberous and summer-flowering variety. It partakes of the qualities of both its parents. Like *socotrana*, *John Heal* blossoms late in autumn, and the influence of the tuberous parent is manifest in the flowers, which are of a bright rosy colour, and produced in long, slender, and particularly graceful racemes, each bearing from six to ten blooms. In a cut state these last for a considerable length of time, varying from fifteen to twenty days. Another good addition to the genus is *Arthur Mallet*, a *Begonia* of Continental origin, and decidedly an acquisition. It is a hybrid between one of the numerous forms of *B. Rex*, with chocolate-coloured foliage, and a tuberous or summer-flowering kind. It is bushy in habit, and grows to about 18 inches in height. Its leaves are elongated and heart-shaped and

brilliant in colour, and the flowers, which are produced in abundance, are also very attractive.

Rhododendrons of the javanicum section may be said to be amongst the best plants grown for the decoration of our glass-houses, and although most of the hybrids from it flower at all times of the year, they are particularly showy at this season. They can be used to brighten up our conservatories and intermediate houses, for they generally produce their best flowers between November and February. They are also equally useful as cut flowers for bouquets, in which, on account of their long, slender tubes, they may be used with advantage. Among single-flowering varieties brought out this season, Queen of Yellows is undoubtedly the most striking. It has yellow, or rather fawn-coloured, flowers of good size and of perfect form and substance, borne in large trusses, each consisting of nine or ten flowers; and the habit of the plant is excellent. Rose Perfection, luteo-roseum, and amabile are all improvements on known varieties, the plants being good in habit, and the flower-trusses large and pleasing in colour. Rajah, belonging to the bal-amiflorum group, is, however, the best amongst these Rhododendrons. It is a robust grower, and produces very double flowers of a rich, warm apricot colour, flushed with red, the outside petals being much larger than those inside; the tube is much shorter than that of other kinds, and the flowers expand widely.

In Gloxinias we have this year had some notable improvements. Ivanhoe is a dark purple, edged with white; Vestal, a good-sized white-ground flower, with a faint rosy bordering. In addition to these there are also three beautiful self-coloured varieties, viz., Irma, brilliant scarlet; The Moor, rich purple; and Ormende, velvety crimson. All the kinds here enumerated belong to the erect-flowered type.

Other stove and greenhouse plants consist of Fuchsia triphylla, a species entirely different from all other Fuchsias in cultivation. Its name is derived from the arrangement of the leaves, which are in threes on the branches. It forms a dwarf, bushy plant, which is remarkably floriferous, and its flowers, which are bright scarlet, and which measure about an inch in length, are disposed in loose clusters, which terminate nearly every shoot. Cyrtanthus hybrida rosea is also an acquisition. It flowers in autumn, and is the result of a cross effected at Burford Lodge between the lovely old-fashioned Vallota purpurea and Gastronema sanguineum. The flowers of young plants of it are variable in colour, and also in size. Clerodendron nutans and Beaumontia grandiflora, though by no means new, are so very seldom met with nowadays, that when seen in such good condition as they have been this season they well deserve special notice. The Clerodendron is a strong-growing stove shrub, whose shoots are furnished with terminal, pendulous clusters of five-petalled white flowers, with a light brown calyx. Its foliage is also very peculiar, being strap-like, about 5 inches long, by 1½ inches wide. It is a shrub which flowers in summer, and well worthy of special attention. Beaumontia grandiflora was formerly grown in our gardens, where its large, trumpet-shaped flowers, resembling those of a Datura, were very ornamental. It is a plant deserving of much more attention than it receives.

To Orchids some valuable additions have been made. Foremost, perhaps, among imported species is the curious and beautiful Cypripedium Sanderianum, which in form and general appearance possesses some resemblance to C. levigatum and C. Robellini. The flowers are in size about equal to those of C. levigatum; they have two narrow purplish brown petals prolonged into long tails; the lip is also long and of an olive-brown colour, with a long compressed stalk, and with the column provided with a very long staminode in form of a spade. A plant of it, which was shown, only bore one flower, but some dried specimens show as many as six on one spike. In Habenaria militaris we have a wonderfully pretty terrestrial Orchid, surpassing in brightness even the gay Sophronitis grandiflora itself. It is an

entirely new species collected in Cochin China by M. Rognier, and is a valuable addition to autumn-flowering Orchids. Unfortunately, it is terrestrial and deciduous, and, therefore, slightly at a discount with some who are afraid of not seeing it turn up again after its resting season. In habit it resembles our native kinds, with this difference, however, that its foliage is tinged all over with light greyish purple; the stems grow to about 15 inches in height, and bear from twenty to thirty flowers, whose shape greatly resembles that of an Impatiens, provided, as they are, with slender green spurs, but their colour is brilliant scarlet. Catasetums are, as a rule, not favourites with Orchid growers; but in the new C. Bungei we have undoubtedly a fine plant worthy of special attention. Its large ivory white flowers, six or eight in a raceme, are of a fleshy character, and curious in shape on account of the lip, which is pure white, being cordate in front, with a round cavity at the base, lined with orange-yellow. When it is stated that the individual flowers measure upwards of 4 inches across, it will be readily understood that this new Catasetum is at once the most interesting and the largest representative of this singular genus. Dendrobium stratiotes, a new species from North Australia, like the preceding, was discovered by one of Mr. Linden's collectors, who states that it is the most remarkable Orchid which he has found in his travels, and that in its wild state it is so floriferous, that on a plant with ten bulbs he has counted as many as 250 flowers all expanded at one time; frequently, he says, fifty flowers may be found on a single bulb. If equally floriferous under cultivation, this new Dendrobium cannot fail to become a general favourite. Its flowers, which have a white ground colour, have petals and sepals suffused with pale green, and the pure white lip being striped with bright carmine, renders it highly attractive. In Cypripedium callosum we have also a new species brought home from Cochin China by M. Rognier, who found it growing by the side of rivulets with its roots in water. It possesses much of the general appearance of C. Lawrenceanum, a most extraordinary thing, seeing that it comes from an entirely new locality. In details, however, it is very different. The dorsal sepal of its large and well developed flower is the most characteristic feature, being marked on a light ground with radiating lines of a deep purple tint, and it is further ornamented by a pure white margin of about half-an-inch in width. Although not so deeply marked as that of C. Lawrenceanum, its foliage is also very handsome. Cyrtopodium Saintlegerianum is a showy Orchid; its stems, which are cylindrically pressed, are about 5 feet high, and are furnished with leaves plicately veined. Its flower-spikes, which are about 2 feet long, are branched at their upper part, and covered with orange flowers spotted with brown. Among what may be termed accidental importations, the most meritorious varieties of already existing good species are, amongst Cattleyas, C. Eldorado virginialis, Triane Schrederiana and Russelliana, C. Mossie splendissima and Arnoldi, and C. Mendeli Duke of Marlborough, whose large and massive flowers have petals about 3 inches broad, delicately tinged with purple. The lip, which is veined in the throat with yellow, and which has its apical portion of a rich crimson tint, which also runs round the margin, measures fully 2½ inches in breadth. Several handsome forms of the beautiful Odontoglossum luteo-purpureum have also made their appearance among recent importations. O. vexillarium Sunrise is undoubtedly the most distinct of the several forms of that popular Orchid. It is, in fact, the one which shows, to some extent, a new departure worthy of the name. It is altogether a most beautiful flower, with a deep rose-coloured lip; the petals and sepals are white suffused with rose, and the eye, which, as in the type, is yellow, is surrounded by a ring of white. In Cypripedium Hycanum we have an admirable form of C. Lawrenceanum, and one of the most distinct Lady's Slippers known. This variety is entirely devoid of the purple tinge characteristic of the species.

In shape and size, both flower and foliage are very similar to those of the species, but the dorsal sepal is pure white lined with green, and the pouch is also light green. Saccolabium curvifolium album is a good white form of that lovely species, although its flowers, which are pure white, are rather small. In that deservedly favourite genus Odontoglossum we have some excellent plants to add to the already existing list. O. Pescatorei Vervaeckianum is one of the most striking forms of that species. Its flowers are prettily spotted, of medium size, and when only partially opened very conspicuous, owing to their bright red colour. Amongst varieties of O. crispum or Alexandro, the one known as Knox's variety occupies the most prominent position. Its petals and sepals, which are particularly broad, although white at the base, are mainly yellow, and ornamented by a few brown spots which cross them about the middle. Then there are the beautiful forms named O. apiatum, Imperati, Mrs. Dorman, and Hrubyanum, the latter only comparable with such gems as O. Veitchianum and Sanderianum. A very curious and equally beautiful plant made its appearance under the name of Dendrobium crassinode Wardianum, supposed to be a natural hybrid of that very popular species. The flower-spike of this plant, which originated amongst an importation of D. Wardianum, was fully 3 feet long, and two-thirds of its length was clothed with flowers, white in parts, with the lip, sepals, and petals tipped with pale rose, the interior of the throat being orange; on the base of the lip are also two crimson spots. These flowers, which are intermediate between those of the supposed parents, are disposed in clusters of three at the nodes, which are as prominent as in D. crassinode. As a natural hybrid, too, Laelia lilacina opens up a wide field for conjecture. It is supposed to be the result of a natural cross between Cattleya crispa and Laelia Perrini. The same cross with Mr. Doiny produced L. Pilcheri. The new comer was found in an importation of L. Perrini in 1883. Its scape is usually twin-flowered; the tube of the flower is white, the interior being marked with purple; the lip is also white, and is adorned in the middle with a purple blotch, while the sepals and petals are pale lilac. The flowering time of this singular plant is intermediate between the periods of flowering of the two supposed parents. A curiosity which made its appearance on the Continent is named Calanthe Veitchi rosea alba. Its flower-spikes in size and habit resemble those of C. Veitchi, but they are covered with flowers, some of which are rosy pink, others white, and others again partly white and partly pink. This curiosity, it appears, found its way to Europe amongst an importation of Limnites rosea.

Of home-raised hybrid Orchids, of which the parents are known, two highly interesting subjects have flowered during last season. These are Phalanopsis intermedia and Laelia Batemaniana. The former is the result of a cross effected by Mr. Seden between P. rosea and P. amabilis, with a view to demonstrate clearly that the plant which formerly was imported under that name owed its origin to these two parents; and we must say that the result of the artificial cross leaves no doubt as to the correctness of this supposition, for the flowers of Mr. Seden's plant have all the characteristics of those of P. intermedia; the petals and sepals are white, the former tinged with crimson at their base; the central and lateral lobes of the labellum are purplish crimson, ornamented with a few dots and a yellow crest. The flowers of the seedling plant measure about 2 inches in diameter, and the foliage of the young plant is the same as that of a robust P. intermedia. Laelia Batemaniana is the result of a cross also effected by Mr. Seden between Cattleya intermedia and the charming dwarf, bright-coloured Sophronitis grandiflora. Its mode of growth is very similar to that of the Sophronitis, but the leaves and bulbs are larger, and the former are produced in pairs. In general aspect the flowers resemble those of the Cattleya parent, and they are nearly of the same dimensions, but there is a great alteration in their

form, and a greater still in their colour; the petals and sepals partake of a tint peculiar to *Odontoglossum roscum* or to *Mesospindium vulcanicum*. The lip bears a close resemblance to that of the *Cattleya* parent; its upper part is white, and the anterior lobe of a beautiful violet-crimson. The whole plant when in flower only measured 4 inches in height, but the bulbs as they are produced in succession appear to gradually gain in strength. Several other home-raised seedlings have also shown themselves during last season, conspicuous among them being the charming *Cypripedium Tautzianum*, a very pretty hybrid, raised between *C. niveum* and *C. barbatum*; also, *Zygopetalum leopardinum*, *Calanthe hybrida*, a strong grower with white flowers; *Masdevallia glaphyrantha*, with small flowers of a dull, purplish crimson colour, and furnished with tails about 2 inches long, and tipped with yellow; *Dendrobium micans* is a lovely hybrid, raised between *D. Wardianum* and *D. litiflorum*. Its flowers, which are of a waxy texture, like those of *D. Wardianum*, measure over 3 inches across. The sepals and petals are mauve-purple, becoming paler towards the base. The lip is nearly similar to that of *D. litiflorum*. It is white, with a large maroon-purple disc, and a rose-purple blotch at the apex.

Ferns now this season possess some good qualities. The most prominent among them is undoubtedly *Nephrolepis rufescens triplinatifida*, a beautiful plumose form, whose fronds, which frequently attain from 30 inches to 35 inches in length and 4 inches in breadth, have the appearance of ostrich feathers, owing to their massive character and their sides being beautifully curled. There have lately been many forms of *Nephrolepis*, some depauperated like *N. Duffi*, some regularly crested, like *N. davallioides furcans*, but none in any way comparable with this new comer. Its fronds, which are produced abundantly, are of a lovely pale green, and sufficiently strong to hold themselves up without any support, notwithstanding their great weight. Like all other kinds of *Nephrolepis*, it grows freely, but requires stove temperature. In *Davallia retusa* we have an elegant stove Fern, a native of Sumatra. It is pendulous in habit and free in growth, and therefore well adapted for growing in hanging baskets. The fronds, when fully developed, measure from 30 inches to 35 inches in length. The pinnules are of peculiar form, though some of them, especially those towards the extremities of the pinnae, are triangular; they are light green, and contrast prettily with the pale crimson tint of the stipes and rachides. *Davallia solida major* is a Fern with bold deltoid fronds, tripinnate, leathery in texture and massive in appearance. *Gymnogramma gloriosa* is a wonderful improvement on *G. schizophylla*, which it is destined to supersede, being of much freer growth, and producing fronds not only of much greater dimensions, but in such large quantities as to make it hard to believe that it is merely a variety of that milky-growing species. To the genus *Adiantum* several good additions have been made. *A. Birkenheadi*, for instance, is totally distinct in aspect from that of any other *Adiantum* known. It is compact in habit, notwithstanding the long and slender character of the stipes, the whole frond measuring about 2½ feet long; its open ramification gives it a handsome appearance, and its bright deep green colour greatly enhances its beauty. *A. fragrantissimum* is also a very good plant, and among the several varieties of *A. Capillus-veneris*, the form called *imbricatum* is, without doubt, the most striking. It is somewhat related to the Cornish variety, called *cornubiense*, but the pinnae are much larger and deeply divided, or markedly fringed on the margins; the fronds, being, moreover, broad and dwarf, impart a particular massiveness to the plant. In the genus *Pteris* are also produced some good novelties. *P. tremula foliosa* is a grand improvement on the already popular Australian species; it is a stately Fern, which attains in a short time twice the size of the type; its fronds, which are of a delicate pale green, are elegantly and effectively crumpled, and have thus a very

plumose and massive look. We have in Naylor's crested variety of *P. serrulata* a densely bushy plant, which, in fact, has all the appearance of a very finely-cut tuft of sea-weed; it differs essentially from anything known, as the fronds are upright, stiff, and measure about 7 inches in height. By far the best, however, of all the variations which have taken place in the genus of late is *Pteris Mayi*, which may be summed up as being a very good crested form of *P. cretica albo-lineata*, the lovely variegation of which it has retained; but it is of a greatly improved habit, as barren and fertile fronds are all of the same size. It will certainly prove to be an excellent plant in every way, being a free grower and comparatively hardy. It is not often that we have to note novelties among Filmy Ferns likely to become popular, but we have this season in *Todea grandipinnula* a handsome Fern of remarkably free growth, and which can successfully compete with such favourites as *T. superba* and *T. hymenophylloides* or *pellucida*. The fronds of this variety are very massive in appearance, and this singular leafy development gives the plant an aspect totally different from that of any other known species or variety of *Todea*. It is a plant which fully deserves good cultural care. There are also a couple of new *Selaginellas* well worthy of a place in all collections: one is *L. tessellata*, a handsome species with erect quadrangular branches and flat deltoid fronds. The most distinct, however, is *S. gracilis*, a species from the South Sea Islands, belonging to the same section as *S. Wallichi*, *Victoriae*, and *Lobbi*, from which it is, however, entirely distinct. Like these, it has sub-erect stems, which are slender, cylindrical, and furnished with dark green cuspidate pinnules that become gradually shorter as they approach the apex of the pinna. In habit it is umbrageous and particularly dense, seldom attaining more than 15 inches in height.

Amongst fine foliaged plants the most striking are the following, viz., *Phrynium jucundum*, a Maranta-like plant from Java, with long-stalked leaves lanceolate in form, and produced abundantly from underground rhizomes, forming quite tufted masses of foliage of a bright green colour variously marked with white stripes of different widths running longitudinally. *Maranta eminens* is another excellent addition to this lovely genus. This new species has stalked, oblong leaves having a greenish cream-coloured ground, on which are scattered some transverse, oblong blotches of deep green of different sizes, and sometimes connected with the midrib. In *Paliourea jugosa* we have a stove shrub with handsome foliage of a deep velvety green colour, ornamented by a lilac midrib. *Aphelandra chrysops* is a valuable acquisition. Like most of the species with which we are acquainted, it may be grown for its flowers and bracts, which are of a beautiful yellow, as well as for its foliage, which is marked on the lines of the main ribs with creamy white. We have in *Trevisia palmata* a distinct and very ornamental Araliad, with spiny stem and deeply palmated seven-lobed leaves of great substance and of a cheerful green colour. All the foregoing require stove temperature. In the greenhouse section we have the charming little *Oplismenus albidus*, a dwarf variegated Grass like a *Panicum*, with foliage 1½ inches long and acutely pointed. The ground colour is white, with a green band running longitudinally through the middle of the leaf. It is a little plant which will be sure to be appreciated by everybody, as its usefulness becomes more apparent every day. The only new Palm which is likely to prove really useful is *Phoenix hybrida*, a kind which shows, in quite a young state, its characteristic slender recurving leaves with long, narrow pinnae. It is very graceful, though compact in habit.

Two hardy plants with pretty foliage have made their appearance this season. One is a fine showy border plant, with white banded foliage and good habit. It is called *Hemeroallis Kwansoi foliis albo-variegatis*. The other is *Ulmus Petersi pendula*, a distinct-looking Weeping Elm with long, slender, pendent branches, clothed with

alternate rough leaves, peculiarly crumpled, and with coarsely toothed margins.

Amongst *Chrysanthemums*, the Japanese section still commands the greatest attention. Foremost among them is *White Ceres*, so named on account of its being a sport from a plant under that name, yet the flower of this new form, which is of a delicate blush tint, is so different in build from that of the type, that it appears hardly possible it should be a sport from it. *Coquette de Castille* is large and full flowered and of a soft rose colour; the florets are tubular, narrow, and slightly reflexed. *Phœbus* has bright yellow flowers, of medium size, and very double—a dense mass, in fact, of long, narrow florets. *Buttercup* is a beautiful full, reflexed flower, and the brightest yellow yet raised; it is finely formed, and particularly rich in colour. *La France* is wonderfully rich in colour, a sort of crimson-purple, quite uncommon; the flowers are of medium size, dense, and of good form. The Pompon class, which contains some remarkably pretty flowers useful for bouquet-making, is represented amongst novelties by a couple of very good things, such as *Flambeau Toulousain* and *Mlle. Elise Durdan*. The former produces in abundance small, compact, globular flowers with quilled petals, of a deep rose, edged with white. *Mlle. Elise Durdan* is a pretty quilled, deep lilac, perfectly globular, and very regular in form. It is altogether one of the most pleasing of Pompons.

*Dahlia*s of all sections have received additions. Single forms are well represented by *Mr. Rose*, a white ground flower profusely striped with lake. *Zephyr* is quite distinct and novel, medium in size, and of a lovely orange-crimson, distinctly margined with yellowish buff. *Miss Limaker* is a rosy crimson flower, with the exception of a golden yellow ring which surrounds the disc. To the Cactus section has been added *Yellow Constance*, a kind which produces bright yellow flowers with straight and fluted petals; but the best variety in this section is undoubtedly *Empress of India*, whose double flowers resemble those of a form of *Paragon*. It is one of the most beautiful and distinct varieties yet produced. Its colour is rich claret-purple, streaked with red. Among new decorative kinds *Annie Harvey* stands in the foremost rank on account of its colour, which is blackish crimson, flushed with scarlet; the flowers are medium-sized, double, and very handsome. Amongst Pompon and fancy varieties, *Eccentric* and *Valentine Humphries* are the most remarkable. The flowers of the former are peculiarly marked with orange and crimson, colours which vary in each flower. Those of the latter variety are rather large and perfectly shaped. They have a salmon-pink ground colour, copiously striped with bright crimson.

Amongst other subjects, new *Gladioli* have been plentiful this season. The most striking are *Lord Salisbury*, a kind with deep crimson purplish throat, and segments flamed with dark crimson; *Empress of India*, a lovely white ground flower, profusely feathered and also suffused with mauve. This variety produces very large spikes furnished with flowers of unusual size and substance. *Clarence* has flowers striped with maroon on a crimson ground colour, and particularly velvety in texture and large in size. Among varieties obtained by *M. Lemoine* may be mentioned *Voltaire*, a deep cerise with spottings of yellow on the three lower segments; *La France*, light rose and dark crimson; *Septre d'Or*, primrose with brown-crimson spots in the throat; and the curious *Sanderi*, bright scarlet, spotted like a *Tydea*. Among arborescent *Pæonies*, *Purity*, a variety with single pure white flowers, is a very effective plant, as is also *liacina*, whose white flowers have the base of their inner petals adorned with deep crimson blotches; *Madame Lafay* produces very large double flowers, some of which measure 9 inches in diameter, and being bright rose-coloured with a broad margin of pale pink they are particularly attractive. One of the finest *Pæonies* yet raised is, however, perhaps *Reine Elizabeth*; its flowers are very double, of

excellent form and substance, and their colour is a deep rose-scarlet. The herbaceous kinds are well represented by Queen Victoria, Festiva maxima, and Eclair, all varieties of great merit. Amongst Hollyhocks, which, owing to disease, are not cultivated so extensively as they used to be, may be noted such improved forms as Revival, a creamy yellow, well-built flower, and Shirley Hibberd, a crimson variety, large and full, with guard petals distinct and prominent. In *Crataegus tatarica* we have a most valuable addition to our Thorns, as its foliage is large and robust, and its bright crimson haws, as large as Black Heart Cherries, are produced in great abundance. S.

FRUIT GARDEN.

THE ORCHARD.

THE weather at the present time is wintry in the extreme, the heavy fall of snow, resembling half-melted ice, having weighed down the trees, and put an end to all bush-pruning, at least for the present. Weather like this, although seasonable, is by no means agreeable, especially to those who, through force of circumstances, have been unable to push on with their pruning and training when mild days lent their aid to progress. Knowing the advantage of taking time by the forelock, many fruit growers will have broken the heart of this chilling work, at least as far as it is prudent to go with wall and garden trees generally, and will now be able to turn their attention to standard orchard trees, for which I have so often pleaded, and, judging from signs of progress, I believe not in vain. Still, there is plenty of work crying for hands as loudly as interlaced branches can speak, and this is just the time for giving relief. Planting, as a matter of course, is laid aside for the next six weeks, if not for the season, as no one who understands his business cares to remove trees in mid-winter, be the weather ever so favourable; but the roots of old friends may be looked to in more ways than one. First of all, heavy land should be well drained, otherwise the application of manure and top-dressing will fall useless, if not injurious, as the roots resting or rotting in cold, stagnant water cannot assimilate the food given to them. This, then, is the foundation on which the superstructure of successful culture must rest, and the sooner it is carried out the better, for we may as well look for Figs from Thorns, as bright handsome Apples from waterlogged orchards. I have often pointed out how the clay or marl from the bottoms of the drains may be turned to profitable account by burning with the old stems and branches of the trees, and I would remind the superintendents of old plantations that they need not fill in the drains as soon as they are opened, as exposure facilitates the escape of water from the land and pulverises crude soil if left lying on the surface until dry weather sets in in March. Meantime, stones, rubble, anything that is open and porous, may be collected and shot in over the pipes with

the greatest advantage. Another operation which should always follow draining is top-dressing with fresh soil, bone dust, or a well prepared compost, consisting of manure, road-scrapings, the scourings of ditches, and plenty of charred refuse. This need not follow closely upon draining, but an eye should always be kept on every load of fresh material that will swell the store heap, without which points gained cannot be retained. Meantime the weather continuing unfavourable for other work, pruning and cleansing should be pushed on with vigour. The best pruners do not open the heads of neglected trees suddenly or check the roots by the removal of large limbs the first season, but open out the centres to let in light and air, and allow the completion of the work to extend over two or three years. Many people scrape the stems and strongest branches before they apply lime and other washes, and where the time can be spared this is a short cut to the attainment of the object held in view. But scraping the stems of a number of large trees is a heavy item, and I have found that syringing with soapsuds, lime water,

introduce it with young trees or grafts. Dipping or washing the young trees or scions as soon as they are received is a brief and simple operation which should never be neglected, as it may destroy the forerunners of a colony of the most persistent insects met with in Apple orchards.

THE GARDEN ORCHARD.—From the farm to the garden orchard is but a step, yet the two modes of management are quite distinct, and for this reason a few words here may not be out of place. The garden orchard is generally managed by a man who is well up in the art of root-pruning, and his trees, after the July pinching or winter pruning, are models of form and neatness. But the question arises, Is this close pruning an advantage, or otherwise? I maintain that it is a disadvantage, as many strong-growing varieties positively refuse a return that will pay for the labour; whilst all, be they strong or weak, become worn out by the time an extension-trained tree arrives at its best. One of the best planted garden orchards with which I am acquainted was established in an adjoining county about five and thirty years ago, and the trees were about twelve

years old when I first saw them. Each tree—a dwarf—had been carefully trained to ten or twelve shoots, starting from near the ground. By means of stakes and ties the external branches took a horizontal direction, and then grew upright, or nearly so, to the height of 10 feet or 12 feet, and were kept closely pruned to two eyes like so many cordons. The fruit, so long as the trees were extending, was excellent, and carried first prizes wherever shown, but, having filled their allotted space, restriction was the course decided upon, and from that day to this the trees and fruit have been going rapidly down the hill. Had every alternate tree been grubbed up to make room for its neighbour, the result might have been different; but annual or biennial root-pruning—no trifling business—fell into anear; the balance was lost, and canker followed. Having myself a row of hand-



Coolhurst. Engraved for THE GARDEN from a photograph. (See p. 21.)

some pyramids of Cox's Orange Pippin, from which my pruner made the small timber fly every winter, much against his will I decided upon extension training, as the fruit did not pay. The trees, well washed each winter with soapsuds, are bright and clean, and now bear good crops of fruit. If practical lessons are worth anything, I would advise owners of hard pruned pyramids and bushes to give them more room, either by transplanting or cutting down every alternate tree, and to allow the branches of those left to extend. Straight-stemmed pyramids, it is true, are difficult subjects to commence with, but once the centres are taken out and the lateral branches are well thinned and allowed to extend, the change which takes place in the course of two or three years is agreeably surprising. Such trees, it is hardly necessary to say, must not be allowed to grow wild, but root-pruning, once the roots are lifted and re-laid in a horizontal position, will not give much trouble, and heavy winter pruning will be.

or weak brine answers equally well; or, lacking the convenience, newly-slaked lime cast into the trees when the branches are damp soon destroys every vestige of Moss and Lichen which it touches. With these parasites the larvae of ordinary insects disappear also; but the greatest pest we have to contend with is American blight or woolly aphis, not that it is difficult to kill, as oils or spirits melt it in a moment; but when thoroughly established under the rough bark of old trees, the problem arises, how are we to get at it? Mr. Bunyard, a great authority, says the best remedy is Gishurst compound or soft soap, well rubbed in with an old brush. These I have used, also paraffin, which is more penetrating, but one dressing with either will not produce a clean sweep; therefore, the only course is patience and perseverance with an insecticide that will kill, and a determination to keep on as long as an insect appears on the surface. Few old orchards are free from American blight, but growers who are thus fortunate should be very careful how they

come an operation of the past, as the sap will be forced into the spurs by means of summer pinching. These remarks, as a matter of course, apply to trees on free stocks and not to cordons or small bushes on the Paradise, which can be kept within bounds for a number of years. But here even I question if longer life and heavier crops would not be secured by giving the trees more room and allowing them to extend laterally in every direction. Maiden trees on the English Paradise stock are cheap, but cheap as they are the cost of trees for an acre is a heavy item, and profit now being the order of the day, the plan I have previously recommended may advantageously be adopted. It is this: having prepared and planted, at the usual distance apart, the first acre, set about the trenching and preparation of the second. When in suitable condition, lift and transfer every alternate tree to its new and permanent quarters, allowing double the distance originally occupied. Pinch gross shoots to keep the trees properly balanced, and allow them to extend. All fruit trees should be lifted and replanted at the end of the second year, not perhaps to produce fertility, but to sever descending roots and train them in a horizontal position near the surface of the soil. The ground being ready, supernumeraries may, of course, be lifted at the end of the first year, but those left behind should stand two, or perhaps three, years before they are disturbed. The relaying of the roots at that age will set them in a course they will not depart from, and good annual mulching will draw the fibres to the surface. W. COLEMAN.

Esbnor Castle, Lodbury.

Forking amongst bush fruits.—"Cambrian" can hardly be aware of the fact that throughout the London market gardens forking is done liberally between and about bush fruits; even in some cases the spade is used, but only in a shallow way, as the men receive a moderate sum, perhaps 4d. per rod, for "turning in," and naturally it is not done deeply. I could show anyone now one of the finest plantations of Gooseberry and Currant trees in Middlesex several acres in extent which is forked over every winter after pruning is completed, and finer bushes than these or heavier crops are not obtained in any private garden in the kingdom. Manure is wheeled in during hard weather, spread about, under, and around the bushes, and then turned in somewhat roughly perhaps, but when a flat hoeing is given in the early summer the soil is fairly levelled. It must be remembered, too, that the soil about and beneath bush fruits, especially when grown under standard trees, as in the case just mentioned, gets hard trodden—very much more so, indeed, than is the case in private gardens. It does not follow that because one gardener adopts a certain rule in cultivation and finds it successful, that another rule may not be equally successful elsewhere. Certainly it is a fact here in Middlesex that forking or turning in amongst fruit bushes is the rule, and that it is a very satisfactory rule too. The bushes to which I have referred are some fifteen or sixteen years planted; they are very large, in robust health, and crop abundantly. No other method of culture could secure better results.—A. D.

Blenheim Orange Apple. I was glad to see Mr. Coleman's remarks (p. 533) on this fine Apple; it is an old favourite of mine, and undoubtedly one of the most valuable varieties which we possess. A grand specimen of this Apple in our old Worcestershire garden excited my admiration more than twenty years ago, and I have ever since recommended it wherever I could. Had I to plant an orchard or fruit garden, I should use more trees of the Blenheim Orange than of all other kinds put together. The fruit, which is large and handsome, also keeps remarkably well, and is equally valuable for dessert and culinary purposes. The growth of the tree is robust, the habit good,

and it is a remarkably fine cropper, the tree referred to often producing as much as twelve "pots" (a deep oblong basket, constituting a standard measure in Worcestershire) annually. When we came to London, we inquired for years in vain for Blenheim Oranges, and it is only during the last two or three years that we have been able to obtain them. Market and other large growers are, however, at last beginning to recognise the value of this grand variety. It speaks, I think, very ill indeed for the sagacity or intelligent enterprise of horticulturists that it has taken them, to my knowledge, about five-and-twenty years to recognise the value of such a treasure as the Blenheim Orange; though how long it is since this Apple was first sent out I do not know.—B. C. R.

VINES ON FLUED WALLS.

OVER twenty years ago I made the gardens at Cliffe Hall, on the banks of the Tees. We built all the garden walls hollow, and the south aspect wall was flued for Peaches, Apricots, &c. We planted three Black Hamburg Vines to occupy 10 yards of this wall, and had a border prepared for them, as for the other trees, viz., 3 feet deep and 18 feet or 20 feet wide. The border consisted for the most part of fresh turf. The garden was formed in the north-west corner of the park, and in making a cart road behind it we had to straighten a wood which here formed the boundary of the park. After cutting down the best of the timber we charred all the roots and branches, and as soon as the foundation of the wall was in we took a spade deep from the surface of the road and wheeled to the south side of the wall, covering with it a space of 40 feet, and mixing all with the charred mass, which amounted to several cart-loads. Previous to making the garden we drained it 4 feet deep. At a depth of 6 inches the soil was a strong holding loam. For many years we were able to hold our own with fruits against all comers, both in the collections and single dishes at exhibitions wherever we went. But to return to the Vines; we trained them horizontally the first year; then we led branches up the wall 3 feet apart, and spurred the upright stems 18 inches apart, no spur being opposite its neighbour. The third year we took fourteen or fifteen bunches from them, but afterwards we had from 100 to 120 bunches each year, each bunch weighing from 8 ozs. to 3 lbs. They were stopped as usual, leaving one or two leaves above the fruit the same as the Vines under glass; thinning the berries was also attended to with equal care, and when the Vines were fully established I cut off from 100 to 130 bunches before they bloomed, or just when coming into bloom, leaving a bunch to each spur. Thus treated, the fruit was equal to any we had in the vineries, both as to colour and flavour. It was often placed on the dinner table along with fruit from under glass, and visitors were asked to say which was hothouse grown and which not.

It was thought to be impossible to grow such good Grapes outside so far north. I exhibited them at Darlington, Bishop Auckland, Middlesborough, and other places, and growers held up their hands and said they were never grown outside; but as that fact had been disputed before, I invited the secretary of the Darlington Horticultural Society to come to Cliffe Hall the day before the show and see them cut. He then took them to Darlington, placed them on the table for me, and assured those who doubted that they were from outdoors that he had seen them cut and brought them to the show himself. In order to give some idea of the value of such fruit, I may state that I sold the Grapes as they hung on the wall to Mr. Pope, of Darlington, who gave me £1 per yard of wall for them, being £10 for the lot. At Sellarby Park, in Durham, close to Raby Castle, a vinery in the garden fell from old age. Vines were left on the back wall, which was flued, and they continued to yield good crops for many years after the vinery was down.

The following is a short outline of the treatment to which the Vines at Cliffe Hall were subjected:

In spring, about the latter part of April when they began to bud and grow, I had the wall-fire lit, and kept it going steadily all through the month of May; after that they had only sun-heat until the middle of August or 1st of September, when fire-heat was again employed and kept steadily on until the fruit was all cut, and sometimes longer if the wood was not ripe. The wall was 12 feet or 14 feet high, and had three tiers of flues. When the fruit began to colour, a 14-inch board was put under the coping, and the Vines were covered with fine Nottingham netting to keep off birds and wasps. The covering was ringed at one end, so that we could unhook it to cut the fruit. The net was so fine that we could see the fruit hanging on the wall from the walk outside a 20-feet wide border. It used often to hang several weeks after it was ripe; on the dry, warm wall it kept better than in vineries. Abundance of air passed through the net, and the leaves, when the wood was ripe, turned yellow and dropped down quite in a natural way.

I omitted to mention that in spring when the Vines began to grow, especially when the fire was lit, we poured two or three eans of water at the foot of the wall every day, so as to cause vapour to rise and thus prevent mildew. My neighbour's Vines at Sellarby used to suffer some seasons from mildew, which, I thought, arose from their being kept too dry. JOHN GRICE.

Moorlands, Sunderland.

The Prune Damson.—May I say a few words in favour of this old Worcestershire favourite? Not one Londoner in a hundred knows what it is. The only way we can obtain it is by getting it direct from Worcester or Pershore. The difference between this sweet and luscious fruit and the hard, sour material that passes for Damsons in London is almost incredible. I have heard it said that the Prune Damson does not bear so freely as could be wished, but I do not see how that can be the case, as I know that we used to have to prop up the branches of our "Prune" trees to enable them to support their weight of fruit.—B. C. R.

Pears—Beurré Diel.—"A Pear Grower" (p. 3) says: "Beurré Diel is not even a second class Pear." "A Pear Grower" must either be very deficient in the sense of taste, or else he has never had a fair example of Beurré Diel set before him. I either grow, or have grown, all the twenty or thirty leading sorts of Pears, and, taking them all round—I mean not deciding by any one one point alone, but weighing all points, growth, fertility, flavour, size, ease of ripening, appearance, &c.—I find Beurré Diel well to the front of them all. Comice I fancy as *facile princeps*, afterwards Bon Chrétien, Pitmaston Duchess, Winter Nelis, and Hardy, and then I should put Beurré Diel. Easter Beurré, Chaumontel, and Glou Moreau are grand when they properly ripen. Knight's and Gansel's are glorious when they bear. Many others are superb when they come big enough to be of real use. I am, however, far from despising small things in flowers, fruits, or vegetables; indeed, I think a great deal too much is thought nowadays of mere size, but still it is undesirable that so many exquisitely flavoured Pears should come, as a rule, too small for the dinner table. Josephine de Malines I am at present greatly disappointed with. I have never yet grown it worth eating for flavour, and Superfin has at present baffled my efforts, but I hope to succeed with both before long. Marie Benoist bids fair to be excellent if it gains fertility with age. But my dear old friend Beurré Diel every year gives me a crop on a half-standard. The fruits are always of good size, always excellent in flavour, and the only possible fault to be found is that in some seasons some of them are just a little bit granular. The mass of the flesh is, however, so soft and melting and so superbly scented, that the grains pass unnoticed, or at least are freely forgiven for the rest's sake. The old Louise Bonne is with me a great favourite. I can quite understand, however, that many would dislike its very peculiar flavour, but everyone must like a good Beurré Diel. The reason "A Pear

Grower" never gets it good is, I fancy, either his soil or his stock; mine is on the Pear stock and in very light sand. I think anyone writing on Pears should be very careful to state what soil and what stock they are on, and also if on a wall what aspect.—W. WILKS, *Shirley Vicarage, Croydon.*

ROSE GARDEN.

NOTES ON ROSES.

EVERLASTING ROSES.—On p. 583 "T. S." refers to twenty-six kinds of China Roses, and says, "are there not many more varieties than ordinary folk dream of?" There certainly have been, even if they no longer exist, or linger only in old-fashioned gardens, nameless and forgotten. A little time ago it occurred to me to try and gather together a complete collection of these charming, ever-blooming Roses, and I began to look up their names and local habitations. In the course of an afternoon I had compiled from modern catalogues and books in my possession a list of no fewer than 370 names of varieties of the China Rose, all fully described, and many with the raiser's name and some with the date of their introduction. This list excluded all hybrids (such as the so-called hybrid Chinas) and all varieties which appeared to approach the accepted character of the Tea scented and Noisette classes. These China Roses, according to their descriptions, included almost every shade of colour from white to black, for there was the Black Bengal Rose described as dark crimson, shaded with purple and black; while the terms blush, lilac, rose, pink, red, crimson, purple, striped, mottled, carmine, and dark velvety frequently occurred. It is not much wonder, therefore, that in old gardens where things have escaped the destruction decreed by the vagaries of fashion that many varieties distinct from the typical China Rose should be discoverable, although their names and history be lost or forgotten; for in all probability the 370 names above referred to do not represent nearly all the varieties that have been raised and distributed. The earliest dates of distribution that I have noticed are those of some of M. Joly's seedlings in 1835 and 1836. Now the China Rose was known in Europe in 1789, and there was plenty of time in the intervening forty-five years for the raising and distribution of any number of seedlings whose names and origin may have been outlived in some old-world garden in France or Great Britain by the plants themselves. The raiser, whose name occurs most frequently in connection with these Roses, was M. Laffay, distinguished as the raiser of the once celebrated *La Reine*, and who distributed seedlings, at any rate, from 1839 to 1863 (probably for a longer period), and next comes M. Vibert, whose dates range from 1828 to 1852 at least. We may therefore fairly conclude that numerous varieties raised and distributed at the beginning of the century, although their names and descriptions be not recorded, may yet themselves have survived to render even more impossible the well-nigh hopeless task of identifying growing plants by means of existing descriptions. Perhaps the best chance of finding out about these Roses would be in some of the older nurseries in France, where the names may possibly still linger round some veteran plants, which in that case would afford some basis of comparison. But, at any rate, it would be highly interesting to compare and learn as far as possible about existing varieties that have proved, by their survival, their hardiness and value as permanent garden plants, whether their original names can be fitted to them or not, for, after all, the plant's the thing, and even a China Rose will not be likely

to lose in attractiveness by the substitution for its own of any other name.

NEW TEA ROSES.—I am glad to have the good impression made by my few plants of some of the Tea-scented varieties of the year confirmed by the record of their trial on the larger scale described by Mr. E. G. Hill. Judging from the plants I have as yet flowered, I should quite concur in placing *Comtesse de Frignense* (Guillot) at the head of the list of the French novelties, and the attractive clear yellow colour of its deep-pointed flowers is certain to make it popular. My only doubt about it is whether it is quite full enough; but it is said to be so, and it comes from a raiser who has sent us some of our best Teas. *Claudius Levet* (C. Levet) is a promising variety with large, full flowers, too substantial for use in the bud state for bouquet work, but likely to be an addition to the list of exhibition Teas. *Marquise de Vivens* (Dubrenil) has been very highly spoken of in France, where two medals have been awarded it as a good novelty, but my flowers struck me as more in the way of *Madame de Watteville* than of *Madame Cusin*, the petals shading from a yellowish white base to a rosy margin. These shaded Teas, however, vary so much in tint even on the same plant, that it is very difficult to speak with certainty of their prevailing colour until after several seasons' experience of any given variety. Take, for instance, *Madame Lambard* (of which *Souvenir de Victor Hugo* Bonnaire) put me somewhat in mind both in its varying shades and in its freedom of flowering, a variety from a few plants of which one may often gather half-a-dozen blooms so different in colour that to describe each at all exactly would involve half-a-dozen separate descriptions. Two other French varieties, which Mr. Hill does not mention, struck me as likely to be desirable, namely, *Comtesse Horace de Choiseul* (Lévêque), a rose-coloured Tea of great substance with a pointed centre, the flowers being produced on stiff, erect stems, and therefore showing themselves to advantage on the plant; and *Marguerite Ramet* (C. Levet), a pretty light Tea with rosy margin and a similar upright, and therefore decorative habit of growth. I was surprised that in a selection of the new Teas of 1886, *The Bride* (May) was not included, but, perhaps, as it originated in America, it is reckoned in that country as an 1885 Rose. It reached us, however, at the same time as the above mentioned French novelties, and bids fair, in colloquial phrase, to take the cake. It originated in the garden of Mr. J. May, of Summit, New Jersey, as a sport from *Catherine Mermet*, and, unlike most Rose sports, it appears to produce flowers as fine in form and substance as its parent. The only difference so far discernible between plants of the two varieties lies in the colour of the flowers, which, in the case of *The Bride*, instead of being flesh-pink, like the type, are white with just a tint of lemon colour at the base of the petals. Assuming that there will be some Roses left after the Arctic winter that we are now experiencing 25° of frost 4 feet from the ground, Jan. 1 and 2), *The Bride* may confidently be expected to make a good appearance at some of the Rose shows of 1887.

NEW ROSE COMTE DE PARIS.—It is a pity that Rose raisers cannot come to some uniform arrangement by which the inconvenience arising from the giving of the same name to different varieties might be avoided. The seedling now being distributed by Lévêque under the above name is the fifth *Comte de Paris* that has been sent out, two Hybrid Perpetuals having been put into commerce respectively by Laffay and E. Verdier, and two Teas by Hardy and Madame Pean; while the chances of confusion are in no way

lessened by the existence also of two Hybrid Perpetuals under the name of *Comtesse de Paris* (E. Verdier, 1864, and Lévêque, 1883). In the same way there are already three varieties involving the name of Victor Hugo, and the Rothschild Roses have lately been increased to five in number (all Hybrid Perpetuals) by the addition of two varieties with the barely distinguishable appellations of *Baron* and *Baronne Nathaniel de Rothschild*. This *Comte de Paris V.*, so eulogised in the *Tuscany Horticultural Society's Journal*, is rather more moderately referred to in the general list of Continental novelties as follows: Flowers red, shaded crimson-purple; of good size and form; robust only.

ROSES FOR A SMALL GARDEN.—In his selection under this heading, would not "J. K." consent to the substitution of *Reine Marie Henriette* for *Cheshunt Hybrid*, of *William Allen Richardson* for *Belle Lyonnaise*, and of *Marie Van Houtte* for *Devoniensis*? I have found *Reine Marie Henriette* quite as vigorous and free-flowering, and not so liable to mildew, as *Cheshunt Hybrid*; while the flowers of the former are really pure in colour. I may be thought fastidious in the matter of dingy colour in flowers, but I believe quiet, soft colours may be obtained without muddy tints, and I should as soon think of trying to cheer up a sick schoolboy with extracts from a Latin grammar as of recommending anyone who had only space for a dozen Rose trees to include *Cheshunt Hybrid* in the number. *Belle Lyonnaise*, again, is woefully tender, and, with identical protection, was last winter more injured than almost any other Tea, consequently not flowering until September; whereas *William Allen Richardson* is essentially a Rose to run to (which is what is wanted in a small garden), having the good qualities of colour, abundance, vigour, hardiness, foliage almost evergreen, and flowering early and late. *Devoniensis*, as "J. K." says, is not very free, but this objection cannot be urged against *Marie Van Houtte*, which is as free and (may it be said?) more beautiful than old *Gloire d'Orléans*. Perhaps "J. K." writes from a happy land where *Cheshunt Hybrid* has no lilac shade, where no frosts interfere with the long growths of *Belle Lyonnaise*, and where *Devoniensis* is not shy; but in a climate so conducive to luxuriant growth it might be desirable to grow *Jules Margottin* as a dwarf plant, and consign *Cheshunt Hybrid* (or its substitute) to the walls, lest in a bed with three *Gloire de Dijon* such moderate growers as *Captain Christy* and *Victor Verdier* should be altogether overwhelmed. T. W. G.

THE GREAT SNOWSTORM.

THE snowstorm of the 26th played sad havoc in our pleasure-grounds; in fact, so far as ornamental trees are concerned, I think the consequences are even more disastrous than those that followed the memorable snowstorm of January 18, 1881, or the great gale of October, 1880. Amongst evergreen trees the Cedar of Lebanon has, as usual, suffered most, and the fact should always be borne in mind when it is about to be selected for planting that its value as an ornamental tree is considerably lessened by its extreme susceptibility to injuries of this kind; indeed, in many cases it hardly attains its full beauty before heavy storms tear away its branches and cause unsightly gaps. The *Deodar* and *Atlantic Cedars* are comparatively uninjured. Many of the different varieties of *Cypress* and *Juniper* have suffered severely, and so also have the heavy *Pines*, such as *Cembra*, *Strobus* and *Lambertiana*. *Cembra* especially seems almost as susceptible to injury from storms as the *Lebanon Cedar*. I am glad to say that very few of the *Abies* have suffered; stiff-foliaged varieties, such as *cephalonica* and *brachyphylla*, and feathery-leaved kinds, such as *Menziesii* and *Molina*,

have all escaped. Evergreen Oaks and Hollies are badly broken and in many cases perfect wrecks. Amongst deciduous trees, Beeches have been most severely injured, and after them Oaks with horizontal growths. I attribute the slaughter amongst the Beeches to the fact that with us they are short lived and have a lot of half-rotten wood in them. Rare deciduous trees have fortunately escaped. The fact of so much wood lying about reminds me of the request made the other day in THE GARDEN as to the burning qualities of different kinds of wood. The majority of our houses here are flue-heated and worked principally with wood. Of the commoner kinds that we have tried, Oak, Apple, Elm, and Beech are about the best amongst deciduous trees, and Cedar is perhaps the best amongst Evergreens; all kinds of Fir are of very little use; they have no lasting qualities, and consequently they want far too much attention. The very worst of all firewood is Chestnut; this is practically useless, unless sparingly used with other woods, fire seems to have no power over it—at least in a green or half green state. The commoner shrubs when they have attained considerable size make useful fuel; big old Rhododendrons are also useful for lighter firewood, from the rapidity with which they dry after being cut.—E. B.

— The great snowstorm of December 26 and 27 and afterwards has revealed such numbers of wrecks in gardens, pleasure grounds, fields, and forests as have seldom or never resulted from a single snowstorm before; for it was the snow, not the wind, that produced the arboreal wreck and ruin everywhere seen or heard of. The wind, which blew half a gale on the early morning of the 27th ult., saved probably thousands of trees and shrubs from utter and complete destruction: it did double service by shaking off the crushing weight of dripping snow where that was possible, and also by preventing the still fast-falling snow from accumulating to greater thickness on the branches. Hence it may be safely assumed that, but for the wind, the wreck and ruin, heavy as it is, would have been far more disastrous. As it is, it is bad enough, and has made terrible havoc among the finest Cedars of Lebanon and many other monarchs of the garden, park, and wood throughout the country. Probably Cedars of Lebanon have suffered most; their far-reaching, dense boughs seem made on purpose to collect and carry as much snow as possible. The size and rigidity of the limbs of old Cedars also force them to hold fast all soft snow that falls upon them. And thus it happened that as the wet snow poured down with a volume and rapidity probably unprecedented, the boughs bent lower and lower until the burden became insupportable, and down they came. The position of the boughs, their line of divergence from the trunk, and their stubborn strength and unyielding rigidity all but augmented the ratio of destruction in the case of the Cedars of Lebanon. The trees and shrubs, in fact, that refused to bend had perforce to break. Next to the exceptional wreckage of Cedars, the most notable results of the snow were the number of branches torn off deciduous trees, such as Walnuts, Spanish Chestnuts, Oaks, Ashes, Elms, and even deciduous shrubs. Since the snowstorm we have also had a double dose of 20° of frost two nights in succession, and a large proportion of the snow is still with us, though it has also thawed for a few hours several times. As I write on the 3rd, the weather does not seem to have decided whether to rain or snow. It is to be hoped that we may not have a second addition of such a destructive snowstorm. A thaw would be most welcome to allow of the removal of broken limbs, the dressing of wounds, &c., as few things are more against the quick healing of wounds in trees than the exposure of their raw edges in a splintered state to 20° of frost. Can any reader of THE GARDEN recommend a safer waterproof and healing emollient for wounds than a mixture of grease and tar?—D. T. F., *Bury St. Edmunds*.

— Our woodland here (N. Hants) is simply ruined. A foot and more of wet snow came after heavy rain on the 26th and froze to the trees. At

midnight a wind rose which snapped the limbs and stems of the ice-laden trees like so many Carrots. Of deciduous trees, Oaks have fared the worst. But the saddest sight is to see the entire tops of fine specimen Conifers lying on the snow. A clean sweep has been made of Scotch Firs. The beauty of Chute Lodge Park, a very tastefully planted estate just over the border in Wiltshire, is destroyed for a generation or more to come; scarcely a Conifer has escaped. Biddesden Park, another finely timbered place, is similarly dismantled of its trees, its owner's great pride. The havoc all round here must be seen to be believed.—G. H. ENGLEHEART, *Appleshaw, Andover*.

— At this place we have lost dozens of fine trees. *Thuja borealis*, *Cryptomeria japonica*, Cedars, Yews, and Junipers are the evergreen kinds that are most injured. Tall Rhododendrons are broken right down, but this is a small matter, as they will quickly recover. Amongst deciduous trees, those most injured are Elms, Horse Chestnuts, Oaks, and Beech. Immense boughs are broken down in all directions, many of the finest trees being so disfigured that they will have to be cut down. Fruit trees have not escaped. Standard Plums and Pears, on which the boughs were long, are broken down close to the main stem, and Gooseberry and Currant bushes are literally flattened to the ground. The only word that can describe the damage is "terrible." Not only has there never been such a snowstorm known in these parts in my lifetime, but a gentleman, who is over ninety years of age and who has always resided in this country, assures me that never before did he remember so much snow fall in so short a time. May it never be experienced again, though whilst I write (January 4) signs are not wanting that a second edition is in store for us.—W. WILDSMITH, *Heckfield, Hants*.

— The storm of December 26 will never be forgotten by lovers of trees and shrubs. Fine old trees of Oak, Beech, Elm, Scotch Fir, and Chestnuts have been blown down and otherwise damaged; while in the gardens here very fine Cedars have lost large branches. Various other Conifers have also had their branches torn off from top to bottom. Catalpas, Evergreen Oaks, Cork trees, Judas trees, Acacias, and many others, including Magnolias, Laburnums, Tulip trees, and Aspens, have likewise all sustained damage. Rhododendrons, Hollies, Portugal and common Laurels are uprooted and broken, in some instances to pieces. In fact, from nine o'clock in the evening till early morning there was a continued crashing and smashing of timber. Trees that have stood for over a century are down, and, in the case of many rare and choice trees, fifty years' growth will not replace the damage. Although the snow was of such a wet and heavy character, yet in eight hours it had fallen to a depth of 15 inches, and, with a strong north-east gale blowing, it in places was much drifted.—W. C. LEACH, *Albury Park, Surrey*.

Wet and dry bulb thermometers.—I was much pleased and instructed by the short article and table in a late issue of THE GARDEN on the wet and dry bulb thermometer as a guide and indicator of what amount of frost might be looked for on any night. I wish "F. W. B." would go further, as I am sure the use of the wet and dry thermometer for gardeners and amateurs does not end there. As a cultivator with but little experience, and, perhaps, less of science, I am often puzzled by instructions in gardening papers, such as a nice growing temperature, a moist, healthy temperature, &c. Now I think if this combined instrument were more used in our greenhouses and quoted by writers on growing different plants we would be better able to understand what was meant. The dry bulb gives us, say, the temperature of any greenhouse, intermediate or stove house, and the wet bulb by a formula will give us the amount of moisture in the house at this given time. I am sure "F. W. B." can supply us with a table showing from the reading of this instrument what amount of moisture there is in the air of any house at any time by reference to the wet and dry bulbs. This would be very useful. I do hope to hear more of this subject; I am gazing after knowledge in this direction myself, having a maximum and also a wet and dry bulb thermometer I use in a small house at present, but I lack the knowledge as to what amount of moisture should be allowed in the air for various plants in varying temperatures.—ENGINEER.

GARDEN FLORA.

PLATE 578.

THE CALIFORNIAN FUCHSIA.

(Zauschneria californica, with plate.*)

THE first notice which we have of this truly handsome plant, the only representative of the genus, is in the "Annals of Botany" (vol. i., p. 543), where it is alluded to as follows:—

This beautiful new genus, a native of California, has the flowers of a Fuchsia and a fruit exactly like that of an *Epilobium*. The genus was first named and described by Presl, in his "Reliquie Haenkeana" (p. 52), and was first introduced by the Royal Horticultural Society in May, 1847, through Hartweg, who collected the seeds in fields about Santa Cruz; and we have also a record of its having been cultivated at Kew in 1852.

Among the many striking hardy plants in cultivation at the present time, this so-called Fuchsia takes a high place. It has the graceful drooping habit which is so much admired in the Fuchsia, together with the advantage of being hardy in most parts of the country. When left to itself, it is inclined to become leggy, but a little management bestowed upon it in the early part of the season soon remedies that, and as flowering time approaches it will be found to have become compact in habit, and to be furnished with a correspondingly large number of its handsome vermilion-coloured flowers. The best plan, we find, when a group of it is contemplated is to plant pretty closely together, and pinch back the young growths as they make their appearance. A compact bed is thus formed, with innumerable shoots, each bearing flowers in such abundance, as to present collectively a mass of vivid colour. Hardy-plant growers seem to fight shy of this plant, but it will be found on trial to withstand even our severest winters in most places. In particularly heavy soils or in low-lying districts, a slight covering in winter may be given it, but that is all that is needful. It lasts long in flower, and as it does not begin to bloom until towards the end of summer, as sunny a spot as possible should be chosen for it, as in shady positions autumn frosts not unfrequently destroy the flowers. This induced us to try it as a pot plant in the greenhouse, where its bright flowers are very attractive, especially during the late autumn months, when most plants were long past their best. When protected in this way from frosts, it continues to flower long after plants of it have been blackened in the open air. It seems to vary much in habit, and also in the degree of hairiness, size, and shape of the leaves, both in a wild state and under cultivation. This variability has given rise to the variety *latifolia*, figured in the *Botanical Magazine* (tab. 4493). In some the leaves are slightly hairy, in others they are villose, and even tomentose, and under cultivation perfectly glabrous and shining. We lately saw a curious dwarf form which differs widely from the type, but it has smaller and less showy flowers.

This *Zauschneria* is easily propagated. It strikes freely from cuttings taken off early in autumn and wintered in a cool frame, from which they may be planted out where required as early as April. It may also be increased by division of the old plants or by seeds. The latter, if sown early in a little heat and grown on, will flower the same year, although not so freely as older plants. Young seedling plants are, however, easier to establish on old walls or perpendicular rockwork, where they assume a hanging or drooping habit, and add considerably to the general

* Drawn for THE GARDEN in Dr. Lowe's garden, Woolcote, Wimbledon.



Eauschnefia californica

effect. When once they get a firm hold they are not long in filling the space allotted to them, producing flowers in the greatest profusion. It grows, as a rule, from about 9 inches to 2 feet in height. It is generally much branched and erect, with drooping points or altogether decumbent leaves, the lower ones opposite those above alternate on the stem. The flowers, as may be seen, are large vivid scarlet or vermilion, and resemble those of a Fuchsia with exerted style and stamens. The roots in light dry soils have a tendency to creep much in the way of those of the French Willow herb. The variety *latifolia* has very broad leaves, and seems to run into the variety called *mexicana*, which is intermediate between the two; it is even possible, where large quantities are grown, to have a complete gradation from the one to the other. *Z. californica*



Zauschneria californica, showing habit of growth.

nicia var. *microphylla*, a plant named by Gray, is not in cultivation. It has very small, narrow, tomentose leaves, clustered at intervals on the stems. The flowers are also smaller and less vivid in colour than those of *Z. californica*. It is found in dry localities from Napa and Plumas counties to S. California. The type is common both in southern and lower California.

D. K.

FRUITS UNDER GLASS.

LATE VINERIES.

If late Grapes are still hanging on the Vines and bottling is intended, no time should be lost in getting them cut and transferred to water. The management of Grape stores being now so well understood by all readers of the horticultural journals, a repetition of details is quite unnecessary, and those who have not made themselves thoroughly master of the subject have only to refer back to past volumes of THE GARDEN. One thing, however, I must repeat, and that is the caution against the use of fire heat, so long as damp does not get into the bunches and the room can be kept at a temperature of 40°. When all the Grapes have been cut the house should be thrown open to atmospheric influences, and the internal borders, having been cleared of all loose covering, may be gradually brought back to a growing condition by repeated applications of water from the cisterns. External coverings, in the form of glass lights, corrugated sheets, or shutters, must also be removed, and, provided the borders are well clothed with Fern or litter, they may be left open to the influence of the elements. The next operation is pruning, cleansing, and tying-in ready for a fresh start, but with the well-known fact that late hanging is tantamount to early forcing before us, a long rest must be secured by keeping the house dry and as cool as possible until the buds show signs of swelling. Many growers are obliged to turn their late vineries into plant houses as soon as the Grapes are cut, but unless the occupants are very hardy and capable of withstanding a degree or two of dry frost, the practice, if possible, should be

avoided. January pruning is not often followed by bleeding, but, bearing in mind that root-watering closely precedes or follows pruning, the application of styptic should not be neglected. A shilling bottle of Thompson's styptic will dress all the wounds in several houses, or, lacking this, painter's knotting will answer equally well. The old-fashioned method of scraping Vines having been given up by all good Grape growers, a rub with the hand to disturb the rough bark is all that is needed, even where bug is present. Washing with strong soap water follows, and, finally, by way of precaution, a solution of Gishurst compound, 8 ozs. to the gallon of water, or 4 ozs. of soft soap and half a pound of sulphur, thoroughly mixed with the same quantity of water, may be well worked into the old spurs with a half-worn paint-brush. If bug is present, gas tar may take the place of Gishurst compound; but it is a powerful insecticide, and must be used with caution always when the Vines are at rest. Although I have often given instructions privately and in print for its preparation and application, a repetition may meet the eye of some despairing person who has often tried remedies and failed. To 1 gallon of dry, finely sifted loam, placed in an iron pot over a slow fire, add half a pint of tar; mix the two thoroughly, then pour in as much boiling water as will reduce the mass to the consistency of thick cream. Having washed the Vines, cleansed and painted the house and dressed the walls with quicklime and sulphur or paraffin, clear away all loose soil and mulching, commence at the base of each rod, and thoroughly encase it with the paint. It is not the quantity so much as the even distribution of the paint and the filling of all old gnarles and holes that kills the insects. Some use it much stronger, but I can vouch for these quantities answering the purpose; but it must be borne in mind that solitary insects may escape the fumes, or they may be biding their time in the borders. These for a time will do no harm, but with returning spring they will put forth, and must be taken one by one as they appear. Although etching and killing is allowed to be the only remedy, the most expeditious mode of annihilating the stragglers will be found in the use of methylated spirits applied with a camel's-hair brush. Armed with this in a wide-mouthed bottle, which can be kept tightly corked when not in use, the attendant should examine every spur for some weeks after the Vines break, when a touch with the brush will melt the enemies in sight in a moment, and a second dip applied to the hole or crevice from which they have emerged will prevent others left behind from following. Many people having painted their Vines with tar rest satisfied, but really the work of extermination only commences where they cease from troubling about the most persistent insect—Phylloxera excepted—that ever entered our vineries.

Pot Vines.—Where these are grown from the eye and fruited upon the premises, a number of operations will now require attention. One of the best trade growers of pot Vines with whom I am acquainted always puts in all his eyes before Christmas, and the fruiting yearlings he turns out are models of perfection. Others put them in as late as February, cut back, and grow them on the second year for fruiting. Vines of this stamp should now be cut down to a good bud close to the soil, and having been touched with styptic, be allowed to stand where they will be safe from frost and wet until the end of the month, when they may be started. A bed of fermenting leaves placed in an early vinery or pit into which the pots can be lightly plunged forms the best of starting mediums, for much as the Vine enjoys copious supplies of water when in full growth, a sudden condition of the soil is often fatal to the best roots when it is slowly recovering from decapitation. The warmth and moisture arising from the leaves supplemented by daily syringing will be found quite sufficient to start the buds, and when 2 inches in length they should be shaken out and repotted. Vines intended for planting out later on may be shortened back to any convenient height to get the base buds forward, but unless they are likely to be wanted before March,

they should be kept semi-dry and as cool as possible.

Fruiting Vines.—With a steady bottom-heat of 70° playing about the crotch roots these will now push on apace, and pay for the patience exercised through the early stages of their growth. Well ripened canes generally break double, and require disbudding as soon as the strongest of the two shoots takes the lead; being close-jointed, the breaks from every alternate eye also require removal, but instead of rubbing off close home these shoots may be closely pinched to two or three leaves, which will assist the roots and aid in the development of the canes. When the bunches show, all but the strongest and best must be removed from every shoot, and the latter stopped at the second or third leaf in advance. All laterals and tendrils, too, must be pinched, and when strong enough the fruit-bearing shoots must be gently drawn to the wires. This stage reached, Hamburgs, Fosters, and Bucklands may range about 60° through the night, 65° when the weather is mild, and 70° by day. The syringe may be freely used about the walls and other surfaces every morning, and overhead about 1 p.m., when the temperature has reached the maximum, up to the time of flowering, when a higher and more buoyant atmosphere will facilitate the setting of the fruit. Being free setters, the Vines need not be taxed with a superfluous number of bunches, eight being quite sufficient to choose from; these it may be well to fertilise with a camel's-hair brush every day, and when set they may be reduced to five or six, according to the strength and vigour of the Vines. If the pots are standing on pedestals, frequent renovation of the bed will stimulate the roots and greatly assist the fruit and foliage, as direct syringing will have been discontinued. The roots, too, will derive benefit from liberal supplies of warm diluted liquid whenever water is needed, and good top-dressings to be washed in and replaced from time to time must not be overlooked. As days begin to lengthen and the sun gains power, a little more air should be admitted every morning and shut off about mid-day to encourage growth, and, if practicable, a chink at the apex through the night, if only to let out vitiated air, will keep the Vines robust and healthy until the most trying part of the season has been got over.

Early vineries.—The air temperature in these should range from 50° to 56° through the night, and 60° to 65° by day, until all the buds are fairly on the move, and when this stage is reached an extra 5 will be necessary. Much, however, depends upon the weather and the treatment to which the Vines have been subjected in previous years. At the present moment the glass registers 17° of frost, and no one would think of maintaining a hard and fast line, especially when clear frosty nights are followed by bright sunny days, and an extra 10° can be secured by closing early. The practice, then, in favourable forcing weather should be the loss of 5° by night, and the compensating gain of 10° through the day. Old Vines which invariably show an abundance of bunches may be disbudded when the breaks are an inch in length. Young ones, on the other hand, should be allowed to declare themselves before the shoots are reduced to the requisite number. Tying down at this early season requires great care; little at a time and often is the proper method. In fact, provided the shoots are kept clear of the glass, and lightly looped ties draw them in the way they are to go, the most obstinate shoots will soon settle down to the wires. Stopping must be regulated by the space at command; in all cases, with the exception of leaders, the shoots should be stopped at the second or third leaf beyond the bunch; then, provided the openings admit, semi-extension may be practised on the first set of point laterals. Some growers pinch and repinch at the first leaf, but crowding being avoided, the young growths should be allowed to extend until every part of the trellis is covered with leaves. If the inside borders have not been watered since the Vines were

started, a good supply at the mean temperature of the house may now be necessary, and renovation of the fermenting material will certainly be a great help in keeping the atmosphere moist, and counteracting the drying influence of fire-heat. External borders, hitherto covered with Fern or litter, with or without shutters for throwing off snow, may now be treated to a good layer of dry warm leaves as a stimulant to the surface roots. Many object to external heat, and so do I if it is produced by rank manure, but dry Oak leaves are mild and constant, and assist the roots without poisoning the compost.

The succession, also the early Muscat houses may now be closed, or, where closed before Christmas, they will be in a fit state for gentle fire-heat through the day. Water at a temperature of 90° and a supply of fermenting leaves having been introduced, the Vines will soon break, when detailed management recommended for the early house may be repeated. As days increase in length and forcing is no longer quite dead against Nature, the heats may often be increased, but always on the give-and-take principle, the first applying to cold nights, the second to bright gleamy days. If Hamburgs, the best of all male parents, are not likely to be in flower when early Muscats and kindred varieties require fertilising, a good quantity of pollen should be saved from the earliest house for this purpose. Forewarned, forearmed, as it is well known that these shy sorts require assistance, but it is not generally known that pollen shaken into a box and kept quite dry will retain its power for some time after it is gathered.

PINES.

The earliest set of Queens expected to throw up their fruit next month will now be on the move, and must be very carefully supplied with water. If well plunged in moist leaves and the house is kept in a growing state, their requirements will neither be heavy nor frequent, but when to the experienced eye water is needed, enough to reach the crock roots must be given. Warm, diluted liquid may be used for this purpose, also for filling the evaporating pans and moistening the surface of the bed. The roots having been rested in a bottom-heat of 70°, all should be alive and ready to respond to the call that will speedily be made upon them, but, in order to assist the fruit to the utmost, a few handfuls of rich, turf compost or turf, pure and simple, may be packed tightly about the collars of the plants. It may be advantageous to remove a leaf or two to set the stem roots at liberty, always provided this can be done without disturbing the plants; then, as the work is proceeded with, the formation of a very compact cone round each stem will check the downward passage of water from the axils of the leaves and throw it outwards towards the rims of the pots. A watchful eye, it is hardly necessary to say, must still be kept on the bottom heat thermometer or watch-sticks, and if it is found that any part of the bed has heated dry or is getting too cold, a moderate supply of hot water poured in between the pots will most likely revive the fermentation and render renovation unnecessary. Many Pine growers start their earliest plants in a very strong bottom-heat, ranging from 90° to 100°, but once the fruit is on the move, 85° to 90° is quite high enough to insure rapid growth equal to the amount of light at command and favourable to the formation of perfect crowns. Aided by an abundance of hot-water pipes—the best safeguard against over-heating—and the assistance of warmth from the bed, there should be no danger of reducing the temperature of the house to any appreciable degree by the daily opening of the ventilators, if only for an hour or two to change the atmosphere. A chink at night also near the front pipes will tend to the vigour of the plants and prevent the crowns from becoming drawn. Next to efficient fire-heat, a covering of some kind, if only along the front or windward side, will be found a great help in cold weather, especially when nights are bright and the escape of moisture is very rapid.

Successional fruiters.—If these, by the pointed look of their centre leaves and the thickening of the stems, show signs of following closely on the heels of their predecessors, one of two courses may be adopted. A portion of the most promising may be drawn and started at once, or the whole house may be brought on steadily by a gradual increase of top and bottom heat and atmospheric moisture. As few people now grow Pines for market, small pits or houses divided into compartments answer best for giving a continuous supply of fruit throughout the year, as not only can the plants be brought on in batches, but, having a dry compartment, ripe and ripening fruit can be kept for a considerable time in a sound condition.

The general stock, including Rothschilds, Cayennes, and perhaps a few Queens, which has been kept moister and cooler than early starters, should not be hurried, as the finest fruit is always obtained from plants which grow on until daylight more than counterbalances darkness. Young stock must be kept quiet for the present, but the time is at hand for re-potting and a general turn over, and as weeks soon steal away, crocks, pots, and compost should be prepared for use when wanted. If plenty of good loam has been wintered under cover, this will only require breaking up and correcting, but turf from the open-air stack should be broken up by hand and placed in a warm, airy house or potting shed some weeks before it is wanted. W. COLEMAN.

Eastnor Castle, Ledbury.

KITCHEN GARDEN.

FORCING ASPARAGUS IN BEDS.

THE practice of forcing Asparagus in permanent beds has never been adopted so much as the merits of the system deserve. It is certainly a more economical plan than that of lifting the roots and forcing them in other structures, as such roots, after being forced, are of no further use, while a well-managed set of permanent beds may be made to last for several years. Handy portable, span-roofed frames are now manufactured that suit Asparagus-forcing perfectly, and the produce from permanent beds is always larger and better than that from plants lifted and forced in the ordinary way. I have had Asparagus produced by this system as large in the beginning of March as I ever cut from beds in the open. We used to commence cutting about the middle of December, and continued to do so until Asparagus came in in the open air. Unless, however, anyone has plenty of frames as well as space, I do not recommend such early forcing, because unless the frames can remain on the beds until late in spring the plants suffer so much from alternate rain and frost, that it takes them a year longer to recover themselves. In the majority of cases it is best to commence forcing early in January, and then the first cutting may, according to the weather, be expected to take place in five or six weeks. I am assuming that the heat supplied will be obtained wholly from fermenting materials. I have had no experience with hot-water pipes in connection with this work. Doubtless, a single 1-inch hot-water pipe run along the centre of the bed 18 inches below the surface would be of great advantage in assisting to start growth, but this is not absolutely necessary. I may say, indeed, that I am so well satisfied with the results which I have obtained from the use of fermenting materials in ordinary trenches, in conjunction with portable span roofed frames, that I do not see the necessity for a greater outlay.

In order to obtain a satisfactory supply of heads, it is necessary that the beds be pretty closely packed with plants, and that they be thoroughly well established in the soil before they are forced. If I could choose the size of the frames, I would not have them wider than 3 feet 6 inches, i. e., the size of the bed. The wider the beds the greater the difficulty there is in warming the soil, and unless

this can be done the heads come up round the sides first and in the middle last. Beds the size I have mentioned will get warmed through if the trenches are well filled with good fermenting materials. The sides of the frame should be 1 foot high, and up to the angle of the span they may be from 2 feet to 2 feet 6 inches. If new beds are to be laid out for this purpose, I should recommend them to be formed as near as may be convenient to the frame ground, or some other position in which a wagon or cart could be made use of for bringing in the heating materials, not a small quantity of which is required when forcing commences early. As already indicated, the width of the beds must be guided by that of the frame. The bed should not be more than 4 inches wider than the frame, and the width and depth of the trenches between the beds should be regulated by the width of the beds. A bed 4 feet wide requires a trench on each side 3 feet wide and 2½ feet deep. Narrower beds may have proportionately smaller trenches, but in every case sufficient space must be provided to hold a good quantity of fermenting materials. In forming the beds, I need hardly say that the soil must be made sufficiently rich to promote a vigorous growth. Early in April is the best time to plant, just as the young heads are rising through the ground, and three-year old plants are best, as they soon get established. They should be planted 1 foot apart each way; and in order to give them time to get strong, they ought to be allowed to make two years' growth before they are forced. While getting established, no heads should be cut from them. A sufficient number of beds should be provided, to allow one lot to be resting while the other is being forced. To enable anyone to judge how many beds are required to keep up a constant supply, I may mention that each bed remains in a bearing state for about three weeks. If cut from longer than that, the plants will be weakened. About 60 feet run of beds will be required to furnish a supply for a moderate sized family.

The preparation of the fermenting material should be the same as if it was required for making an ordinary hotbed; the more preparation it receives the more regular and lasting will be the heat. I prefer about half stable manure and half leaves. In filling the trenches the material may be lightly trodden down, and it must be made as high as the top of the sides of the frame; unless there is a good body of material the heat will not be sufficient to start the plants into growth. It may also want adding to, as it sinks down. I cover up the frames with mats as soon as put on the beds, and keep them in darkness until heads begin to come through the soil; at other times the frames are covered at night. The frames do not require any air until growth makes its appearance; then they require a fairly good supply and all the light possible, so as to get the Asparagus of a good green colour. If possible the frames should be left on the beds until late in spring, and the manure must be left in the trenches until the time comes round to force the same beds again, for as soon as the plants begin to grow they send out their roots into the manure, and, of course, derive a good deal of nourishment by doing so. J. C. C.

Failure in winter Spinach.—Autumn sown crops of winter Spinach have become quite a failure here this winter, and all my neighbours' crops have also failed in the same manner. I have had an opportunity of seeing several large breadths growing in gardens in this locality, and in each case the crops are an entire failure—not a single plant is likely to recover. One grower who has had over thirty years' practical experience, and who is one of our most successful cultivators of vegetables, considers his failure due to dressing the ground heavily with rotten pigsty manure; but his crop seems about in the same condition as that of his neighbours'. This is the first time in which he has entirely failed with Spinach during his experience. Another grower attributes his

failure to dressing the ground with fresh manure from the cowsheds; whilst others, who dressed the ground with ordinary farmyard manure, have succeeded. One large grower always sows his Spinach upon ground which had been used for early Potatoes. In this case, though the ground was manured in spring, every plant has decayed, and that after attaining a size when plenty of leaves could be picked for use. During my experience in growing winter Spinach in many different parts of the country, I have never seen it fail as it has done this year; frequently a few plants fail to grow annually, but not the entire crop. I sowed my earliest crop the second week in August, choosing for it an open quarter in the garden, which had previously been cropped with early Potatoes and Peas, the ground having been manured in spring. The young plants came up strongly, and grew satisfactorily for some time, but after they were thinned in the rows to 6 inches apart, and the leaves ready to pick, they commenced to assume a yellow colour, and ultimately failed. I attributed the failure to a loss of root action, but upon pulling up several of the plants, the foliage of which seemed most decayed, I found the roots to be to all appearance in a healthy state. Upon closer inspection, however, I found at the base of the plants, level with the surface of the soil and round the joints of the lowest leaves, numbers of small white insects, resembling in appearance *Eucharis* mites. About each plant there were dozens of this insect, which had eaten the skin off entirely, leaving only a dry, hard, woody stem. I dressed the plants with slaked lime as soon as I noticed the insects, but without any good results. My second sowing, which was made on September 3, has shared nearly the same fate as the first. Is this disease prevalent this season in other districts, or is it confined to this locality?—WM. CHRISTISON, *Hornwood, Chisholm.*

WINTERING SEED POTATOES.

THERE can be no doubt that even in places where there are ample conveniences for wintering Potatoes in bulk some difficulty is experienced in doing so satisfactorily, and especially so during mild winters, or when they are marked by strong diversities of temperature. Whilst exceeding cold is repugnant, there can be little doubt that a regular, cool temperature through the winter is the best in which to keep Potatoes in a thoroughly quiescent state, and, of course, in the best condition for consumption. The difficulties associated with the storing of Potatoes through the winter begin not so much with early ripening, as with the unnatural ripening induced by either summer drought or the destruction of the leafage and stems by disease. Really well-finished and naturally matured tubers will always keep well, but all those which have come from prematurely checked plants exhibit early impatience to break again, thus showing that there is always instinctive readiness to make second growth or to super-tuberate if later conditions are favourable for such before the crop is got up. For some years it has been a rare circumstance for the plants to hold out naturally to the last, or the tubers to have complete opportunity to fully mature. To that circumstance do we owe some of the complaints now and then heard with regard to want of quality in Potatoes. It is no more possible to have the best quality in two-thirds developed tubers than in fruits which have had but two-thirds growth. That complaint has been more fairly made where, soils being cold and moist, tubers have naturally lacked the maturing influences which heat and drought give.

The inclination to shoot or break resulting from early ripening is a matter of no great difficulty as applied to early sorts. Obviously these are only suited for late summer and autumn use, and only the seed needs wintering. It is impossible to check the natural tendency of the tubers in such a case to push growth quickly, and this fact demonstrates how easy it would be for us to have two outdoor crops of early Potatoes during the year

did we have nine months of real summer instead of but about five. It is a fortunate characteristic of Potato tubers that, whilst it is not possible to repress their innate forces, yet these forces are limited, as is evidenced by the fact that if tubers which have sprouted, say, an inch in length be placed in a dry position and exposed to ample light, the shoots must remain dormant, and, if continued in that position, will so remain for months—in fact, till the tubers die of exhaustion. Thus we have a check upon the earliest of sprouting kinds which enables us to command good, well-sprouted, mature seed at almost any moment. Place these seed-tubers in heat if it be dry and they will still remain quiescent, but bring them in contact with soil or any moist substance, or, indeed, associate them with water, and they make growth immediately. The power of the tuber to produce growth is limited to an inch or so, but when moisture promotes root action, then other forces are brought into play, and growth becomes rapid even in a much cooler temperature. Thus it will be seen that, in the matter of wintering seed Potatoes, we can use them as we like, but only in dry, light positions, from which, of course, frost is excluded.

Whilst late ripening sorts show less inclination to make growth on the part of the seed tubers, they are not less difficult to deal with, on the ground of greater bulk and the necessity for keeping all the tubers fairly well exposed to light and air. It is wise to select the tubers intended for seed, even as soon as lifted, and have them, whilst the weather is open, well exposed to light and air, but not to the weather. The winter's exposure to light thoroughly hardens the skins and matures the tubers, so that with that exposure maintained the sets are in the spring absolutely perfect for planting. Without doubt a Potato store having a north aspect—that is, placed on the north side of a wall—is in an excellent position, because much less subject to atmospheric changes. If the temperature becomes so low that the tubers must be protected by covering with straw or other material, there is the special advantage that the reaction, when a warmer change comes, is slow, and the tendency on the part of the tubers to exhale moisture is very much lessened. With a general even and comparatively low temperature tubers also show very much less desire to sprout when exposed on shelves or stored in tubs, boxes, or pans. Seed Potatoes are, without doubt, best cared for on shelves, straw being placed on the boards to protect them from frost upward as well as downward. Ample facility for turning the tubers is also desirable if stored thickly, and in the case of seed in bulk, it may be sometimes needful to store on shelves some 3 inches or 4 inches deep. In such a case a careful turning should be given once a month, but shoots should not be injured. With respect to eating Potatoes in bulk, without doubt the best receptacles are bins made of stout wooden divisions and fitted with false trellised wooden bottoms, to enable air to pass beneath the bulk of the tubers. Even a couple of inches space is ample. The wood division should have close joints, so that only top covering is needful in case of very severe weather. The front boards should be made to lift out, and thus facility is offered when turning becomes needful.

On wet days a few hours' labour expended in the Potato store is usually well employed, especially if the labour be of a careful sort. Where possible, light should be given through the roof by means of glass tiles, or using stout plate glass; but if the roof is thatched with straw—one of the very best protections from cold as well as heat—then glass can hardly be introduced, unless specially raised frames are provided. A little ventilation is needful, but not much, as the exhalation from Potatoes so stored is very slight. Of course, something depends upon drainage, and if the soil be naturally moist in winter, then efficient drainage should be provided and the floors of the bins should be of concrete. Where a north wall is not available the next best site for a Potato house is beneath trees, which afford protection from frost and from strong sun-heat.

The walls should be 3 feet high from the ground line and 4 feet within, sinking the floor a foot to secure the height; they should be of 9-inch concrete, whilst the roof should be a span one of thatch. Then with a door at either end, ample light and air would be given to the store. A. D.

MUSHROOMS IN WINTER.

THE frosts which we have recently had have reduced the supply of many kinds of open-air vegetables, and those raised indoors are therefore becoming every day more valuable. Amongst these are Mushrooms, which can be used in so many ways, and which give satisfaction both on the breakfast and dinner table. To supply them in quantity should therefore be our aim, and apart from the principal work of making up the beds, there are various attentions that may be given them with good results. It is gratifying to see the young Mushrooms come up in the first flush of their strength, but after the beds have been in bearing for some six weeks they dwindle away, and it may be thought such beds are not worth saving or further attention, but that is a mistake. Good beds may be induced to bear two and sometimes three crops, but by the time the first one is exhausted the manure will generally have become so dry that it is incapable of producing more, and it is by watering the bed thoroughly that another crop is induced to make its appearance. The surface of the bed being generally quite smooth and not in a condition to retain water, it must be watered many times over. The water should be heated to 90°; it should be put over the surface at intervals of ten or fifteen minutes, and it often takes a dozen or more waterings to moisten it through. As soon as this has been effected, the surface should be covered over to the depth of 6 inches or 8 inches with hay, and in a week or so afterwards the young Mushrooms will be observed coming up in crowds.

When beds are formed with rather hot manure, so much evaporation is liable to take place, that by the time the Mushrooms should appear they have failed to come; if no Mushrooms are up in six weeks after spawning, the bed should be thoroughly watered as above indicated, which, as a rule, will have the effect of producing a fine crop. I would never condemn a bed as being a failure until this plan had been tried. A good and abundant supply of Mushrooms may be grown in a temperature as low as 45° or 50°, but it does not answer to have them in this temperature to-day, in 65° or 70° to-morrow, and then back to the cool system the following day. Fluctuating temperatures of this kind make the little Pea-like Mushrooms become brown, and then they cease to swell. The temperature should be studied thus far, that if it is low, let it be low, and if it is high, let it be so; avoid alternations to any extent. Of late we have been trying spawn from several sources, and I am astonished at the result. Good spawn is one of the greatest secrets connected with successful Mushroom culture.

In old houses, woodlice are sure to find their way to the Mushrooms, and as they are very injurious to them, we sprinkle a little salt over the surface of the bed—a good plan. Maggots are more apt to attack them in summer than at this season, but they sometimes destroy them even now, and salt is the best antidote with which I am acquainted. Inexperienced growers might be afraid to put salt near their Mushrooms, as it is no friend of vegetation generally; but my experience leads me to assert that it not only destroys vermin, but also benefits the Mushrooms.

CAMBERIAN.

Good Peas.—How is it that one now never hears of or sees a Pea sent out some years ago, and for a short time pretty frequently met with, under the name of Laxton's Fillbasket? I suppose it must have some fault or faults that would account for its having been discarded, but I must confess I have never been able to discover them. The only disadvantage I can think of is, that this Pea

does not possess the sugary sweetness (when cooked) so much admired by some, but it has a full marrowy flavour that, to my mind, is almost as desirable. In other respects it is a moderate grower, seldom exceeding 3 feet or 4 feet in height, and a very free cropper—at least, that is my experience; but its chief value lies in the remarkable productiveness of the pods when they come to be shelled, every pod that has gained anything like maturity being completely packed with Peas from end to end, so much so, that they are usually not round, but flat-ended sections of a cylinder. This being so, it follows that an equal measure of pods of this variety should produce about twice the quantity of shelled Peas that any other kind would do, and this is just my own experience when comparing it with any other Pea with which I am acquainted. I am fully aware of the grand qualities of Telegraph, Telephone, and other fine Peas of that type; but I am sure that anyone who has charge of a garden will find they might do worse than sow a few rows of Laxton's Fillbasket—that is, supposing that it is still to be had.—B. C. R.

THE BEST POTATOES.

I SHOULD think that there are few at all conversant with Potatoes who would not readily admit that soils have very much indeed to do with table quality and quite as much with crop production. It is very evident that no esculent so thoroughly participates in the chemical components of the soil as Potatoes do, and if certain essential ingredients, potash especially, are absent, the Potatoes will suffer. It is odd, however, that kinds undoubtedly so first-rate in some soils should be bad in others, and *vice versa*, a circumstance which is almost inexplicable, and to be accounted for chiefly, I presume, on the ground that some varieties have better or worse absorbent powers than others in diverse soils. Our West Middlesex soil has an excellent reputation, especially in the London market, and Potatoes from it always obtain relatively the best prices. Thus it is odd to read that Porter's Excelsior, rarely good here, and usually close and heavy-eating, is so good at Cotelstone, and that Covent Garden Perfection, which does so well here, could never be induced to yield more than a very moderate crop. Its brother, Magnum Bonum, always beat it trebly. Here, Woodstock Kidney and Cosmopolitan have always been good, quite up to the best Lapstone form, and rather softer when cooked; whilst at Cotelstone both are pronounced to be inferior. There is no accounting satisfactorily for these eccentricities, for I have had to discard very many varieties that others have esteemed as good when grown in other soils. It is thus very obvious that much injustice may be done not only to a Potato, but also to those peculiarly interested in its reputation, if thoughtlessly it is denounced in one place, while elsewhere it may prove highly meritorious. In giving a selection of best Potatoes, growers whose range of selection is limited naturally write of the few sorts which they grow, pronouncing them the best, whilst there are, perhaps, a score or more of other really first-rate sorts which they have never grown. I have grown literally hundreds during the past twenty years, and have cooked and tasted all from time to time. I could wish now that I had kept memoranda of the cooked quality of each, but I have always been content to judge of the merits of the Potato as served up. Since we got rid of the Americans and many of the older sorts, the average quality of varieties has increased appreciably, and now amongst new seedlings really bad ones are rare. My experience as one of the seedling committee of the International Potato Exhibition, when testing seedlings at Chiswick, satisfied me, as it did the other members of the committee, that there was a decided advance in quality, putting aside cropping, with which feature so many were remarkably endowed. Probably not one half of English gardeners are acquainted with the fine Potatoes which are raised from time to time in this country.

A. D.

FLOWER GARDEN.

LILIES AND THEIR CULTURE.

THAT there are difficulties connected with Lily culture I fancy even the most successful cultivators will allow. How comes it to pass, unless this were the case, that tens of thousands of *Lilium auratum* are annually imported, to bloom for one year and then to die? or why is it that only in favoured localities we are shown good clumps of it that have stood their ground for some years? That they may be seen at Wisley or Duneevan is quite true, but these are favoured spots. This difficulty is evidenced in another way by Mr. Ewbank's complaint a few weeks ago, in THE GARDEN, with regard to *L. neilgherrense*, the finest perhaps of the longiflorum section; and if so experienced a cultivator, in such a locality as the Isle of Wight, finds such difficulty, it stands to reason that it will be still more felt by less experienced growers in less favoured localities. These difficulties are of necessity felt in the rarer kinds, but there is one at least of our commonest Lilies which seems to present a difficulty—the common white Lily. "Do you grow it?" was a question put to me by one of our best cultivators some time ago. "Yes." "And how?" "Well, it grows itself," was all I could reply; and yet numbers of persons have found great difficulty in getting it to succeed satisfactorily.

There are two ways in which Lilies are grown—in pots and in the open air. There is, indeed, a third plan midway between the two, used by my friend Mr. Wolley Dod—planting them out in a pit where they are protected from the effects of the weather, and the flowers retain their purity of colouring. I have seen this tried nowhere else, and obviously it is a plan which few would care to attempt on account of expense. I think most persons would prefer the open air, and where they are successfully done, a border, even though it be of modest dimensions, on which the Lilies peep up from amongst numerous herbaceous plants, is a pleasurable sight. There is a stateliness about them that commands attention; while their graceful curves and clear markings make them especially interesting objects in the flower garden.

There are a few things what make out-of-door culture difficult; in the first place, like as the Rose will not flourish in smoke or the Rhododendron on chalk, so I believe it to be impossible to get the Lily to flourish on clay. I have seen it tried over and over again in the neighbourhood of London, and in every instance it was a sad failure. A friend of mine in the north of London who is very fond of Lilies, and whose garden is situated on the London clay, has tried it over and over again. He has had the beds dug out and filled in with other material; the bulbs have struggled on for a year or so and then succumbed. In the same way they will not endure stagnant water about their roots; this may take place even where the soil is not clayey. Some may, perhaps, imagine that because some are excessively fond of water—for instance, *L. superbum*, which goes by the name of the Swamp Lily—that this can hardly be a difficulty; but let anyone examine any place where our bog plants flourish and he will see that the water is anything but stagnant; indeed, the difficulty of imitating the condition in which they grow constitutes one of the greatest obstacles to their successful cultivation; the water is continually oozing and running away, and constantly in motion from the many little springs in it. Here *Droseras*, *Pinguiculas*, &c., flourish; but when we try to imitate this in our bog gardens the difficulty soon shows itself, so that, although *L. superbum* may grow at the edge of a swamp, it does not

necessarily relish the stagnant water which is sometimes made to do duty for a bog. There is also another slight difficulty connected with them—the tendency that some sorts have to push their shoots underground and come up in quite a different place from that in which they were planted; and so very frequently on going over the borders they suffer from the tender care of those who wish to have their borders tidy. Worms, both earthworms and others, are often a hindrance to their successful growth. I have often found the bulbs pierced right through, and in consequence decay sets in and they perish.

The question of light and shade is one which has excited a good deal of controversy, and each system has had its advocates, who have contended that Lilies must be grown in one or the other. Some sorts, at any rate, seem to me to be indifferent on the subject. The common white Lily is an instance of this. As I drive into our market town there is a row of cottages which I sometimes pass with tiny front gardens, on which in summer the sun beats down from midday until sunset, blistering the paint on the doors, necessitating the closing of outside shutters, and altogether making it evident that it is a sunny spot, yet here I see the white Lily flourishing. Some one has introduced it, and then, as is often the case, has given a bit to his neighbours, and so most of the gardens possess it; but yet in my parish there is a border running up to a cottage facing the north—in shade therefore the greater part of the day—and here are magnificent clumps of it in the greatest luxuriance. It is therefore, I think, idle in the face of facts like these to contend that it—and perhaps many others are the same—requires to be planted in one or the other position.

With regard to soil, it is, I believe, pretty generally recognised that peat and sand suit most Lilies. There are some in which an admixture of loam seems advisable, but it is not, perhaps, too much to say that all Lilies will succeed in peat, and that, therefore, when they are planted, it is well to take out a portion of the soil and fill in with this. How magnificently they do in the Rhododendron beds at Mr. McIntosh's, at Duneevan, Mr. Wilson's, at Weybridge, and all through the Bagshot district is well known; and although we in our humble way cannot imitate these places, yet we can study the requirements of our favourites by giving them a soil that they delight in. With regard to the use of manure, it is universally admitted, I believe, that no bulbous root likes fresh manure, and that with some, contact with manure produces disease and death; it is therefore well not to dig in any where the bulbs are planted. If they are mulched with manure in the autumn it will answer two purposes: it will serve as a protection from frost, and the fertilising part of it will be washed down into the soil, and so tend to strengthen the bulbs. The mention of frost leads me to the consideration of their hardiness; my own conviction is, that very few if any of the Lilies which are so largely imported from North America, Japan, or Southern Europe are tender, and that all will withstand a very low degree of temperature without injury; in fact, I believe, that damp more than frost injures the roots, and this is the opinion of Japanese gardeners, who always speak of damp as the great enemy to their well-being. But if light and shade are a matter of indifference, there is another point in their culture which is not, perhaps, so well decided; are they the better or not for having the ground covered with other plants? In their native habitat they are, I suppose, mostly so covered, and the difficulty of obtaining many bulbous plants is increased by this fact for

you mark where a plant is growing; but when you come to look for it by-and-by you find the whole place covered with rank and luxuriant foliage, and your quest is in vain. This would point to the desirableness of having the ground well covered, and I suppose Mr. G. F. Wilson does this in his wood at Wisley; but how it is to be done in small gardens such as I am now writing of, I do not quite see; and I think we have this to console us, that many plants seem to flourish even where their natural conditions cannot be given them.

Another matter in cultivation the amateur would do well to determine is not to disturb the clumps when they are doing well. We do not care to see single bulbs of a Lily, but rather a grand collection of flowering stems, so as to make a fine display, and it is astonishing what grand clumps a few bulbs will make in the course of a few years. Should they become too crowded, it will be much better to weed out the young growths, so as to give the flowering bulbs more room; but even this will hardly be necessary in most cases, and "let well alone" is a very good motto in such matters. The same may be said, too, of the stems; after they have done flowering it is the practice with some people who are afflicted with the complaint of over-tidiness to cut them off soon after the blooming season is over. This is wrong. Granted that a decaying stem is not a very pretty object in a well-managed garden, yet there are uglier things even than that, while it is undoubtedly better that whatever of nutriment there is in the stem should go to the benefit of the bulb rather than to the manure heap. I would, therefore, advise all stems to be left on until they have completely withered.

DELTA.

THE GREAT REED.

(PHRAGMITES COMMUNIS.)

THIS handsome native plant is well worth cultivation if a suitable place can be given it at the edge of a piece of water or in any damp ground. When well established it will grow 10 feet or more in height. The plumes of black flowers are handsome, and the sharply-pointed, blade-like leaves, which seem to spring with a sort of determined vigour from the slender, slightly-arching stem, give great character to the plant. The leaves when stirred by the wind give the pleasant "swishing" sound common to many of the great grassy plants, such as *Arundo Donax* and the Bamboos.

Double Wallflowers—Something has been said lately in praise of the old-fashioned double Wallflowers as distinguished from the lumpy and coarse German varieties. I may mention that by far the most delightful double Wallflowers I have ever seen or smelt were in the great market place at Verona last March. These were golden in colour, shaded with a little tawny orange, and most deliciously fragrant; leaves and stems delicate and slender, the flowers loosely double, not very closely crowded on the spikes, and almost as large as a crown. Altogether they were greatly superior to even the very best of our old English sorts. Unfortunately, no little plants were to be had, and my movements prevented me from bringing large ones home with me.—G. H. E.

— Much as I admire Wallflowers, I should not advise their being trusted to the anything but tender mercies of one of our English winters. Indeed, it is to the incapacity of the plants to withstand our winters that we owe their present scarcity. Twenty years ago, the old double yellow, the coppery red, and the rich dark one were fairly common; now they are rarely seen in gardens. Whatever may be the case in the milder parts of the kingdom, certainly over a large area few double Wallflowers of the old perennial type

are to be found. If they could be re-uscitated, it would be well for these growing them to propagate young plants by means of cuttings every summer, preserving these as pot plants in a frame or cool greenhouse in winter. I dislike the double German forms as much as "Veronica" does, and think them the reverse of pleasing. The dwarf double yellow Wallflower, mentioned as the Rocket Wallflower, is apparently identical with a kind which I had formerly known as the Whin-flowered, because the blossoms resembled those of the double Gorse, but that went the way of the rest; and I fear this year we shall find that the hardy singles have suffered considerably also, for the hard, heavily weighted snow and intense hoar-frost have brought many otherwise apparently hardy plants to grief.—A. D.

CACTUS AND OTHER DAHLIAS.

Now that the promoters of the Grand National Dahlia Exhibition have decided to introduce in their schedule of prizes a class for Cactus and "decorative" Dahlias, the question arises, what is a decorative Dahlia? Doubtless the framers of this class intended it to include only the Cactus types



Phragmites communis.

so called and any of a similar character, such as the old *pieta formosissima*, which Mr. H. Cannell revived a few years ago, but which was grown in this country before D. Juarez was heard of. The floral committee of the Royal Horticultural Society have occasionally given first-class certificates of merit to Dahlias of the show class as decorative varieties, but not always wisely so, because when they had only the flowers to judge from, no reliable evidence was forthcoming as to the habit of growth of the plant, which is a matter of the first importance. All the bedding Dahlias, selected mainly for their dwarf growth and free-blooming qualities, besides their habit of throwing their flowers well above the foliage and their bright colours, are decorative Dahlias in the best sense of the word, and they are clearly admissible in the decorative class. But it should be understood that no variety that finds a place among the show and fancy Dahlias should be admissible for competition among the Cactus and decorative varieties. Perhaps when the schedule of prizes is issued some limitation will be made in this class, so that as far as possible exhibitors may be able to show on a footing of equality and correctly.

I will now pass in review the section of Cactus Dahlias, but it should be said at the outset that, while many of the varieties look charming in a

cut state, they may have little or no value for garden decoration, because of their tall growth and the grave defect of hiding their flowers among the foliage. A Cactus Dahlia, to be of value as a variety for garden decoration, should be of fairly dwarf growth, not more than 4½ feet high, compact, erect, free branching, free blooming, displaying its flowers well, upright, not drooping, and throwing the blossoms well above the foliage. Add to these flowers of striking colours, so as to be effective in the open border, and we get a model decorative Dahlia. Now let us endeavour to judge some of the varieties of which we hear so much by this standard. Take one of the very best when seen in a cut state, *Cochineal*, a variety that is pretty certain to be exhibited in all the stands at the Crystal Palace, the shaded crimson-scarlet flowers being very bright; but it has the sad defect of mingling together flowers and foliage, and so does not display a good and effective head of bloom at any one time. *Cochineal* is regarded as an intermediate form between the Cactus proper and an ordinary show variety. *Constance*, or the white Cactus, grows fully 6 feet in height, but it must not be taken as a white form of *Juarez*. It is free, attractive, and does not hide its flowers in the foliage so much as *Cochineal*. *Fire King*, or *Glare of the Garden*, for it is found under both names, has small vivid crimson or dark scarlet flowers, is of a fairly dwarf and good habit of growth, displays its flowers well, and is a striking object in the border. *Juarez* is so well known with its scarlet, Cactus-like flowers, that little need be said about it; it is of fairly dwarf growth, but had it the freedom of one of the small-flowered *Pompon* varieties, it would be a perfect decorative Dahlia. Then there is *Mrs. Hawkins* with its pleasing bright, deep sulphur flowers, but it is a tall grower, quite 5½ feet to 6 feet, and has the bad habit of hiding its blooms. Nine-tenths of the people who buy this Dahlia do so to plant it in their borders, and become greatly disappointed at finding it such a tall grower. But then it is a novelty, and that fact sometimes covers a multitude of defects. But it will tell in a stand of cut blooms for exhibition purposes. Mr. A. W. Tait I do not know, but it is represented as having pure white and very double flowers, the tips of the petals being deeply serrated. *Parrot* may be said to be a small form of *Juarez*, with petals somewhat twisted, and of an intense scarlet colour, and it is said to make a good border plant. And what shall I say of *pieta formosissima*? When, a few years ago, we saw that representation of it in Mr. Cannell's catalogue, it seemed certain that we had secured something of a marked individuality of character. During the past three years has anyone seen a bloom of it that compares, except at a disadvantage, with the coloured illustration. Of all tall ugly growers, this is the most ungainly. Early in the season of bloom, the flowers are anything but attractive, but later in the season they are of a better character. But its tall growth will effectually prevent its being kept long in a garden after being once planted. One remarkably good new variety is *Turner's Flambeau*; it is of a bright scarlet colour, grows about 4 feet in height, and is very free and effective, throwing up a good head of bloom, well above the foliage, on good long stems. This is a want in some of the Cactus varieties; their stems are short, and so the flowers do not rise well above the foliage. I think that in requiring six bunches of these in six distinct varieties, a little too much is being asked at the hands of exhibitors, seeing how restricted are the varieties. I think it would be best were this class made to read, not less than three varieties. But much will depend upon whether the bedding varieties are admissible. If they are not, then the competition must be almost entirely in the hands of the trade, for amateur growers will scarcely grow nine or ten varieties. In fact, this number includes almost all the known sorts that are in cultivation. R. D.

Japan Anemones (p. 50).—Of course *Anemone japonica* may have been known in England from Chinese or Japanese drawings long prior to 1845, but I do not think the plant itself was known in gardens ere that date. Siebold was one

of the most successful of all the early Dutch plant collectors, and his old garden at Leyden still contains many Japanese plants. There were several works on the botany of China and Japan published before 1847, in one or more of which this *Anemone* may be figured. It is figured in Siebold and Zuccarini's "Flora Japonica," vol. i., pag. 15, t. 5, a work commenced in 1825 and ended in 1844. It is more than possible that some of the early pottery, textile fabrics, &c., were ornamented with figures of this plant, and that these figures attracted the attention of ladies fond of needlework.—F. W. B.

WHITE DAFFODILS.

I AM so greatly interested in Daffodils, and especially in the white kinds, and so desirous of helping forward their elucidation, that I trust Mr. Scrase-Dickins and others will acquit me of obstructiveness when I say I am unable at present to look favourably on the proposed trial at Chiswick. Having carefully followed all the correspondence on this subject, I must say that the doubts about Chiswick expressed by Miss White six weeks ago (p. 474) have by no means been satisfactorily answered. "Veronica" (p. 497) puts the matter quite the wrong way on. He says that those who think white Daffodils will not grow healthily and well in the Chiswick garden have not proved their case. Possibly not, but the burden of proof lies on the other side. Some of us think that before we spare cherished bulbs from small stocks and go to the trouble and expense of journeys to the London neighbourhood, it should be demonstrated with some certainty that the plants will flourish and display their full character at Chiswick. I have seen no evidence pointing this way: all information I have received points rather in the opposite direction. What proof has "Veronica" that white Daffodils grew well—not only grew, but grew so vigorously, that every one of our many varieties would show its individuality—at Chiswick in the days of Salisbury, Haworth, and Herbert? No suitability of air and soil less perfect than this is a sufficient recommendation of a trial ground. I have always understood that the London neighbourhood, generally speaking, affords anything but a welcome home to white Daffodils. I have myself seen them—with the exception of a very few of what may be called the "half-breed" whites, such as F. W. Burbridge, &c.—looking far from happy in nurseries not so far from Chiswick. It is a very good thing to have a neutral ground for the investigation, but it is an absolutely necessary thing to have a ground which is known beforehand to exhibit the plants in their utmost perfection.

Like "Veronica" (p. 497), I have much faith in deep digging and early planting, but am, nevertheless, led by my own experience to infer that white Daffodils are less amenable than the rest to cultivation where their natural requirements of atmosphere and subsoil are wanting. I think I am proving that in this garden—medium loam, rather flinty, on chalk—where all white Daffodils rejoice immensely in their life, they do best and yield the finest flowers when left alone for at least two or three years, while the other sorts give the best results when lifted every summer. It is very doubtful whether they would take a long lease and settle down in this comfortable way at Chiswick. A well-drained subsoil with no possibility of water standing in it in winter is a chief element of success. Not far from here, the scarce double *cernuus* may be seen growing to perfection in a wild copse among matted Hazel stems (loam on chalk), where I have reason to believe that the roots have been undisturbed for many generations. The finest variety of *cernuus* in my collection came from the long-neglected and overgrown garden of an ancient religious house in Wiltshire, where the old clumps were flowering splendidly, though scarcely to be ex-

tricated from a dense overgrowth and undergrowth of Periwinkles and tree roots. Here, again, the subsoil is chalk. I think I once heard Mr. Elwes say something about white Daffodils succeeding on chalk and among roots, and have read something recorded by Mr. J. Wood about their flourishing among paving-stones, or the like. Mr. Harland, too, found his "Bishop Mann," alive and hearty in the bishop's garden, buried in the growth of a century, or was it 150 years! Mr. Wolley Dod tells me that his Pyrenean collector recommends fibrous, peaty soil for the little wild *moschatus*. All this seems to show that our trial of the white Daffodils, to be successful, must be held somewhere where they are sure of a dry, warm winter bed.

But, besides this, we shall, some of us, I think, want at least two more springs for observing and sorting our plants before we are in a position to send bulbs to the trial-ground, knowing accurately what we are sending. Personally, at least, I should not feel I was forwarding science much if I sent plants away from my garden which suits them so admirably before I had thoroughly watched their behaviour, and made notes of their respective features. I cannot count my white Daffodil labels, for they are under a foot of frozen snow, but they are very many, and not a few of them mark bulbs which will flower here for the first time this next spring.

To sum up, if we are to hold such a trial as that proposed, let it be in a locality which not only has not been proved unsuitable, but has been proved suitable, and do not let us be in a hurry.

While on the subject of white Daffodils I may add that their future seems likely to be interesting. I find many of the best forms to seed freely, and to produce remarkably large bulbs the first year from the seed as compared with the offspring of other Daffodils. As to *pallidus precox*, every flower gives a well-filled seed-pod, but I entirely agree with Mr. Wolley Dod that this variety has features—notably its distinct Allium-like bud—which quite sever it from the section of pure *moschatus*. G. H. ENGLEHEART.

Applethorpe, Andover.

Aster spectabilis.—The colour and habit of this *Aster* are good (p. 6), but "J. W." must excuse me for saying that it is not a *Michaelmas Daisy* at all, as even in this late garden its flowers are over long before *Michaelmas*, and it has a very short flowering period. The merit of *Michaelmas Daisies*, properly so called, is that they make our gardens look fresh and gay in the month of October.—C. W. DON, *Ely Hall*.

New Chrysanthemums.—Is it after all such a serious misfortune that new *Chrysanthemums* should be introduced yearly by hundreds when all are pretty and many very beautiful? What matters it, as our gardens are all the richer? If we want forms solely fitted for exhibition it will be easy to ascertain the adaptability of new ones for such a purpose. I think the floral committee of the National *Chrysanthemum Society* may be pretty well trusted, and if some of its members are traders, at least about two-thirds are not, and all are thoroughly conversant with exhibition *Chrysanthemums*. Thus, intending purchasers of new kinds have some assistance in selecting the best from the great bulk of novelties that annually crop up. I agree that the issuing of so many new kinds with English appellations is a good feature, as these are more acceptable, more easily pronounced and spelled, and generally more pleasing to the ear than outlandish names. Still, I am not so anxious to see the name of the raiser attached to each appellation, because all flowers should depend upon their intrinsic merits absolutely, and not

upon a raiser's fame, or otherwise. Once a plant is put into commerce it becomes practically the property of the public, and the raiser's copyright in either plant or name is absolutely gone. As a rule, all plants have names of sufficient length, without burdening those having to write them also with raisers' names.—A. D.

TREES AND SHRUBS.

THE PURPLE BEECH.

THAT was a just remark of the writer of the note the other day upon the Purple or Copper Beech in Hampshire, when he said: "There appears to be a difficulty in grouping this tree so as to give effect to its contrast with other trees. Most specimens I have seen have evidently been planted in the wrong place." This is a common fault, but a more common and even graver error is that of planting too many in one garden or park. Like all "good things" among trees and shrubs, the Copper Beech has been used too lavishly and too heedlessly planted, even in places of small extent, the result being that, instead of the tree being the means of heightening the effect of a garden landscape, it actually appals one to see its coppery masses of foliage meeting one at every turn. In a garden—not a big one—I saw in the midlands last year Copper Beeches had been planted by the thousand. These were "arranged" in masses, with no regard to proper distance of planting the trees, no heed being taken as to whether they harmonised or contrasted with the surroundings. You saw these masses from every point, and the whole place wore a very coppery aspect.

All thoughtful planters know that the Copper Beech is one of the principal pigments upon the landscape gardener's palette, with which to paint the landscape, and as artists are always careful in the use of their high colours, so in like manner does a judicious planter take care how he distributes his few precious high tones which are so important and telling in true ornamental planting, and so productive of bad results if thoughtlessly planted. It would be a big place that would need a dozen Copper Beeches to embellish it. The same may be said of other very conspicuous fine-leaved trees and shrubs, such, for instance, as the golden Elder and the variegated *Negundo*, both of which have much to answer for in the incongruous effects one often sees in gardens, particularly in small places. They are even worse than the prim conical Spruces, Firs, and Cypresses, or Noah's ark trees, as the children call them. One can tolerate two or three masses of golden Elder about a place, and a few—very few—nicely placed Silver *Negundos*; but when planted profusely, as in some gardens, it gives the place more the appearance of a laundry-yard than a garden.

The grouping of Copper Beeches with other trees requires much thought to do it well. Sometimes one sees happy combinations result from haphazard planting, but it is always best to well consider where to place such important trees. There can be no rule, though there is a principle to act on. A Copper Beech never produces the best effect if any heavy green tree is close to it, neither must it jar with a tree of a similar colour, like that of the purple Sycamore, or purple Birch, though a group of silver Birches could not have a finer setting than the Copper Beech. It never looks well if planted out in the open, where its fall outline can be seen against the horizon. I should always seek for it a background of larger trees. Pleasing contrasts are most effective, such as combining it in, or making it form a part of a group containing *Laburnum*, which makes a charming picture in spring, and for carrying out the contrast through the summer one could associate it with a pale green tree, none better than some of the American Oaks, whose leaves unfold a soft yellow, and getting greener as the Beech deepens in colour towards summer. Couple a Copper Beech and *Quercus spalustris*, and every May you will enjoy such a pleasing picture as any two trees

could produce. These are only a few instances of the way in which this fine tree can be effectively planted. One must always be careful to plant the best sort of Beech, for there is no other coloured-leaved tree in which there is so much difference in the shade of colouring. Some are very inferior to others, having small leaves undecided in colour, neither green nor purple. The finest forms have the leaves very broad, oval in outline, and of a colour like that of Beet. There is also a broad-leaved sort which has reddish purple or coppery leaves, and this also is a distinct and good kind. There is a great difference, too, in the vigour of the trees, and this is all important. Copper Beeches are raised largely from seed in nurseries, but the seedlings do not come true, and in the best nurseries the finest forms are always "worked" on that account. The new pendulous variety of the Copper Beech is likely to prove a valuable tree, though one can scarcely judge of it at present in a nursery stage. W. G.

Mr. G. F. Wilson's Veronica.—In the *Botanical Magazine* (tab. 5965) there is an excellent portrait of the pretty Veronica exhibited by Mr. Wilson at South Kensington on December 7. The portrait was taken from a greenhouse specimen in 1872, before the shrub was known to be hardy; it looks a little more luxuriant than Mr. Wilson's did, which was gathered in the open air in December; but still there can be no doubt about the identity of the two plants. It was named and described in the *Botanical Magazine* by Sir Joseph Hooker as *V. parviflora* var. *angustifolia*, a species intermediate between *V. salicifolia* and *V. ligustrifolia*. In the description it is once by mistake called *V. parvifolia*. Unless the name has been changed since 1872, I think we ought to keep to that originally given by Sir J. Hooker.—C. WOLLEY DOD, *Edge Hall, Malpas*.

Old Elms.—These, like all other old trees, add much to the beauties of parks; but when they get very old they are dangerous near buildings. Some time ago, when carrying out some improvements contiguous to the household here, I was anxious that some decayed Elms should be felled and some more serviceable trees planted in their stead; but as their removal was objected to, we planted our shrubs and finished our alterations, and all went well for some years, until a strong gale came, breaking boughs and overturning trees in all directions, and amongst the rest one of the Elms just mentioned, containing upwards of 150 feet of timber. Had it been taken down by practical woodmen it could not have been felled better, but it played sad havoc among many valuable shrubs. Upon one side stands the church, with buildings upon two other sides, and had the gale carried it or blown it upon any of these three sides there is no telling what might have been the consequence. Upon examination its roots were found to be thoroughly rotten, with the exception of 3 inches or 4 inches of an outside shell and a few surface roots, and I have no doubt that the majority of them were Ivy roots, as the bole of the tree was encased in Ivy, which must have been the means of keeping it in its right position for some time. Where Elms or other trees are standing close to buildings they should be examined, which is easily done by probing them at the bottom.—J. M.

The Sturtias.—Among the numberless trees and shrubs which we have now in cultivation, and for which we are indebted to North America, the two Sturtias stand out conspicuously on account of their intrinsic beauty, interest, and variety. The Virginian Sturtia is one of those plants that have been nurtured in obscurity, so to speak, for the past century at least, for so long ago as the middle of the last century it was spoken of as having been introduced. At that period, when it was a commendable practice to plant arboreta, it seems to have been much sought after, the result being that there has been handed down to us a few grand specimens of it, which, now being matured, display their full beauty. In the rich arboretum at Syon House a large bush of it is one of the most prized objects in the garden, it being probably the finest example of this shrub in Europe. *S. pentagyna* is likewise an old introduction, having been brought from America about a cen-

tury and a half ago. We therefore possess two Sturtias, and another near ally, *Gordonia pubescens*, so nearly resembles them that, for all practical purposes, it may also be considered a Sturtia. The Virginian Sturtia is, indeed, a charming shrub, possessing a flower some 4 inches across, and pure white except the little tuft of stamens in the centre, which is crimson. *S. pentagyna* is very similar, but it has not the red tuft of stamens, and the carpels or insipient fruits are separated, whereas in *S. virginica* they are formed into a flask-shaped organ. *S. pentagyna* is the hardier of the two, inasmuch as its home is more northerly than that of the Virginian species; consequently it is a more important plant for English gardens, although *S. virginica* is really not what one would call a tender shrub. The latter inhabits swampy places or shady woods in its native haunts, for no doubt the plant is grateful for a little shade to screen it from the full force of a Virginian sun; but here it wants all the sun we can possibly give it in order to thoroughly ripen its growth, so as to better enable it to withstand our sharp winters. Unfortunately, the Sturtias are very difficult to propagate, and this difficulty in propagation no doubt accounts in a great measure for its scarcity.—G.

UNHEALTHY ARAUCARIAS.

I NEVER considered that the Araucaria was worth all the thought that "A. D. W." (p. 13) appears to bestow on it. He bewails the disease that preys upon it, as well as the imperfect means of coping with the disease. My remedy would be the axe in the case of big trees and the handbill with the small. If there is one unsightly object more than another in a garden capable of neutralising the good effect of all others it is an Araucaria in a bad way. Except when seen at its best, as at Dropmore, many regard it as an unlovely tree, very odd-looking certainly, but associating or harmonising with nothing in an English landscape. Rather than go to the trouble of reviving one in a bad way, or, as "A. D. W." says, one with half its branches dead or dying, I think the best advice would be—chop it down, for who has seen a sickly Araucaria reeover or even look decent when once it has lost a limb or become browned? I have long since come to the conclusion that the Araucaria is not a tree for general planting, for, as "A. D. W." states, it succeeds only in certain localities and soils; then is it not folly to go so much out of the way to coax it into vigorous growth when we have within reach so many trees that repay us for planting them and far handsomer? The odd appearance of the Araucaria has, no doubt, captivated many who have room for one tree only, and therefore that tree must be an uncommon-looking one; hence it is so commonly seen in forecourt gardens even in towns, and no doubt these trees are often planted unskillfully. But this is apart from the question taken in the broader sense, which is that which concerns the larger class of gardens in which indiscriminate tree planting is a serious matter, seeing that it is costly. Because the Araucaria is a stock plant in all nurseries, large or small, no garden is considered complete without it, and this thoughtless planting of Araucarias everywhere has been the means of spoiling many a garden landscape. The Araucaria, it must be admitted, is a handsome tree when it is seen so finely grown as the Dropmore tree, which is always cited as the finest specimen; but then is it generally known that Philip Frost has cultivated this tree as he would a pot plant? The tons of top dressing he tells you he has put around its roots during the many years he has had charge of it lets one into the secret of Araucaria culture. It is not the soil or the climate of Dropmore that has made the tree what it is, but the attention that Philip Frost has bestowed upon it. But how many can afford to grow trees on his plan? That the Araucaria as an ornamental tree has been, and is still, over-rated, is the opinion of many; that it is not a tree of the future is pretty well certain. The best effect I have seen produced by it was a group in a Surrey

garden on light soil. The trees were of various heights, ranging from 20 feet to 5 feet, and as there were about a score in the mass, they formed one of the chief features of the place.

W. G.

GROUPING CONIFEROUS TREES.

The dotting style of planting is cold, as well as meagre; nevertheless it has its uses; it shows what individual plants can become under difficulties. It also brings individual specimens and species into the sharpest contrast, and thus exhibits their special characteristics in intensified and, one might almost add, exaggerated lights. It has also enabled cultivators to grow the largest number of species and varieties within a given area. But the dotting plan mars every landscape on which it is practised. What play of light, or shadow, or repose could be obtained by a series of dots, even though they consisted of trees faultless in form and symmetry? Trees so disposed might be enjoyed as specimens, but a pleasing landscape, consisting of solitary trees, is plainly an impossibility. Not only, however, is the dotting style inimical to landscape beauty, but it is also opposed to cultural perfection.

Trees and shrubs are gregarious by nature, and if we compel them to grow in solitary isolation we must take the consequences; and we do so in the form of slow and stunted growth in summer, or of ruthless destruction by cold in winter. It is not good for trees to grow alone. Each wind that blows beats against them with full force; the sun and dry air drain each leaf and bough of its rich juices, and, worse than all, the extremes of heat and cold do their worst as regards the exposed roots. This exposure of the roots to direct solar and atmospheric influence is altogether unnatural, and consequently injurious. But there is no need to rest the case on such general statements. It is only necessary to trace the palpable effects of the frost throughout our pleasure grounds, after an exceptionally hard winter, to discover that the single trees are often cut down, while groups of the self-same sorts escape unhurt. The seeming exceptions but confirm the rule.

These exceptional groups killed or injured will be found in a lower situation or a moister locality. In the former the air is colder, as cold air will shoot down valleys into plains with as much certainty as a stone will roll down hill; in the latter the plants are also more tender. Excessive moisture may help growth, but it hinders maturity, and it is maturity that enables plants to withstand cold. Hence it follows that groups may in such exceptional localities be cut down, while single trees at a higher level, if more thoroughly matured, may escape. But let the three-fold conditions of soil, site, and maturity be alike, and the results will be wholly in favour of the groups. It is necessary, however, to bear in mind that there are "groups and groups." It is not only possible, but easy to render groups tender by overcrowding or over-feeding, and when such is the case, groups may be swept away by a frost that will hardly brown the leaves of a solitary tree. It may be well to add that excessive stimulation, from whatever cause, results in weakness, that leaves the plants more liable to injury from cold than more hardy treatment.

My object, however, is to show that the conditions of growth being the same, Conifers planted in groups endure winters better than those dotted about singly. There is more than one reason for this; the tops are warmer and so are the roots. Plants can scarcely realise the amount of shelter that plants afford each other when planted in groups. I know that in a series of experiments made in Scotland, the absolute difference of temperature between the inside or outside of a wood was much less than might have been supposed. But the difference is one of air in motion or at rest, rather than of absolute superiority or inferiority of temperature. The air around and in a group is, as it were, at rest, compared with that against a single tree. Now, air at rest is one of the best known non-conductors of heat, but air in motion steals it from every living or dead substance that it touches with avidity. No doubt this mere motion thwarts, to some extent, the loss of heat by radiation. But, possibly, there is sufficient gentle movement in

the air of groups of trees to effect this purpose; while of the warmth and shelter the trees afford each other there can be no doubt whatever. But I am of opinion that the shelter which they afford to each other's roots and their own is of yet greater importance.

From many years' observation of the destructive effects of cold, I have arrived at the conclusion that most plants are crippled or killed from the roots upwards, and not from the tops downwards. This is what kills isolated trees. The best roots are often considerably beyond range of the tops. Of course, the feeding roots sweep out, and are, in ever-widening areas, in search of new and better food. Just then the frost comes down upon them with full power, and either paralyses or kills them. Old roots might be frost-proof, but young ones are not. The former deprived of the latter are as useless as detached gas or water-pipes cut off from the mains. The collecting roots being crippled or killed, the main ones become useless, and the tree begins to languish and die, or, in other words, is starved by the amount of cold at its most sensitive extremities, which planting in groups would have protected most effectually. There is another powerful inducement to planting in groups.

The dead leaves may be left to protect the roots along with the overshadowing tops. The former, in many cases, would afford the better protection. It is astonishing how many leaves fall off *Coniferae* just before winter; whole barrowloads of withered leaves lie under large trees of *Pinus excelsa*, *P. Sabiniana*, *P. macrocarpa*, and others. Under single trees these are, in most cases, carefully swept or raked up as so much unsightly litter, or are blown away by the wind. This is simply to lay the most sensitive part of the tree open to the cold. In a state of Nature these dead leaves accumulate to such an extent as to cover the ground under the trees ankle deep. They decompose very slowly, and their texture, form, and non-conducting powers are such that a very thin layer of them forms a frost-proof barrier. I have proved this, and no one who has not noted the power of the tops above and leaves below to resist cold could form a proper estimate of their potency. In group-planting there is no temptation to remove the dead leaves, and the wind is powerless to drive them out. Hence trees in groups cannot suffer at the roots, and, as a rule, they winter safely.

F.

White Japan Quince.—The numerous varieties of *Cydonia*—or, as some prefer to call it, *Pyrus japonica* are amongst the most handsome of hardy ornamental trees and shrubs. They exhibit a considerable range of colour, from almost pure white to deep crimson. In size of individual flowers, too, a great advance has been made amongst the cultivated forms and the seedlings raised since the old *Cydonia japonica* was introduced, about seventy years ago. One of the most desirable of these is *Pyrus japonica nivalis*. In this there is no trace of the pink colour which is so prominent in the old so-called white

Pyrus japonica, the large flowers being almost pure white.

Stem-pruning Deodars.—Stem-pruning encourages upward growth, adds variety to the landscape, and is not in the least injurious to the health of the plants. Stem-pruning need not be practised on Deodars till they become 8 feet or 10 feet in height. When of that size the stem should be divested of its lower branches, from 10 inches to 18 inches from the ground, according to the height of the tree; as the upward growth of the tree increases, the stem-pruning may be carried to the height of 24 inches or 30 inches. The effect of the pendent points of branches round the central stem is in some circumstances infinitely more pleasing than seeing the lower branches lying flat on the ground and destroying the Grass below. After pruning the stem of Deodars, as well

completely surrounded with branches; besides, from the greatest cold being on the surface of the ground, it is more apt to injure those lying on the surface than those higher up.—J. M.

OBITUARY.

THOMAS MOORE.

MR. THOMAS MOORE died at his residence in the Botanic Garden, Chelsea, on New Year's Day, in the 66th year of his age. Death has thus removed from our midst one of the best-known and most prominent men in connection with the horticulture of this country. Regret at the death of such a man will be universal, for

his life-long labour in the advancement of horticulture is known, we might say, in every country where a love of gardening is fostered. More than half his life has been spent in literary work connected with gardening and botany, but he began gardening as a boy upwards of fifty years ago, first at Guildford, his native town, and afterwards at Fraser's nursery at Leyton. In 1841 he became Mr. Marnock's clerk, at the time when he was laying out the Royal Botanic Society's Gardens, in the Regent's Park, and he was afterwards associated with Mr. Marnock in the production of a gardening journal, which was, however, but short-lived. In 1848 he was appointed curator of the Chelsea Botanic Garden, as successor to Robert Fortune, so that he has resided at Chelsea for nearly forty years, and has been associated with the chief gardening events that have taken place during that time both here and on the Continent. For the Royal Horticultural Society Mr. Moore has worked most assiduously both in connection with pomology and floriculture. At one time he was one of the directors of the Chiswick Garden, and also examiner in floriculture both to this society and to the Society of Arts; he was secretary to the great International Exhibition and Congress that was held in London in 1866. Of late years



THOMAS MOORE.

as all other coniferous trees, where the branches to be removed are in close contact with the ground, it will be necessary to lay down soil, so as to cover any roots which may be near the surface, in order to protect them from the sun or frost. Unless this simple treatment is adopted, such stem-pruned trees are liable to sustain injury, and blame given to the pruning, and not to the want of this after-treatment which is absolutely necessary, not only with *Conifers*, but with all evergreen shrubs requiring to be cut down. In the case of stem-pruned specimens of coniferous plants, I consider that the bark on the lower part of the stem, when allowed to mature and harden from exposure, is better able to resist cold, and the tree more likely to stand uninjured than it does when

floriculture claimed a good deal of his attention. In the *Carnation*, *Picotee*, *Auricula*, and *Dahlia* Societies he was the chief leader, and the *Dahlia* Society was his especial hobby, the late Mr. Charles Turner and Mr. Douglas being his chief associates in these matters. As an author Mr. Moore has been industrious, for he has written no fewer than a dozen works. The first appeared in 1844, and the last—his "Epitome of Gardening"—in 1881, being a reprint of the article on horticulture which he contributed a year before to the "Encyclopædia Britannica." He will, however, be best recollecting by his works on Ferns, which were his

special study. As an editor he was even more industrious than as an author. The "Treasury of Botany," issued in 1866, is an example of his skill and thoughtfulness, as is also the last revised edition of Thompson's "Gardener's Assistant." For fifteen years (1866-81) he was joint editor of the *Gardener's Chronicle*, and for many years he edited the *Florist and Pomologist*, a monthly magazine which ceased to exist a year ago. At all the leading horticultural exhibitions in London, in the provinces, and abroad, Mr. Moore was a familiar figure. He was considered indispensable as a judge of new plants, upon which he was justly regarded as an authority; indeed, it is not too much to assert that Mr. Moore's knowledge of garden plants was unsurpassed by that of any other man one could name. The above is but an epitome of his chief work. He was a man who won for himself a multitude of friends, by whom his loss will be deeply regretted. In horticulture the good and useful work which he has done will be an enduring monument to his memory.

INDOOR GARDEN.

LAPAGERIAS PLANTED OUT.

THE best way of growing *Lapagerias* is undoubtedly that of planting them out, for although good specimens may, and indeed are, sometimes seen in pots, wherever a surface of any great extent requires to be covered, it is found much more expedient, whenever there is a possibility of doing so, to have them planted in the conservatory or greenhouse border. *Lapagerias* being somewhat shallow-rooting plants, their roots naturally attain a great length and cannot well be accommodated in a pot, and when planted out they annually gain in strength.

When planted out, great shoots are produced from the crown in a similar manner to those formed by *Asparagus*, and these should receive every encouragement; owing to the somewhat horizontal direction that they generally take during their development, they often rise from the ground at a great distance from the parent plant, and in altogether unexpected places; on that account alone a border is preferable to pot culture. When *Lapagerias* are planted out it is beneficial to have them surfaced with fresh soil every year, and under all circumstances the operation should be performed before the new shoots push through the ground. A gentle stirring of the surface of the soil with a hand-fork having been carefully done to the depth of about 3 inches or 4 inches, and the material thus loosened having been removed, the border should be filled up again with fresh compost. A mixture of two parts good fibrous peat, one of coarse silver sand, and, if procurable, a little rubble or a small quantity of broken-up charcoal, is about the best material that can be recommended for the purpose. This annual surfacing has the effect of stimulating the vigour of the plants, as the nutritive properties contained in the new compost are, by repeated waterings, carried to the roots, which derive great benefit therefrom. The new shoots must be carefully watched, and, as soon as they issue from the ground, protected by a piece of zinc formed into a tube about 6 inches high and 2 inches in diameter. This is the most efficient way of preventing slugs from destroying them; all ingredients recommended for that purpose lose their efficaciousness through the damp state in which the ground has to be kept.

After the flowering season *Lapagerias* should be re-arranged on the roof, leaving between their foliage and the glass a space of 8 inches or 10 inches, which is sufficient to enable the syringe to have full effect on them during their growing season, when they require frequent use of it to prevent their being infested with aphides, which, under cool treatment, are the only insects that

attack them. By being trained near the light the wood gets well hardened and produces flowers in greater profusion, but as soon as the flower-buds have reached the size of an ordinary Pea, which is generally about the end of July, the shoots should be untied and allowed to hang down loosely. This gives the plants a better opportunity of displaying the beauty of their blossoms and produces a very pleasing effect, which is also enhanced by disposing the flowering shoots, when they are untied, at various heights.

It may be well to state here that for training *Lapagerias* it is much better to use soft string than either copper or galvanised wire, for while the former material retains, owing to the frequent summer syringings, constant dampness, which is greatly beneficial to the plants, the latter is often the cause of serious disasters through being a conductor of heat, and getting in summer much warmer than the young and tender shoots are capable of enduring without suffering. Abundance of water at the roots is necessary at almost all times of the year, but particularly from March to October, during which period the waterings should be both frequent and copious. The foliage should be freely syringed until the flowers begin to open. Shoots from the plants which were layered in the border last year will be found to have rooted freely, and to have produced independent plants from the eyes which have lain buried in the soil during the past season. These may now be separated from the parent plants and treated as ordinary layers.

CROWEAS AND THEIR CULTURE.

CROWEAS belong to a limited family of evergreen greenhouse plants, introduced from New South Wales, that are of comparatively small, bushy habit of growth, producing their lively dark pink star-shaped flowers, for two or three months in succession through the autumn, at a time when greenhouse-flowering subjects are few. *Croweas* have many things to recommend them to the general cultivator, not the least of which is their easy growth and adaptability for decorative purposes, especially for the conservatory, where by regulating the time that they commence growing a succession of the plants may be had so as to have some in flower from the commencement of August, to be succeeded by others that will keep on until after the close of the year. They will also bear, whilst in bloom, placing in a confined situation in conservatories or similar places much better than most hardwooded subjects; they likewise have the property of flowering freely in a very small state. Plants the first year grown from the usual nursery-sized stock will just bloom as plentifully in proportion to their size as when older. When they get large and are well managed, they are useful for exhibition, if required for this purpose, the nature of the flowers being such that they will bear a deal of knocking about without being bruised or disfigured. They make moderately strong roots, that are not at all delicate or liable to injury from causes that would result in the death of more tender things; yet they do not form them in such large quantities as to need so much pot-room as many plants. All the kinds will grow in loam, and in it, when of a good description, the colour of the flowers is often a little higher; but in peat they generally make quicker progress, and where the latter can be had of a fair character, we should recommend it in preference to loam, using about one-sixth or seventh of clean sharp sand intermixed.

Although the *Croweas* do not require anything above a cool greenhouse temperature to grow them, they are amongst a certain number of plants that will bear and make much more progress by having their growing season lengthened through being started in a little warmth in the winter. Their time of flowering can also be regulated by this. Plants that are thus started into growth in slight heat in February will bloom early in August if required, to be succeeded by others, the growth of which commenced with the advance of the season. Where there is the means of submitting them to a temperature of 50° in the night, with a rise of 8° or 10° by day, about

February, we should advise the young stock to be so started at that time.

Croweas strike readily from cuttings, which should be procured about April from plants that have started in an intermediate temperature in February; put them several together in 5-inch or 6-inch pots in sand, subjecting them now to an ordinary stove temperature, with shade and a moist, confined atmosphere; here they will root in six or eight weeks, when give more air and light. As soon as they are fully rooted move singly to small pots, stopping the points and continuing the warm, moderately close treatment through the summer and autumn, keeping on in the winter in a night temperature of about 50°. In March the young plants should have made enough progress to admit of their being moved into 4 inch or 5-inch pots, stopping each shoot; through the spring and summer give a little more warmth than usual for the generality of greenhouse plants, standing them on a moist bottom, with plenty of light and a little shade in very bright weather, giving a dash with the syringe every afternoon. Winter as before, and about the commencement of the year cut in the whole of the preceding summer's growth, leaving the shoots about 6 inches long from the point where they were shortened to the previous season; tie them out in a horizontal position, and about the time and in the temperature above advised place them where they will receive a fair amount of light, slightly dumping them overhead with the syringe once a day; here they will soon commence growth and be in a condition for potting. They will require a 2-inch shift, with a fair quantity of drainage, using the soil in a moderately lumpy state, and pressing it solid in the pots. Replace the plants in a similar temperature to that they have been in, and here let them remain until the beginning of May, when there will be enough solar heat to keep them on growing without the assistance of fire; after this, they will do along with other ordinary hardwooded stock, requiring like treatment through the summer as to air, syringing overhead, and closing the house or pit they occupy with the sun upon it in the afternoon. They will not need any stopping of the shoots, except such as happen to grow considerably stronger than the rest. The reason that it is not advisable to stop these plants in the summer, as prescribed in the cultivation of most hardwooded subjects, is that if pinched back nothing is gained, as it rarely has the effect of causing shoots to break out several from each, as in the case of most things, but simply stops growth altogether for the season, and hastens their flowering. Where there is not the convenience of a house in which they can receive a little heat early, as above described, all the difference in their treatment required is to pot them later, about April, with the other hardwooded greenhouse plants, and treat through the summer as before advised, but by the latter method they cannot be expected to make so much growth, nor flower so early. When they come into bloom they will make nice little plants for standing on front shelves or in any prominent position.

When their blooming is over, remove the plants to where they will receive ordinary greenhouse treatment as to temperature, air, and water, cutting them back as in the preceding season so as to reduce the shoots to 6 in. or 8 in. in length from the point they were shortened to the year before, and again starting them in a little heat as previously, or if a succession of bloom is required, a portion of the stock may be allowed to commence their growth later on in the greenhouse. This year they will bear a 3-inch shift, using the soil in a little more lumpy state, and keeping the strongest shoots well tied out, so as to clothe the base of the plants, treating them through the season as heretofore. The treatment required during subsequent years will be similar in every way, always cutting the shoots well back before growth begins, or a sufficiently dense, bushy condition will not be maintained. It is not necessary to increase the size of pot beyond 15 inches in diameter, as this will be big enough for full-sized specimens. After the plants have been in pots of this size for a year or two they should be regularly supplied with manure water through the growing season. In this way *Croweas* may be kept for years in a thriving, healthy state.

Azalea mollis.—This Azalea is very valuable for forcing purposes. Plants if potted up in summer and kept out of doors until hard frosts sets in force better than plants otherwise treated, and the flowers are more persistent than in the case of plants newly imported from France and Belgium. This is a fact worth knowing; and as it is found by experience that the varieties of *A. mollis* are not so well adapted for outdoor culture—except under very favourable circumstances—as for greenhouse work, and seeing they are easily managed, they should be extensively grown where there is convenience for forcing. The flowers are of various beautiful shades of colour, and all very showy, and the blossoms are borne in fine trusses, which are often equal in size to those of the Rhododendron. Then the plants are of bushy growth, deciduous, and perfectly hardy. The following are a few of the best varieties: Alphonse Lavallée, bright orange, shaded with scarlet, and spotted with citron; Baron E. de Rothschild, dark red, spotted with yellow; Chevalier de Reali, straw-white, merging into creamy yellow; Comte de Gomer, lovely rose, spotted with orange; Isabella Van Houtte, dark nankeen, spotted with orange; Consul Pecher, rose, spotted with dark orange; Dr. Leon Vignes, white, shaded with nankeen, and spotted with orange; and Scarlet La Grande, orange-scarlet, the best of all in colour. It should be stated that the spots are confined to the upper segments of the flowers. From some nurserymen seedlings of Comte de Gomer, Consul Pecher, Isabella Van Houtte, and one or two other distinct varieties can be had, and if these have been transplanted twice and are 10 inches or 12 inches in height and bushy, they will be found admirable for potting-up for forcing purposes. As a matter of course, seedlings can be bought at a much cheaper rate than the propagated named varieties.—R. D.

Origin of Berberis stenophylla.—Can anyone enlighten me upon the history of this most beautiful Barberry? It is generally considered to be a hybrid between *B. empetrifolia* and *B. Darwini*, and I thought so too until I came across the name in Forbes and Hemsley's "Index Floræ Sinensis." It there states that *B. stenophylla* is a native of Szechuen, and gives Hance as the authority for the name. I once heard that it was raised in the Handsworth Nurseries, Sheffield, and was named *B. handsworthensis*, but that the name was afterwards changed to *B. stenophylla* by Lindley. I find no published statement corroborating this. Possibly there may be two Barberries under the name of *stenophylla*; but I am alluding to the beautiful shrub with long, slender branches and narrow leaves, and which in summer is wreathed with golden blossoms brighter in colour and more graceful than that of either *B. Darwini* or *B. empetrifolia*.—G.

Poetical allusions to Pears.—In Mr. Rivers' paper on Pears, published in your last issue, the lecturer notes that Shakespeare only mentions this fruit once ("Merry Wives of Windsor," n. 5), but in "Winter's Tale," n. 2, the poet mentions Warden's—

I must have saffron to colour Warden pies—

and Warden were undoubtedly cooking Pears (cf. Bacon, "Essay xvi."). Again, Mr. Rivers asserts that Herrick does not mention this fruit. Surely he never can have looked through that poet's "Hesperides"? I find no less than seven separate allusions there to Pears, and he, besides Sir John Suckling, has immortalised the Katharine Pear—

So Cheries bluish and Katherine Pears,
(*The Mourning Blush*, "Hesperides.")

Herrick also mentions the Warden—

Of roasted Warden or baked Pear,
(*The Phoenix*, "Hesperides.")

And to a Christmas custom, in which the Pear is alluded to—

Wissal the trees that they may bear
You may a Plum and many a Pear,
(*Christmas*, "Hesperides.")

Spenser speaks of the Pear in his "Shepherd's Calendar" (March 3), and Chaucer, who perhaps

more than any other poet loved the freshness of spring and early morning, alludes to the beauty of the Pear tree in its full bloom—

She was well more blisful on to see
Than is the new Periwelle tree,
(*Mellors Tale*, "Line 61.")

All who have read the "Canterbury Tales" will remember the incident of the Pear tree in the "Marchand's Tale."—P. E. N., *Upper Norwood*.

NOTES OF THE WEEK.

Begonia socotrana proves itself to be the most persistent winter-flowering of all Begonias. At Kew, where almost every cultivated species is grown, it is the only one that makes a show. There is a group of plants of it that for weeks past have been the feature of the Begonia house. The flowers do not drop, as those of most other Begonias do, but wither away without losing their colour. This mass of rosy pink bloom is very cheerful at this almost flowerless season. When the Socotra Begonia was first introduced it was thought that good things would result by hybridising it, but as yet none of the hybrids raised from it surpass the original.

A pretty winter Heath is *Erica colorans*, and we should include it in a selection of the best winter-flowering kinds. It is a good deal like the common winter Heath (*E. hyemalis*) in growth, and, like it, the flowers are long and slender, opening pure white, then gradually changing to a delicate blush, and dying off a deep rosy red. They are densely produced on the upper parts of the new shoots, and are therefore very suitable for cut sprays; one of these flowering shoots with a frond of Maiden-hair Fern would form as pretty a combination as could be cut in the plant house at this season. There is a variety of *E. colorans* called *superba*, but if this is prettier than the original it is superb indeed. This Heath may be seen among others in the Heath house at Kew.

The winter Honeysuckles.—The two Chinese Honeysuckles, *Lonicera Standishi* and *fragrantissima*, which in mild winters are in bloom before Christmas, seem to be still struggling to open their flowers midst the frost and snow. If we get a spell of mild weather, both will be covered with white bloom in a short time, diffusing their Orange-blossom-like fragrance, as does the *Chimonanthus*, which, by the way, is also behind time this year. These Honeysuckles are perfectly hardy, and will grow and flower well in a shrubbery, but then their fragrance is lost, and their flowers are too modest to attract one to them. The place for them is against a south wall near a frequented walk; then one can enjoy their fragrance, and even the crowds of small blossoms give an interest to a walk round the garden at this season.

Bignonia venusta.—This Bignonia blooms as freely during the winter months in a cool stove as it does in a warmer house. Its flowers, which are bright orange-red, have a particularly cheerful appearance at this season of the year when flowers of almost all colours are scarce. The plant grows rapidly—almost too much so where space is limited, but by a judicious thinning of the growths as they are formed, flowers in abundance can be had in a small space. Here it is planted in a Cucumber bed along with some Gardenias, which occupy one side of a small Cucumber house. On the opposite side Cucumbers are grown, and the moist temperature required for them during the spring and summer months just suits this Bignonia. We grow it in a compost consisting of two parts loam, one of leaf soil, some charcoal and bones, and give it copious supplies of water in summer and occasionally liquid manure. During hot weather the foliage is vigorously syringed twice a day. The young growths are trained over the pathway in the centre of the house, which is a span-roofed one, and thus managed they do not interfere either with the Cucumbers or the Gardenias. The strongest shoots are trained thinly on the wires, and all the weaker ones are removed, thus allowing those retained to get thoroughly ripened, and from their points, and also from the axils of many of the leaves on the current season's growths, flowers are now appearing in profusion. Brown scale is the only insect which attacks

this plant, and an occasional syringing with lemon oil is the best remedy for it. It can also be removed by sponging with soapy water, but when the plant is large this is a slow process.—E. M.

With this communication came magnificent clusters of flowers of this showy old-fashioned, winter-blooming stove climber—a plant too seldom met with now-a-days. In old days it used to be well grown both at Kew and Frogmore.—Ed.

The Golden Scotch Fir in winter.—Whoever interested in trees has seen a good plant of this Pine (*Pinus sylvestris aurea*) must have been struck with its bright golden colour, which eclipses that of the Golden Yew and Golden Lawson Cypress, or any other Conifer. In winter its colour is most conspicuous and most valuable, as it stands out so distinct from everything else among trees and shrubs. On account of the depth of the yellow hue, it does not wear that sickly appearance that many other golden Conifers have, and it seems to possess the vigour of the typical Scotch Pine. I saw it last winter at Westonbirt, and Mr. Holford, who knows how to estimate ornamental trees at their true value, thinks highly of it, particularly for winter effect. There is a specimen of it in Kew Gardens near the main entrance, and though it is only about 4 feet high, it is one of the most prominent trees in that part of the garden. It may not be so rapid in growth as the green, and it will be years before a big tree can be seen of it. It is a tree which nurserymen should take in hand, but it does not appear to be catalogued in English tree-lists yet.—G.

Senecio Ghiesbreghtii.—For want of a better English name, this has been called the Tree Groundsel, yet to associate such a noble plant with our troublesome weed is not right. In all Kew there is not a more remarkable plant in flower than this South African one, which largely helps to make the greenhouse attractive. The plants now in full bloom have erect stems, as thick as a broomstick, with leaves nearly a foot long and half as broad, and crowned by a great flower-head composed of numberless small, bright yellow flowers, the whole measuring some 15 inches across. Every visitor seems to inquire the name of this remarkable plant, and few seem to grow it, or know it even. It is a fast-growing plant, for the specimens in flower are 6 feet or 7 feet high, and yet but two years old from cuttings. It lasts a long time in bloom. It is grown in pots and treated liberally, as it is a gross feeder. Mr. Barron used to grow it very fine at Chiswick, and there and at Kew are about the only places in which we have seen it. Why is it that nurserymen do not take in hand such a plant as this, so that it may come into general cultivation?

The Eucharis mite.—I extracted from a *Eucharis* bulb, the other day, about as many mites as would fill a small gun-cap, and put them in an egg-cup half full of paraffin, where they remained all night. I then looked at them through a binocular microscope and they were quite lively at the bottom of the cup, after being in undiluted paraffin for more than eighteen hours. If I could obtain the use of an air-pump I should like to try the experiment of placing a bulb under the receiver, exhausting the air, and then admitting some poisonous gas. What is the opinion of your readers respecting this suggestion?—IVANHOE.

Mr. Rivers' lecture on Pears.—May I ask you to allow me to say that this was delivered at the usual monthly meeting of the Horticultural Club on December 7.—HOX, *Soc. Hort. Club*.

Names of plants. *H. G.*—Apparently a bit of Spindle tree; send flowers and leaves.—*H. S., Duncester*.—1, *Alantium Capillus-veneris*; 2, *A. pubescens*; 3, *A. concinnum latum*; 4, *A. tenerum*; 5, *A. formosum*.—*Anatour*.—1, specimen insufficient; 2, apparently *Succedebium rapulosum*; 3, *Calanthe nivalis*.—*H. K., East Finchley*.—*Epidendrum ciliare*, *Monodes prunum micolor*.—*E. M., Bishop's Hatfield*.—*Bryophyllum calycinum*.—*G. Barham*.—*Illica laurina*.—The plant which "A. J. C." possesses having an aromatic smell is evidently *Coleus aromaticus*.

BOOKS RECEIVED

"The Rosarian's Year-Book, 1887." Rose & Sons, 23, Old Bailey, London.
"The Repair and Maintenance of Roads." City Press, Aldersgate Street, London.

WOODS & FORESTS.

ENGLISH FIREWOOD.

Your invitation to a further discussion of this question is specially appropriate when the ground is covered with snow and the thermometer indicates 20° of frost. It is also the season of Yule logs and Christmas and new year's festivities when the blazing wood fires on the hearth or in the grate add a special brightness and a new glow of comfort to friendly gatherings. At such times, but for the spits and sparks, there is nothing like deal firewood, and especially Scotch Fir. It may also be fancy, but I rather think it is a fact that this firewood flies and sparks less in Scotland than in England. Whether the difference—if any—arises from the greater age, superior quality, or increased percentage of resin or turps in the Scotch timber over the English, it seems difficult to say. But my experience of wood fires, which is rather extensive, points to a wide difference, all in favour of the Scotch grown wood. It blazes more freely, burns more fiercely, and gives out more heat than the same species of wood grown further south; and as to brilliancy of flame and pleasant odour, there are few, or no, firewoods that can equal the Scotch Fir. I observe that "C. R. S. D." recommends that any one of the Cedar trees should be stored away for its pleasant smell in burning. He also observes that their wood burns brightly when dry. Neither can hardly be said of the Cedar of Lebanon, which, I fear, there will be an excessive experience of as firewood on account of the recent storms. It is in no way equal to the Scotch Fir for firewood, green or dry, and no Cedar but the common red one is worth burning for its odour, and that is seldom available for firewood.

A year or two ago I called attention to the extremely high merits of Yew as firewood, and am glad to find that "J. C. C." holds similar views. I also agree with this writer's estimate of White Thorn and Holly, if it could only be had in sufficient quantity. He is also, no doubt, right in placing Oak at the head of the list of deciduous trees, with Ash as a good second, and Apple and Pear, could they only be had, as good thirds. As to the fourth, there will probably be considerable variety of opinion. In the north of Scotland and other localities where Larch abounds it is highly prized as firewood. It not only burns well and gives out a good heat, but is easy to prepare, and cleanly to use and store. It also gives out a mild and pleasant odour. Sycamore, Spanish Chestnut, and Beech are almost equal in heat-producing properties; and though there is such a difference in weight between Beech and the other two, it does not last much longer nor give out much more heat. Spanish Chestnut spits and sparks almost as much as many Firs. Horse Chestnut is hardly equal to these for fuel, and is not often found in sufficient bulk for firewood. Elms of all sorts I place last. Most of them are difficult to reduce to proper size and form, and are what the Scotch call "dour" burners—a quality most trying to the tempers of those in a reasonable haste for dinner or to get warm. Perhaps no wood needs so much humouring in the burning as Elm, and few woods are, on the whole, less satisfactory, humour it as we may. A good deal, however, depends on its greenness or maturity, and possibly not a little on the soil on which it is grown and the sort. One more wood should have followed closely on the heels of the Ash, if it should not have succeeded the Oak as second, and that is the Hazel. Where this can be had of considerable size, it leaves little to be desired in firewood.—HORRUS.

—Perhaps my experience on this subject may be worth recording, as we burned wood of all sorts in my youth, partly loppings from a wood in the parish, and partly the produce of our own shrubberies. My father (a tree-fancier well known to the nurserymen of his day) always preferred green Ash or dry Oak-top, but we children liked a fire of Spruce or Scotch Fir, especially the latter, and a bit of Birch was a

rare treat, because it produced so much flame. Elm roots we considered "sulky;" but the worst of all wood was that of Sycamore; nothing would induce it to do more than smoulder.—JUNIA.

WOODLAND NOTES.

RAPID GROWTH OF THE DOUGLAS FIR.—On thinning a patch of the above tree quite recently, curiosity prompted me to measure a few of the individual specimens, these being of twenty-two years' growth, and planted in a free sandy soil, with a considerable admixture of alluvial deposit. One of the largest, but there were many quite as big, contained 38 cubic feet of wood, and measured 30 inches in diameter of stem near the ground level. The average height of the trees is 61 feet, with clean, straight boles that taper gradually from base to top, and an abundance of well-feathered branches. What strikes the careful observer most in these trees is the wonderful difference in general habit as well as mode of growth, the branches of some being as pendulous as those in the typical Weeping Spruce (*Abies Morinda*), while others have a decided erect inclination. In colour of foliage as well as habit of growth striking differences are observable in the same wood, that of some trees being of an intense green, others of a dark, almost black, yew green; whilst others, again, have a slight silvery hue intermixed with the usual colour. These differences are likewise usually discernible in the seed-bed, but most strikingly, perhaps, after half-a-dozen years' growth.

GROWTH OF THE WEYMOUTH PINE.—Intermixed with the above Douglas Spruces are a number of trees of *Pinus Strobus*, or the Weymouth Pine, and which, being planted at the same time, or exactly two-and-twenty years ago, give a good idea of the average yearly rate of growth of this valuable tree in our soil and climate. The average height and general bulk of the Weymouth, although far short of that of the Douglas, is, nevertheless, encouraging, and proves to us that when grown on soil of fairly good quality and of a loose nature the tree makes rapid progress, and produces a nice, clean, resinous timber that should be easily worked and suited for many of the uses of an ordinary carpenter. The stems are remarkably uniform in size, the whorls of branches occurring at regular intervals of about 21 inches, and the bark, which is smooth and unctuous in appearance, is of a pleasant olive green above, but changes to a dull terra cotta on the lower portion of the stem. I have just been examining some boards of the Weymouth Pine, the produce of trees cut seven years ago, and find these, although placed under disadvantageous circumstances, as fresh and sound as when cut, the only difference being that the original light colour has given place to a deep lance-wood yellow. I am quite certain that few persons would recognise one of these planks as home-grown, for an examination and comparison reveal but slight differences between it and that imported from its native country.

THE LEBANON CEDAR AS A GENERAL FOREST TREE.—For planting indiscriminately amongst the general run of our forest trees, the above Cedar is, here at least, not well adapted. It requires plenty of room for spread of both root and branch, else it soon puts on a miserably unhealthy-looking appearance, the leaves being scant and a yellowy green, the branch growth laterally short, stunted, and prone to die off prematurely, thus imparting to the whole tree that half-starved look that is anything but desirable where a healthy state of the woods is of first importance. Hardly a year passes that we have not to remove one or two specimens of the Lebanon Cedar, owing to ill-health, but how caused is a puzzle that has baffled for years our most careful investigation and research. Low-lying, damp ground is not the cause, for others lying high and dry are similarly affected, and if soil be the cause, then that of every description almost must be at fault, for on rough sand, heavy loam, vegetable refuse, shale rock with light, sandy loam at top, as well as carefully prepared peat bog, they have gradually become unhealthy, and ultimately died out altogether. I am not now referring to woodland trees, but rather to those grown as single specimens for lawn and park decoration. Seldom does the disease, or premature death from other causes, attack

trees of less than about twenty years' growth, the first indications being want of foliage, this becoming scant and of an unhealthy colour, and in less than three years old is up, for usually at that stage the tree dies off, unless when growing in a conspicuous position, when usually after the second year the axe is laid to its roots.

LARGE EVERGREEN OAKS.—It may be of interest to at least a few correspondents to know that there is growing on Taly Bont farm, midway between Bangor and Aber, a very fine specimen of the Evergreen Oak that stands about 50 feet high, measures 10 feet in circumference of stem, and has a diameter of spread of branches covering 39 feet. Standing alone, with no kind neighbouring clump or wood to guard off our dread south-western blasts, and with a well balanced head of the richest and greenest of foliage, clearly points out how well adapted this valuable tree is for high lying, wind-swept districts. But not only as a hardy subject is the Evergreen Oak well worthy of commendation, for as an ornamental Evergreen that imparts both warmth and character to the adjacent surroundings it has certainly few equals. Large as the above specimen may seem, it fades into insignificance when compared with those of the same kind growing at Peniarth, County Merioneth, and which the following inscription on a beautiful plank of this wood, sent to Lord Penrhyn from the owner of the Peniarth estate, in 1868, and now preserved in our wood collection, but too plainly shows:—

This wood is a piece of one of the great Evergreen Oaks at Peniarth, County Merioneth, blown down in October, 1850, the same night on which the *Royal Charter* was wrecked on the east coast of Anglesea. The largest of these trees was 47 feet high, 6 feet in diameter (21 feet in circumference), and 17 feet from the ground 11 feet in circumference.

1868. W. W. E. W.
The plank in question, although only 20 inches long, 7 inches wide, and an inch thick, weighs fully 5½ lbs. It is of a pleasant walnut-brown, marked with black bars longitudinally, these again crossed, nearly at right angles, with rather broad, wavy, dark brown bands, thus rendering the wood, but particularly in a polished state, of a rich and desirable tint. The idea that this beautiful graining and density of the wood is characteristic of the Evergreen Oak in general must not, however, be for one moment entertained, for it is only the largest and oldest of trees that produce as heartwood anything akin to the above.

EARTHING UP TREE STEMS.—This should never be tolerated, unless, indeed, it is immaterial whether the trees live or die. Not long ago we had some experience of the evils of such—Birch, Alder, Oak, Larch, and Scotch Firs being killed outright, and that in a very short period of time, by the embanking work carried out in the formation of a railway line. At the time it was, no doubt, thought that these living trees would act as first-class props for the embankment, but in less than two years every tree that had a stem covering of 4 feet and upwards was killed. This should be a warning to contractors to first of all remove every tree that may come in contact with the earth thrown together in embanking before the work is set about, for such work cannot be satisfactorily carried out afterwards, unless at great expense and at considerable loss of timber as well.

WOODLAND DRAINAGE.—In a season like the present the effects of a thorough system of drainage are only too apparent; whereas the evils caused by neglect of such should act as a future warning to every forester not to neglect so important and useful an operation. Ground that is excessively damp cannot produce healthy timber—in fact, if we would but take Nature as our guide in this matter we will find that a free, light loam on a porous subsoil produces the largest and finest quality of timber. It, therefore, behoves everyone in charge of woods and plantations to look well to whether or not the ground is relieved of superabundant moisture. Open ditches may be cut in old woods where the Moss clad trees indicate that too much moisture is present, but in doing so, care and forethought must be exercised in choosing the line of drains, so that the dampest ground may be traversed; as well as that in cutting the drains they may have been marked off at such a distance from the tree stems as to injure the roots of these as little as possible. A definite

system of drainage is not required in such cases, the best plan being to open good wide ditches wherever the state of the soil and appearance of the trees indicate that such is needed.

PINUS LARICIO AS A FOREST TREE.—All along we have strongly advocated the extended use of the Corsican Pine for forest planting in this country, and the eagerness with which nurserymen are getting up a stock tells but too plainly for what particular tree most demand is anticipated in the future. Experiments have been carried out all over the country, from the cold, high-lying lands of Scotland to the low-lying plains of Southern England and Ireland, and in every case the anticipated news reaches us that amongst the various Pines that have been tried none seems better suited for the soils and climate of this country than the one in question. It always does me good to have a walk through a thirty-acre wood that was formed on a bare, wind-swept moor at a considerable elevation above sea level to see how the Laricio braves the piercing blasts to which that hillside is fully exposed, and there puts on a freshness and greenness of foliage tint that even the ozone of our seaside woods cannot impart. Many trees have we cut up for boarding, &c., and it pleases us well, being firm and close grained, well impregnated with resin, and capable of being readily and easily worked. The Laricio has a very bad fault, but only the one that I have yet found out, and that is it transplants badly if proper care has not been expended on its early training so as to produce an abundance of fibrous roots. By transplanting it when two years old, and annually afterwards until planted out permanently, we have quite overcome this evil, but to treat the Laricio as we do the Larch, Scotch, and Spruce will never do. Plant the Laricio out permanently at a young age, say three years, and if the above directions have been followed few deaths will occur. A. D. W.

SCOTTISH ARBORICULTURAL SOCIETY.

At a meeting of this society, which took place at Edinburgh, Dec. 23, as reported in the *Scotsman*, it was agreed that the competition essays and reports for next year should be as follows:—

Class I.—For Open Competition.

1. The best and most complete original plan, accompanied with specifications and estimate, for the erection of a forester's cottage.
2. Essay on the comparative value of the newer Conifera, as ornamental or timber trees, in Britain, with date of introduction.
3. Report on the effects of the great gales of the last twenty-five years on the woods and forests of Britain. The report to give the date of gale and statistics of trees destroyed.
4. The history and details of management of the plantations on an estate for a period of not less than twenty years, giving the acreage, annual receipts and expenditure per acre.
5. Report on the comparative value of the different timber trees grown for profit in Britain, with rate of growth of each species in a given time.
6. Report on the plantations of which the competitor is forester. A medal to be awarded for the best report from England, Scotland, and Ireland, and competition to be confined to each country. Reporter to state the extent of plantations, the kinds of timber grown, soil, situation, age, management, &c.
7. Essay on the present state and future prospects of arboriculture in the county in which the competitor resides.
8. Essay on the best system of managing Oak plantations and Oak coppice.
9. Essay on best method of rearing underwood for game coverts in high forest.
10. Report on Conifera produced from home seed as compared with plants from foreign seed.
11. On the natural reproduction (by self-sowing) of forest trees.
12. Essays on the advantages of forming belts of plantations on hill pasture land; the proper width, the best system of draining and fencing, and the most suitable varieties of trees to be given.
13. Essay or report on an arboretum, with plan.
14. Report on the old or remarkable trees on the estate where the competitor resides, giving correct measurements of the circumference of the trunk at 3 feet and 5 feet from the ground; the height of the bole, the total height of the tree, and its cubic contents to 8 inches in diameter. Photographs or drawings to accompany the report.
15. Report on timber grown in Scotland and its uses. The writer to state the principal markets for the various classes of timbers, and the use to which such timber is generally put, with other details.
16. Essay on the best methods of utilising small wood in the manufacture of fancy-wood articles, turnery, &c.
17. Essay on the best method of seasoning different timbers.

19. Essay on any disease incidental to forest trees.
20. Report (from personal knowledge) on the forests of any British colony.
21. Report (from personal knowledge) on the forests of the United States of America.
22. Report on the system of forest management in any foreign country.
23. Essay or report on any other subject connected with arboriculture.
24. For a new invention or a marked improvement on any of the implements used in forestry (models or implements to be accompanied by a report).

Class II.—For Assistant Foresters only.

1. Essay on the formation of plantations. The writer to describe all operations necessary for laying out, planting, and managing plantations for the first twelve years.
2. Essay or report on the best method of renovating overgrown shrubberies. The writer to state the treatment required for the various species of plants.
3. Report on the management of a home nursery.
4. Essay on the best size of plants, and method of planting to produce the best results in different soils and situations.
5. Essay on the formation and management of live fences.
6. Essay on the best dead fence (iron, wire, wood, or stone), taking into consideration economy, efficiency, and durability, and detailing the method of erection and cost.
7. Essay on the peeling and harvesting of different kinds of British bark used in tanning.
8. For the best and approved model in rustic work or in ornamental woodwork of any subject designed and executed by the competitor. Model not to exceed 6 feet in height.
9. For an essay or report on any other subject connected with arboriculture.

The prizes offered in each case are gold, silver, and bronze medals, or their value in money, ranging from £5 to 10s. In connection with No. 7, Class II., a remark was made by the chairman, that foresters were greatly handicapped in this country in preserving their bark by the weather. Mr. D. F. Mackenzie, Morton Hall, said there was no doubt that the tannin was washed out of the bark when it was exposed to the rain. The chairman said that the bark should be dried under cover. A tanner had said to him that more Scottish bark would be used if that were done. The Americans had tried sending over the tannin extracted from the bark in barrels, but it had been found not to work so well. It was announced that Her Majesty had given permission to the society to visit the woods and forests at Balmoral during the first week of August, 1887.

A note was also read from Mr. John Michie, forester, Balmoral, one of the members of the council of the society, stating that he should be glad to assist in the carrying out of the excursion so far as may be in his power.

THINNING FOREST TREES.

THERE is, perhaps, no other branch of more importance in the successful rearing of timber trees for profit than a thorough knowledge of the art of thinning, and, perhaps, there is no other branch of tree culture so little understood, or, at all events, that practical men are more divided in their opinions as to the proper mode of carrying it out. Some say, "do not thin at all, leave that to Nature, and she will do the work infinitely better than we can do." These advisers generally commence their argument by asking, "Who thinned the natural forests—the source from which we derive the finest and best quality of timber?" Now at first sight these arguments appear to be conclusive, and there can be no doubt that by studying Nature we can learn much; at the same time when once we become familiar with her ways, we can sometimes find a favourable opportunity of assisting her in her operations, and by acquiring a knowledge of her economy, and where and when to apply that assistance rests the pivot of the whole argument. As, for example, in thinning a natural plantation of Scotch Fir some years ago, I found a patch of trees in one portion of the plantation about 30 feet high, and growing at a distance of some 10 inches or 12 inches apart. These trees were straight, and free from branches with the exception of small bushy tufts at their summits. Now, had these trees been thinned in early life, there can be no doubt that they would have attained the size of useful timber; whereas by leaving them to Nature they were only fit for paling rails or other similar purposes. These trees, being all about one size, grew up like a crop of Corn or Wheat, but had they been of different sizes the results would have been widely different, as the larger trees would then have killed their weaker neighbours, which is Nature's system

of thinning under ordinary circumstances. This may be taken as a fair illustration of the difference between natural forests and such as have been planted. The trees in the latter are generally nearly one size as regards height, whereas the former are of different sizes, except in some isolated patches such as I have referred to. Now when the larger sizes of trees in the natural forest kill the weaklings in their immediate vicinity, the latter are never removed, at least as far as Nature is concerned, so that they crumble away and fall to the ground by degrees; consequently no sudden climatic change takes place in the forest, as the work of pruning and thinning goes on at such a slow pace that the trees left never feel the want of such as have been killed, and the result is that we never find any bark-bound trees in the natural forest, that is trees whose bark contracts and prevents the free circulation of sap, such as is caused by sudden exposure.

The foregoing is a brief description of Nature's system of thinning. I shall now hastily glance at the system pursued by the forester, and in doing so I think I should not be far wrong in stating that in too many cases plantations suffer considerably before thinning is commenced, the trees becoming too crowded. Care is necessary at all times, but more especially in cases where thinning has been neglected too long, not to admit too great a current of fresh air at once into the plantation, which would have a very injurious effect upon the health of the trees, and lay the foundation for a series of diseases, from the commencement.

On exposed situations and under such conditions I have found it a good plan to stem-prune such trees as were to be removed by cutting off two or three tiers of the lower branches, by which means the permanent trees are allowed room for development, and the others can then be removed in due course as required. This system is more in accordance with that pursued by Nature, as the temperature of the plantation undergoes less change than would be the case were the trees cut and removed at once. I have practised this system on exposed situations for many years, and can recommend it with confidence under such circumstances; nor do I remember seeing any of the permanent trees so dealt with become bark-bound, or fall into a state of premature decline.

Under such conditions it will be seen that thinning should be carried on gradually and conducted on rational principles, special care being taken never to open up the plantations too much at one time to admit a sudden rush of air through the trees, otherwise the latter are sure to suffer damage to a serious extent.

Trees growing on different soils and situations show considerable diversity of size and strength in a given period of time, so that it is necessary to take all such circumstances under consideration when commencing to thin. Those, again, on high exposed situations should be treated cautiously as regards thinning, whereas such as are growing in sheltered situations in the interior of the plantation may be allowed more space than the former without risk of injury. Another point of much importance in rearing timber for utility, and one which should never be lost sight of, is to remove all crooked, weakly, inferior trees, and leave such as are strong and healthy for the permanent crop. Sometimes this system may interfere to a certain extent with the regularity of the trees left upon the ground as regards their distance apart, yet, although it may sometimes happen that the best tree is not in the exact spot where it could be wished, yet for the welfare and prospective value of the plantation the best should always be retained. No doubt if the trees in a plantation were all equally robust and healthy, then such should be thinned to a regular distance apart; but it is seldom that such is found to be the case, and although trees may appear to be nearly uniform, yet the practised eye of the forester can often detect a difference, when he will then select accordingly. J. B. W.

Timber sale.—About 500 Elm trees were sold at Wantage, Berks, recently, at prices ranging from 6d. to 9d. per foot. The quality of the timber, with a few exceptions, was scarcely up to the average on account of the trees being knotty, owing to constant lopping.

No. 791. SATURDAY, Jan. 15, 1887. Vol. XXXI.

"This is an Art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—*Shakespeare.*

ORCHIDS.

DOES ORCHID CULTURE PAY?

I HAVE had to do with Orchids ever since I began my gardening career in 1852, good collections, for the period, having been grown in all the establishments I passed through, and more or less under my charge. I long ago formed the opinion that as far as the appearance of Orchids went, when not in bloom, they were anything but ornamental in the ordinary sense of the word. They are queer-looking objects, and sometimes interesting in appearance, but I have never heard anyone venture to assert yet that they were handsome subjects in the sense that ornamental plants are regarded. In short, to speak the truth, a shelf of mixed Orchids has about as scraggy an appearance as any collection of plants could well have; and as in collections generally the blooms are, as a rule, few and far between, this scraggy aspect may be said to be the normal condition. I am not speaking of trade collections, in which monetary considerations compel good culture, and where the flowering plants are gathered from among thousands of stock to make a display for the public, but of collections in general, which run perhaps from a hundred to two or three hundred plants in private places. Such collections are, as a rule, unsatisfactory and unprofitable—not regarded from a merely monetary point of view, but as decorative subjects in any form. I had lately some talk with a plant-grower in a moderate way, and, concerning Orchids, he said he commenced their culture with enthusiasm, from what he had seen at flower shows and in nursery collections, and gave it up in disgust. His collection was managed as well as such collections generally are, but he had plants that had never flowered from the day they came—several years, many that flowered but sparingly, and only a few that flowered fairly well. Altogether his Orchids were the least satisfactory plants on the place, and he "swapped" them, as he said, "for a collection of anything that would live and flower with some degree of certainty, and that he could gather a handful of flowers or leaves from without fear or hesitation when he wanted them." This he now succeeds in doing, although the value of the "swap" on his side was a flea-bite compared with what he paid originally for his Orchids. This view is being adopted now by a good many proprietors and their gardeners; by the first, because of the expense of culture and poor results, and by the latter because of the difficulty of giving the plants the attention they need with the reduced labour which is now the order of the day in many old gardens. The rage for Orchids began in the large gardens of the wealthy throughout the country, and later extended to those in the suburbs of towns. Their culture is now practically discontinued in the former, or, at least, is at a standstill, and the town gardens will follow suit, as they have hitherto done in gardening matters. Nurseries are at present crammed with private collections of Orchids reluctantly taken in at a great sacrifice to the private grower. I do not say that there are not a few Orchids that it will pay to grow for flower, but the number of these can be summed up on the fingers of both hands. What is true is, that collections of numerous spe-

cies and varieties as now grown by the average cultivator are practically a failure, and none are so ready to own it as the trade whose prospects of business depend largely on the mortality among their customers' collections. "What becomes of them all?" I asked a nurseryman not long since, and the reply was, "Oh! they are killed, or die from some cause or other," and he was not far off the mark, judging by what we have seen. For those who wish for plants in flower, in quantity, under glass, the choice lies between stove and greenhouse plants and such hardy subjects as can be grown in pots; Orchids are out of the question. True, their flowers are pretty, and some sorts last in perfection a long time, but these advantages are lost in other ways. I fear that hitherto Orchids have greatly hindered the culture of many other subjects of far more value to the gardener. A house of Roses alone, for example, can be put together for as many pennies as it would cost pounds to fill it with Orchids, and I would like to know anything better than a good supply of Roses of the different beautiful kinds now in culture between December and May. Where the plants receive the most ordinary care they produce blooms in abundance to supply not only the house, but to give away to the proprietor's friends, giving pleasure both to the giver and receiver. Yet Rose culture under glass is as yet a comparatively neglected art, even in those gardens where Orchid culture is but unsuccessfully attempted on an extensive scale. And the same could be said of many other subjects, such as Azaleas, both tender and hardy, Rhododendrons, Camellias, as well as other shrubs and plants well adapted for culture under glass. Under all these circumstances I have somewhat reluctantly come to the conclusion that the popular Orchid is neither a remunerative nor a satisfactory subject to cultivate under ordinary circumstances in private gardens for a supply of flowers, whether on the plant or in a cut state, and that for such purposes many excellent and in every way better substitutes can be found. W.

CALANTHES AND PHAIUS.

THESE are two important genera of orchidaceous plants, and so nearly related to each other, that some interesting crosses have been obtained from them. In each case the seed-bearing parent, *P. grandifolius*, has produced a *Phaius* and not a *Calanthe*, although the progeny has been intermediate between the two. It is twenty years since *Phaius irroratus* first flowered. It is the result of a cross between *P. grandifolius* and *Calanthe nivalis*. Subsequently a cross was effected between *P. grandifolius* and *Calanthe vestita rubro-maculata*, and produced *P. irroratus purpureus*. The first of these bore white flowers, with the exception of the throat, which is pale yellow. Another form which has just flowered has been obtained by crossing *P. grandifolius* with *Calanthe Veitchi*. This has borne a noble spike, furnished with fifteen flowers, each 3 inches across, and very beautiful. The sepals and petals are white externally, and flushed with pale pink inside; the undulated lip is whitish, with a rosy pink margin, and the throat yellow. It may not be botanically distinct from *P. irroratus*, but it is sufficiently so for garden purposes. The intermediate character of these interesting crosses is noticeable even in the habit of the plants; they have not the decided evergreen character of the seed-bearer, nor are they decidedly deciduous, as in the case of the pollen-bearer. Of the last-named it is unfortunate that so few seedlings were raised. Only one plant was saved; and propagation, by severing one or more back bulbs from the main body of the plant, is but a slow process. It might be a question of some importance to know whether seedlings could be raised from any or all of these bi-generic crosses by using their own

pollen. Their culture is certainly not difficult not more so than that of *Calanthes* or any other stove plants; they grow very freely, and flowering as they do during the winter months, they are certainly valuable.

The seed-bearing parent of these hybrid Orchids, *P. grandifolius*, was well known in this country more than a hundred years ago. It was introduced from China about the year 1778, and was grown many years subsequently under the name of *Bletia Tankervillei*. It was also described in the *Hortus Kewensis* as *Limodorum Tankervillei*. Could such a handsome Orchid be brought forward as a new species, it would create quite a furore amongst orchidists. As an exhibition plant it was well known twenty-five years ago, but it usually flowers in March and April. There is an excellent coloured illustration of it in the *Botanical Magazine* (tab. 1924) published in 1817. There are two more species in cultivation, or probably merely sub-species of this, viz., *P. Blumei* and its variety *Bernaysi*, a native of Queensland, also *P. Wallichii* of Lindley, an Indian species. These are tall-growing, handsome Orchids which succeed best potted in loam, leaf-mould, and a little decayed cow manure. I have also found that they thrive well when spent Mushroom manure is put in the compost. The introduction of the handsome *P. tuberculatus* and *P. Humbloti* a few years ago marked quite an era in regard to this genus. These last-named kinds require a very warm atmosphere well charged with moisture, and Sphagnum Moss and a little fibrous peat to grow in instead of loam. They succeed well in some collections and in others they refuse to grow at all, although the greatest care is bestowed upon them. They may be of very great value as seed or pollen-bearers to cross with the *Calanthes*.

The latter have been greatly improved during the last few years by numerous additions, some of the best of them being English-raised hybrids. The finest pure white I have seen is a variety of *C. Veitchi*; the formation of the flowers, length of spike, and whole character of the plant are the same as in *C. Veitchi*. A recent seedling now in flower in Messrs. Veitch's nursery at Chelsea has also very long spikes, with pure white flowers 2½ inches in length by 2 inches wide; this was raised by crossing *C. vestita lutea* with *C. nivalis*. There are also in flower some very distinct pale coloured types, such as *C. lentiginosa*, also a rose and pale red form of that species. These, I believe, were raised by crossing *C. Veitchi* with *Limatodes rosea*. The original winter-flowering species which have in years gone by done such good service cannot yet be dispensed with. Of these there are two groups, both introduced to this country by Messrs. Veitch. Their history is as follows: *C. vestita* (three varieties) was sent to their Exeter nursery from Moulmein in 1848, and the variety with the yellow blotch on the lip was figured in the *Botanical Magazine* (tab. 4671) as *C. vestita* simply; these flower early and continue in bloom up to the new year; indeed, we have them in full bloom now (Jan. 8). *C. Turneri* is quite a distinct species, and was sent by Mr. Thos. Lobb from Java; of this species there were two distinct varieties. *C. Turneri* has a rosy red blotch on the lip, and was the first to flower; the other variety flowered subsequently, and was altogether pure white; it received the name of *C. Turneri alba*. Both flower later than the true *C. vestita* section. *C. Veitchi* flowers at midwinter, and its rosy red flowers contrast well with those of the light-coloured forms. When the flowering period of the deciduous species is well over, the evergreen species are quite ready to take their place. Of these, *C. veratrifolia* is the best, and it is a species familiar to most growers of stove plants. Its flowers are of the very purest white, produced very freely on erect flower-spikes, and the spikes continue in full beauty for two months at least; unfortunately, they are not well adapted for use in a cut state, as they fade in twenty-four hours. This species can always be depended upon to flower in May and June. *C. Masuca* is not so well known, nor does it make

such free vigorous growth, unless in extra good condition. There is a type named *grandiflora* which produces its spikes quite 3 feet high. *C. Domini*, quite a charming hybrid, belongs to the above two species, and requires very similar treatment. Sir Trevor Lawrence exhibited a wonderfully fine specimen of it a few years ago with at least a score of strong spikes on it. The peculiar lilac tint of the sepals and petals is very attractive; the lip is purple. The yellow *C. curculigoides* is a plant to dream about. I have never been fortunate enough even to see it, but it has evergreen leaves and much resembles *C. veratrifolia*, except as regards the colour of the flowers.

The evergreen species of *Calanthe* require the same treatment as the deciduous kinds, except in regard to water. When at rest, they require no water at all at the roots; whereas the others must not at any time be allowed to get quite dry, even in winter. In potting, fill the pots quite a third of their depth with drainage, and over the crocks place a layer of fibrous turf from which the clay particles have been well shaken. A little broken charcoal may be mixed with the potting soil, which should be pressed into the pots moderately firm with the fingers, finishing off the surface as level as for a *Pelargonium*. If the loam is of a clayey character, some coarse sand ought to be mixed with it.

Greenfly gets amongst the flowers if the plants are not fumigated before they open. Brown scale will also attach itself to the leaves, and must be washed off with a sponge and soapy water. We have also had to deal with yellow thrips on them; these, however, succumb to an infusion of tobacco liquor.

J. DOUGLAS.

Lælia anceps.—Numerous varieties of this showy Mexican Orchid are now flowering in Mr. Horsman's Marks Tey Nursery, at Colchester. Amongst the most remarkable forms observed were *Percivaliana*, with its beautiful purplish magenta and white lip; the large and deeply-coloured variety known as *grandiflora* is also a chaste variety; whilst in *coccinea* we have perhaps the most intensely coloured and brilliant form of *Lælia anceps* yet seen.

Dendrobium Fytchianum roseum.—The normal form of this elegant *Dendrobium* was introduced from Burmah many years ago, and was figured by mistake in the *Botanical Magazine* under the name of *D. barbatulum*, from which, however, it is abundantly distinct. It has pure shining, snow-white flowers, which are produced from five to ten together on terminal racemes. In the new variety *roseum*, the white is suffused with a lovely tint of warm rose. This, together with the fact of its being a mid-winter bloomer, will considerably enhance its value. We recently saw it in bloom in Mr. Williams' nursery at Holloway.

Odontoglossums at Chelsea.—These lovely mountain Orchids are now making a rich display in Mr. Bull's nursery; amongst the varieties of *O. crispum* the colours vary from pure white to richly spotted white, and to deep rose colour. There are also quantities of exceptionally fine forms of the *majus* variety of *O. Rossi*, whilst *O. Pescatorei*, which used to be looked upon as a spring-flowering kind, may also be found displaying its chaste white flowers, blotched with purplish magenta on the lip. The Lily-of-the-Valley-like flowers of *O. pulchellum majus*, if not very large, are of the purest white, and disperse a delicate perfume. Amongst other *Odontoglossums* which maintain so much gaiety here are quantities of the richly coloured *O. leopardinum*, *O. Roczli*, *maculatum*, *Cervantesi*, *gloriosum*, *madrense*, and *Erstedii majus*.

Calanthes at Holloway.—In spite of the fogs with which London has been lately visited, there are more flowers open on the *Calanthes* than on any other Orchid. They are just now very fine at Holloway, their long arching spikes of bloom having a graceful and beautiful effect. The

most noteworthy kinds are *C. Veitchi*, the red and yellow-eyed forms of *C. vestita*, *C. Sandhurstiana*, a desirable plant, being a hybrid raised between *C. rubro-oculata* and *Limatodes rosea*. It produces very long spikes, and bears quantities of flowers, which are of a richer and deeper shade of rosy crimson than those of *C. Veitchi*. On the lip there is also a beautiful eye-like spot. *C. Regneri*, a species introduced from Cochin China, proves to be a charming addition to this family; the sepals and petals are white, whilst the lip is deep rosy pink.

Compærtia macroplectron.—This elegant little Orchid is now flowering in various places about London, and very attractive its flowers are. They are a soft rose, and on the spreading, almost square lip there are numerous dotted lines of rosy-red. There is also a very long spur, which is of a pale rose colour. In some varieties we have observed that the whole surface of the lip is covered with red dots. *Compærtias* are somewhat rare in collections, their cultivation not being apparently understood. We have found the scarlet-flowered species (*C. falcata* and *C. coccinea*) to thrive best upon blocks, in just the smallest quantity of *Sphagnum Moss*. Treated in this manner, they produce quantities of roots which cling tightly to the wood, but they apparently do not long survive if their roots are covered up with either Moss or peat. They do not appear to thrive if exposed to the full light, and they require great attention all the year round, as, being plants with very minute pseudo-bulbs, they cannot withstand drought. *C. macroplectron* is a native of New Grenada, and should be grown in the warm end of the Cattleya house.—W. H. G.

NOTES OF THE WEEK.

Primula obconica.—This pretty Japanese *Primrose* is scarcely ever out of bloom; even now it is bearing numbers of mauve-tinted blossoms. In this respect it forms a good companion to the perpetual-blooming *P. floribunda*. In one point, however, it surpasses that kind, and that is fogs, which have lately played great havoc with *P. floribunda* by destroying nearly the whole of its foliage and greatly disfiguring its blooms, have not injured *P. obconica*, though growing under the same conditions.—H. P.

Erica melanthera is one of the prettiest winter Heaths, and of the large number of kinds in flower at Kew, it stands out from all the rest by its distinct appearance. The flowers are very small, like tiny mauve wax bells with black anthers, and each plant bears myriads of these. The habit is neat, for the floriferousness of the plant checks exuberant growth. It lasts a very long time in bloom throughout the winter; in fact, therefore quite worth growing in a general way. The flowers have rather a fetid odour, but this is not observed if not sought for.

Jasminum pubescens.—This beautiful old white *Jasmine* is scarcely less desirable than the new *J. gracillimum*, which it so nearly resembles, that one might easily mistake one for the other. Both have large white and sweetly scented flowers, and the foliage is similar, but *J. gracillimum* has more of a climbing tendency, while *pubescens* may be grown as a dwarf pot bush. Both kinds may be seen flowering side by side in one of the stoves at Kew, and their fragrance perfumes the house. For cutting from at this season both are excellent, though their flowers do not last long in water.

Veitch Memorial prizes.—At a meeting of the trustees held at South Kensington on Tuesday, the 11th inst., it was decided that a £5 prize and medal should be offered for competition at the principal show of each of the following societies: York Gala, Liverpool, Birmingham, Leicester, Oxford, Derby, and the Royal Horticultural, May 24 (*Cypripediums*). Also at the National Dahlia Show, to be held September 2, a prize of £2 10s. and a medal should be offered in each of the following classes: Self show, parti-coloured show, Pompon, decorative, and single. And further, at the National Chrysanthemum Show, to be held in November, a prize of £3 3s. and a medal should be offered for 24 incurved

Chrysanthemums, distinct; a similar prize and medal for 24 Japanese kinds, distinct; also a prize of £2 2s. and a medal for each of the following: 24 reflexed, 24 large-flowered *Anemone*, 24 Japanese or hybrid *Anemone*-flowered, and 24 Pompons, including *Anemone*-flowered. The object of the trustees in the two latter competitions is to make the exhibitions as complete as possible by inducing exhibitors to bring together specimens of all the best sections of *Dahlia* and *Chrysanthemum* in cultivation. The number of prizes offered during the year are therefore—7 special prizes, 5 *Dahlia* prizes, and 6 *Chrysanthemum* prizes, or 18 in all, each prize being accompanied by a medal. These prizes are open to competition amongst amateurs only.

Justicia purpurea.—Some specimens of this in the stove have been for a considerable time, and still are, objects of great beauty, being thickly studded with bright purple blossoms, which, though they do not remain long in perfection, are quickly replaced by others; indeed, under anything like favourable conditions, a regular succession is maintained. It is a plant of the easiest possible culture. In spring cuttings strike root in a very short time, and if treated liberally throughout the summer, form good bushy plants by the autumn. Red spider is the principal insect that attacks this plant, and it can be readily kept down by means of the syringe.—H. P.

Gesnera oblongata.—Those who want a bright winter-flowering stove plant may find in this old plant all that they wish. It is a shrubby plant, with pale green foliage, and bears an abundance of flowers, which, though small compared with those of other *Gesneras*, are of an exquisite colour, the buds being like velvet. The plant allowed to grow naturally has somewhat of a straggling habit, but the knife may keep it in good form, and it may also be trained. It is a capital plant for trailing on a pillar, and in that way it flowers most freely. It is not a very common plant, and especially in nurseries, but the other day we met with it in bloom in the Handsworth Nurseries, near Sheffield, where it is a favourite plant and well grown. Its flowering season extends over two or three months. It is a South American plant, originally discovered by Humboldt and Bonpland in Peru, near the city of Quito.

Omphalodes verna.—The Creeping Forget-me-not, or *Venus' Navel-wort*, as it is still called in old-fashioned English gardens, is as beautiful in every way as our native Forget-me-nots, and far more useful for clothing out-of-the-way places in our gardens. But, however well it may grow in such places, it should be seen, we are told, gathered fresh from, or growing in, its native wilds to be fully appreciated. On San Romola, near San Remo, it is said to outstrip in beauty the alpine Forget-me-not (*Myosotis alpestris*) itself—a fact not difficult to believe, after seeing the sheets of clear blue, white-eyed flowers of this plant growing in a semi-shady spot. *Rhododendron* beds, the shady side of shrubberies, &c., suit it exactly, and in such positions I have never known it to fail. There is also a white variety, but it is not nearly so handsome as the type. Both may be increased to almost any extent by division; the stems as they run emit roots from their undersides, and buds at intervals on the top. These, broken into small pieces, soon make good plants.—K.

Cyrtanthus McKeni.—This is a plant that should be taken in hand by nurserymen, so that it may come into general cultivation, as it is, without doubt, one of the prettiest and most elegant greenhouse plants we have for winter-flowering. It is a South African bulbous plant, the best of a genus containing some fifteen species, a few of which, such as *angustifolius*, *obliquus*, being old garden plants. *C. McKeni* has long Grass-like foliage; its flower-stems are erect, and as thick as a quill, each being topped by a cluster of flowers, usually about five together. The flowers are about 2 inches long, tubular, slightly curved, pure ivory-white, and sweet-scented; a good potful of bulbs will produce about a dozen of these spikes, which when in bloom are very chaste and beautiful, and a plant lasts in bloom for several weeks. It has been in flower in the Heath house at Kew since long before Christmas, and is likely to last a month longer. It is, therefore, a most desirable plant, easily grown in a cool greenhouse, or even a frame,

and may be readily increased. It is to be regretted that such a plant should only be seen in botanical collections, but the public should create a demand for it; then no doubt a supply would come, as in the case of other plants that have been known only in botanic gardens. C. McKeni comes from Port Natal—surely not an out-of-the-way place from which to get bulbs.

Eranthemum pulchellum. Flowers of a rich blue are valued at any season of the year, and in mid-winter they are specially acceptable; we are therefore glad to see this beautiful old-fashioned plant again coming into favour, having received sprays of it from several of our readers, to whom it appears to be a novelty. It is, however, anything but that, having been introduced to this country from India nearly a hundred years ago. It was largely grown some years back, but of late it has fallen into disrepute. It is, however, one of the very prettiest soft-wooded plants at this season of the year, but worthless in a cut state, as its flowers fall so rapidly. They are freely produced, and are of a most lovely shade of blue. Cuttings should be struck every spring and the old plants discarded, as young plants are not only handsomer, but produce the finest flowers.

The late Mr. Moore.—At the meeting of the floral committee at South Kensington on Tuesday last, the chairman, Mr. G. F. Wilson, alluded to the death of Mr. Thomas Moore, who had for so many years been connected with the floral committee of the Royal Horticultural Society. It was proposed by Mr. Hibberd, and seconded by Mr. Fraser, that a letter of condolence be sent to Mrs. Moore. It was also proposed that something should be done by Mr. Moore's many friends to mark the esteem in which he was held. It was agreed that a subscription list be opened, so as to form a fund by which a memorial may be erected over Mr. Moore's grave in Brompton Cemetery. In order that everyone who desires may be enabled to contribute to the fund, each subscription will be limited to a guinea in amount. Mr. Veitch, Royal Exotic Nursery, Chelsea, has undertaken to act as treasurer, and Dr. Masters secretary, of the fund.

Turner Memorial prizes.—The money subscribed twelve months ago as a memorial for the late Mr. Charles Turner, of Slough, amounted to £182 18s. 6d. That amount was invested in Consols, and £20 will be available for prizes every year for a period of ten years. That amount will be given in prizes next season at the following exhibitions: The National Auricula (Southern Section) and Primula Society, at South Kensington, on April 26, 1887, for six show Auriculas (to be competed for by amateurs who do not employ a gardener regularly). The exhibits must contain at least one representative of each of the four classes—green, grey, white, and self-edged. Four prizes—40s., 30s., 20s., 10s. The National Carnation and Picotee Society, to be held at South Kensington, on July 26, 1887. Six distinct Carnations and six distinct Picotees (to be competed for by amateurs who do not employ a gardener regularly). Four prizes—40s., 30s., 20s., 10s. The Newcastle-on-Tyne Botanical and Horticultural Societies' Exhibition, to be held in the Jubilee Grounds, on August 30 and 31, 1887. Twelve distinct Roses: three prizes—50s., 30s., 20s.; twelve distinct Dablias: three prizes—50s., 30s., 20s. (to be competed for by amateurs or gentlemen's gardeners).

Rainfall at Dorchester.—I have just been making up the rainfall at this place for the past year, and I find it to be greatly in excess of the average, being not less than 47.44, or very nearly 47½ inches. I have recorded the rainfall here for the last ten years, and I find the average for that time to be 38.76 inches. The fall of 1886 was nearly 4 inches greater than in any other year in the ten years, 1877, in which there were 43.67 inches, coming nearest to it. December, 1886, was the wettest month during that time, when we had 8.29 inches, October, 1880, in which there were 7.81 inches, coming nearest to it. The new year has set in with a heavy rainfall: the first four days has given us 2.31 inches, which makes just over 10½ inches since the 1st of December, and in

consequence the land is full of water; in fact, the garden here is literally a swamp. In making up the annual amount of rainfall, one cannot help thinking with what a liberal hand Nature does her work. Here we have an average of 38½ inches. This would amount to about 3875 tons, or 868,000 gallons of water to the acre. And this makes me think that fruit trees and other things planted out in houses frequently suffer from an insufficient supply of water. We have a Peach house here which has an area of about 1000 feet. What would Nature's supply be to this area? I find it would be just over 20,000 gallons per annum, but I much doubt if it has been supplied with that quantity.—D. UHILL, *Morilton.*

HARDINESS OF PLANTS.

To what degree the ability of plants to endure our severe winters is affected by culture is shown by the notoriously hardy common Wallflower. Growing out between the crevices of a stone wall, where its root-room is of the most limited description and its food of the scantiest, it endures our hardest winters with impunity, but when grown in a deep rich soil it perishes. We have noteworthy examples of this here. On a rockery, under which there happens to be a good depth of tolerably rich soil, we have planted Wallflowers annually for some years, and they have grown much more robustly than usual, and made, indeed, great bushes with numerous and tall stems, which, when in flower, make very fine objects indeed; but every winter some of the plants perish by frost, or are greatly injured, and in severe winters they are all killed outright. The reason of this is, that the plants push long, tap-like roots down between the rocks into the good soil beneath, and never ripen their growth sufficiently. Plants of the same sowing left in the seed-bed of rather poor, thin soil all survive every winter, and so do plants put out elsewhere under similar conditions. Of course, gardeners are familiar with such facts, I daresay, but they are not weighed as fully and as often as they ought to be. A Peach or a Vine, or any other tender tree or plant, is just affected in the same way, and I believe myself that the root culture under such circumstances has far more to do with success than the training and management of the branches. Whether a plant be weak or strong, if it has to produce flowers, and, above all, fruit, everything depends on the ripening of the wood. The stronger and more vigorous the shoots are, the more fertile they will prove, provided they are matured to the core. Grossness is generally regarded as an indication of barrenness, but the barrenness does not result from the grossness, but from immaturity. Ripen the shoot perfectly, and it will not only bear fruit, but it will bear more than any other. This I believe to be the true philosophy of this matter. It may be wise culture not to grow shoots so strong that they cannot be ripened with the means at command; but that does not affect the principle involved. The grossest of all shoots are produced when the roots are allowed to penetrate deeply into a rich, moist soil, from which they continue to send up moisture into the tops long after the temperature of the air has fallen below the growing and maturing point at the approach of winter; hence the tissues remain soft instead of hardening, and perish under frost or severe cold. Rivers's plan of producing strong and fertile shoots by means of rich top-dressings applied to the surface of his orchard-house trees was the right plan. The roots were near to the surface, and as well fed as if they had been deeper down; but being affected by the external temperature almost as soon as the branches, the action between the branches and the roots was more reciprocal, and strong, but well-ripened buds were the result.

Take the Grape out of doors, again, in England. To digress a little, I think, it must be confessed that its open-air culture has not been a success as yet in the right sense of the word. Many people make much of the fact that vineyards were common in England some centuries back, and infer from that that the Grape was grown success-fully then, and that if it fails now it is because either the culture or the climate has gone wrong. I once thought this myself, but of late the accidental perusal of some references to the subject has given me a different opinion. I believe I am correct in stating that the culture of the Vine in this country did not extend over a long period at the time when vineyards did exist. It just seems to have occurred to our ancestors, as intercourse with the Continent became more frequent, that they might grow Grapes outdoors as well as the French, and, just as gardeners do now, they made a rush to try the new idea, with the result that after a fair trial Vine culture out of doors was given up. This to me appears to be one at least, if not the legitimate inference to be drawn from the practice of our forefathers.

But to return to the subject. Has anyone ever tried to grow the Vine out of doors with its roots on an impervious bottom and in a border 6 inches deep? My impression is, that such a plan would succeed, and that under such conditions early varieties might be ripened in good time if the Vines were carefully trained on walls. What hinders Grape culture in this country is the want of sufficient heat; the fruit does not ripen perfectly; hence anything that could promote early or quick root action and growth would help to get over that difficulty, and conditions under which the roots were kept as warm as the tops in a shallow border well exposed to the sun would do that. At all events the wood would ripen sooner and better than if the roots were 2 feet deep, and the ripening of the fruit depends on the ripening of the wood. Grapes under glass seldom or never colour till the wood begins to get brown. S. W.

Plant names.—To the somewhat familiar question, "What's in a name?" the compositor in a horticultural printing office might perhaps reply that there is a very great deal—an alphabet or two—in some names. At this season they may be observed in full cry, like Calverley's "long-backed fancy mongrel trailing casually" through the spring seed catalogues. As the same author would remark, "the imagination boggles at" them, even at the appellation of such a "grand and greatly improved flower" as *Zinnia elegans robusta grandiflora* double. Here is a chance fragment from my friend Short's gardening diary: "In the library, looking out a few dictionaries, &c., for my mar, who will not spell the Orchid names correctly. Hearing a noise outside, went out, and found my good neighbour Lacon stuck fast in the garden gate with an armful of the new patent telescope garden labels of his own invention. Showed me practically how, like Euclid's parallels, they can be produced ever so far both ways (not) to meet the requirements of modern nomenclature. Brought me the promised plants of *Chrysanthemums*, *Monsieur Juan Cruz de Eguileor* and *Monsieur Edouard Pynaert Van Geert*. Spent half an hour with him in the garden. Much pleased with my arrangement of a clump of *Helianthus multiflorus simplex maximus* in a bed of *Petunia hybrida nana compacta grandiflora*, with background of *Cupressus Lawsoniana erecta viridis argentea variegata*. Gave him seeds of *Hellebores Apotheker Bogren* and *Commerzienrath Benary*. N.B.—Must really remember to ask Lacon not to bring his dog Bob with him in future. The brute got into the Orchid house and knocked down the *Odentoglossum Pescatorei Vervaeianum* and the *Campylobotrys Ghiesbreghtii variegata*, and then went and scratched up nearly all my *Matricaria eximia*

nana aurea crispa, and rolled in a patch of *Heli-chrysum monstrosum nanum atre-sanguineum flore-pleno.*"—G. H. E.

FERNS.

LIP-FERNS, OR CHEILANTHES.

MANY who have a taste for Ferns and possess a small greenhouse for their accommodation have to lament the want of interest which their favourites afford them. This is usually attributable to the kinds selected being too large and monopolising too much room. Small houses should not be filled with large kinds simply because they are easily grown. What is wanted is variety, and there are many elegant small-growing Ferns which thrive admirably in a greenhouse temperature, and which would, if properly cared for, furnish this. Many have an idea that Ferns cannot have too much water, and consequently they are kept constantly drenched both overhead and at the roots. Such treatment in the case of bold, robust-growing kinds may not be detrimental, but it is one of the chief reasons why we see so few choice Ferns thriving in a greenhouse temperature. The majority of the Cheilanthès succeed well under cool treatment. Water should never, however, be sprinkled upon their fronds, and during winter it will be found safest and best to err on the side of drought, both in the atmosphere and at their roots. They should be grown in rather small pots, which must be well drained. The soil best suited for their requirements is a mixture of sandy loam, peat, old mortar rubbish, and small pieces of sandstone, a compost which will keep open and porous, and which will allow water to pass freely away. As just remarked, the fronds should never be wetted, and during winter a dry atmosphere must be maintained, whilst as much light as possible at this season should be admitted, but in summer they should be well shaded from the sun's rays. To obviate shading, green glass is sometimes used, but this is about the worst substitute for ordinary shading material that can be used; not that the Ferns refuse to grow under it (although we are not sure that it suits them as well as clear glass), but because the green glass casts such a ghastly light upon the leaves, quite destroying the effect of the beautiful tints of green which the fronds assume in their different ages and stages of growth. From experience we may safely assert that in the culture of plants in our climate nothing is better than to have the summer shading material of such a character, and adjusted in such a manner, that it may be applied or removed conveniently, as occasion may require. Ferns with pendent fronds should always be allowed to assume their natural habit; to keep such fronds in an erect position not only destroys the graceful appearance of the plants, but eventually destroys their vigour. The following kinds are all beautiful, and all well deserving the attention of Fern lovers requiring choice plants for a cool house, viz:—

C. MYSORENSIS.—An elegant plant, found growing in dry, rocky places in Southern India and Ceylon, also in China and Japan; the form from the latter country is the most hardy and robust, and its stems are densely clothed with dark scales. The fronds are narrowly oblong in outline, and their pinne are divided into small segments.

C. ARGENTEA.—This charming little Fern seldom exceeds 3 inches or 4 inches in height. Its fronds are triangular in outline, borne upon slender polished stems, bright green on the upper side, and silvery white beneath, edged with a line of black soft. It is common in Japan, and is also found in China and Siberia.

C. SZOVITSI.—This is said to be a European Fern, being found, although very sparingly, in Italy and some parts of the south of Austria. It is, however, widely distributed in Asia, and is found at considerable elevations in Northern India. It is not a large-growing plant, its fronds seldom exceeding 7 inches or 8 inches in length, and often less than 2 inches in breadth. They are broadly lance shaped in outline, the segments being twice

or three times divided. The stems and undersides of fronds are densely clothed with white and brown woolly hairs and scales; the upper side is deep green.

C. ALABAMENSIS.—The fronds of this, when well grown, attain a length of from 4 inches to 8 or 9 inches; they are narrowly lanceolate in outline, three times divided, the ultimate segments being small, smooth on both surfaces, and deep green in colour. This very elegant little Fern is tolerably plentiful throughout Georgia, Tennessee, and Alabama.

C. CAPENSIS.—The stems of this are smooth, brown, and polished; fronds bright green, ovate in outline; segments entire, bluntly ovate, the lower segments much the largest. South Africa.

C. SIEBERI.—This is another elegant little species, of tufted habit. Its fronds vary from 3 inches to 6 or even 9 inches in length. They are oblong in shape, and about three times divided into small, oblong-ovate segments, which are somewhat coriaceous in texture, and deep green and smooth on both surfaces.

C. HISPANICA.—This Fern is somewhat sparingly distributed through Spain and Portugal. Its slender stems are of a rich polished brown, springing from a dense tuft of stiff hairs of the same colour, which envelop the crown of the plant. The fronds (under cultivation), including the stems, are about 6 inches long, and over an inch wide, but in the wild plant they are somewhat smaller; they are coriaceous in texture, dark green, and smooth on the upper side, but the reverse side is clothed with long chestnut-coloured hairs.

C. LANGUINOSA attains a length of from 6 inches to 8 inches or more: the fronds are ovate-lanceolate in outline, and slightly under 2 inches in width, firm in texture, bright lively green above, and densely clothed on the underside with long woolly tomentum. It is found in Wisconsin, California, and elsewhere.

C. MULTIFIDA, a fine robust kind from South Africa, has dark shining brown stems and fronds, which are triangular in outline. They attain a height of from 9 inches to 1 foot or more, and are three or four times divided; the segments, which are narrow and oblong, are of a firm texture, smooth, and deep green in colour.

C. FRAGRANS, often called *C. odora*, is another European plant, although not a native of Britain. It is very abundant in Madeira and the Canary Islands; is found somewhat sparingly on the rocks at Gibraltar, in various parts of the south of France, and occasionally in Switzerland. The fronds, which have an agreeable odour, are some 6 inches long, by about an inch in breadth, and twice or thrice divided. They are deep green on the upper side, but pale beneath. Other elegant kinds for a greenhouse are *C. vestita*, from Carolina; *C. tenuifolia*, the Australian form; *C. myriophylla*, from Chili and Peru; and *C. lendigera*, from New Grenada. W. H. G.

INDOOR GARDEN.

NEW RACE OF CHINESE PRIMULAS.

THE Royal Horticultural Society's silver-gilt medal was never more worthily awarded than it was last Tuesday, when it was given to Messrs. Sutton, of Reading, for what was, perhaps, the finest, largest, and most varied collection of new double and single Chinese Primulas ever shown in London. Upwards of four hundred plants were exhibited, every one being a credit to the grower. Notwithstanding the bad weather lately necessitating a good amount of fire heat, the plants were not drawn, but stocky in growth, with luxuriant foliage and dense trusses of bloom. No fewer than sixteen sorts were shown, all raised by the exhibitors, and ten of them had not been shown before. These new sorts show what great strides the Messrs. Sutton have made in the improvement of this flower, the most remarkable kinds being the so-called blues, which, by the way, are not true blues yet,

though these may come. But a few years ago no blue Primula existed; then Messrs. Carter showed their Holborn Blue, a single sort with large flowers of a purplish blue. Now Messrs. Sutton have besides single blues two good double blues, one having Fern-like foliage, the other the ordinary foliage of the Chinese Primrose. The colour of these doubles is even brighter and a nearer approach to true blue than that of the singles, which are really beautiful sorts. The floral committee had no hesitation in certifying these double blues, and, no doubt, they were a surprise to many. One member of the committee, Mr. George Maw, made a suggestion as to the possibility of intercrossing a white Chinese Primula with a yellow-flowered species, as he thought that a yellow winter-flowering Primula would be valuable. Whether such a cross as this is possible or not no one can say, but all must admit that the attempt is worth making, and, seeing the rapid steps that are being taken in perfecting the blues, why need we despair of yet seeing yellows? Other remarkable doubles in the Reading collection were those named Double Scarlet, which is not, however, a real scarlet, but a brilliant carmine; Double Rose, an exquisitely beautiful sort of a colour pleasing to everyone. These doubles form quite a different race from those raised by Mr. Gilbert, of Burghley, and sent out by Messrs. Osborn, of Fulham. These Burghley doubles have fuller flowers—more rosetted, so to speak, but they have not the brilliancy of colour of the Reading doubles; and, further, they are far more delicate in constitution and more difficult to grow and propagate. But there is no need to disparage the Burghley hybrids in order to extol the Reading race; both are invaluable, and it is well that they are different; and let us hope that Messrs. Sutton and other raisers will still persevere in the improvement of the doubles and try as much as possible to originate new colours, for that is what is most wanted now. We have a surfeit of crimsons, roses, and whites among Primulas, but blue is a decided departure from the old track, and yellow is still within the range of possibility without even intercrossing with another species; for, be it remembered, Messrs. Huber, an Italian firm, showed in London some remarkable single Chinese Primulas having the yellow centres abnormally developed, almost obliterating, in fact, the white, and therefore a true yellow sort may be seen shortly, for that is, we believe, the ultimate aim of Messrs. Huber. As to Messrs. Sutton's single sorts shown, they do not call for special comment, as similar, if not identical, sorts have been shown numbers of times in London of late years, though no doubt the committee were just in certifying them. Among the single sorts, however, there were some remarkable for curious leaf development; two have foliage like Curled Kale or Parsley, but these seemed to lack quality of flower. To combine this handsome foliage with good flower-trusses and varied colours will, no doubt, be an object for attainment at Reading. Another point about the doubles that must not be overlooked, as it is so important, is, that the sorts may be perpetuated from seed; in fact, the grower of the Reading collection assured us that there was not a "rogue" in the batch of the double scarlet. This is a great gain, as the drawback to other doubles is the difficulty attending their propagation.

Forcing *Choisya ternata.*—I saw it recently stated in *Gardening Illustrated* that the Mexican Orange flower, as this shrub is called, is a good plant for forcing into bloom early, but as I have never seen or heard of its being forced, would any reader enlighten me as to its treatment as a forced shrub? It would be a great gain to have a good supply of bloom of this lovely white sweet-scented shrub at Christmas, or at any time during winter.—W.

THE BRUGMANSIAS.

FIFTY years ago Brugmansias were amongst the most popular of greenhouse plants. They were grown in almost every good garden in which there was a greenhouse or conservatory big enough to accommodate them, and the records of the Royal Horticultural Society tell us how popular they were at flower shows notwithstanding the fact that they are not very suitable for pot culture. Somehow or other, however, Brugmansias have been elbowed out of general cultivation; like a good many other old-fashioned plants, they have given place to more modern, if not more beautiful, introductions. Some good specimens of them may have been seen at Kew, and also at Chiswick in old times.

The Brugmansias should be strictly called *Daturas*, for botanists tell us that there is no material difference between the two genera; in a gardening sense there is, however, a difference, and an important one; therefore we cannot do better than retain the good old garden name of Brugmansia. Brugmansias are all shrubby plants, while *Daturas* are mostly, if not all, annual. A good many names are given under the head Brugmansia in books and catalogues, but there are really only three distinct plants that should bear that name, and two of these are a puzzle to many, who fail to see the difference between them. The three species are *B. arborea*, a native of Peru; *B. suaveolens*, said to inhabit Mexico chiefly; and *B. sanguinea*, also from Peru. The names *B. candida*, *B. Gardneri*, *B. cornigera*, *Knightsi*, *bicolor*, *frutescens*, and others are all synonymous with one or other of the three species above-named. The two white-flowered kinds, *B. suaveolens* and *arborea*, are so variable, and found in such widely separated regions, that it is no wonder the different forms of them have received specific names, and these have been transmitted to and perpetuated in gardens.

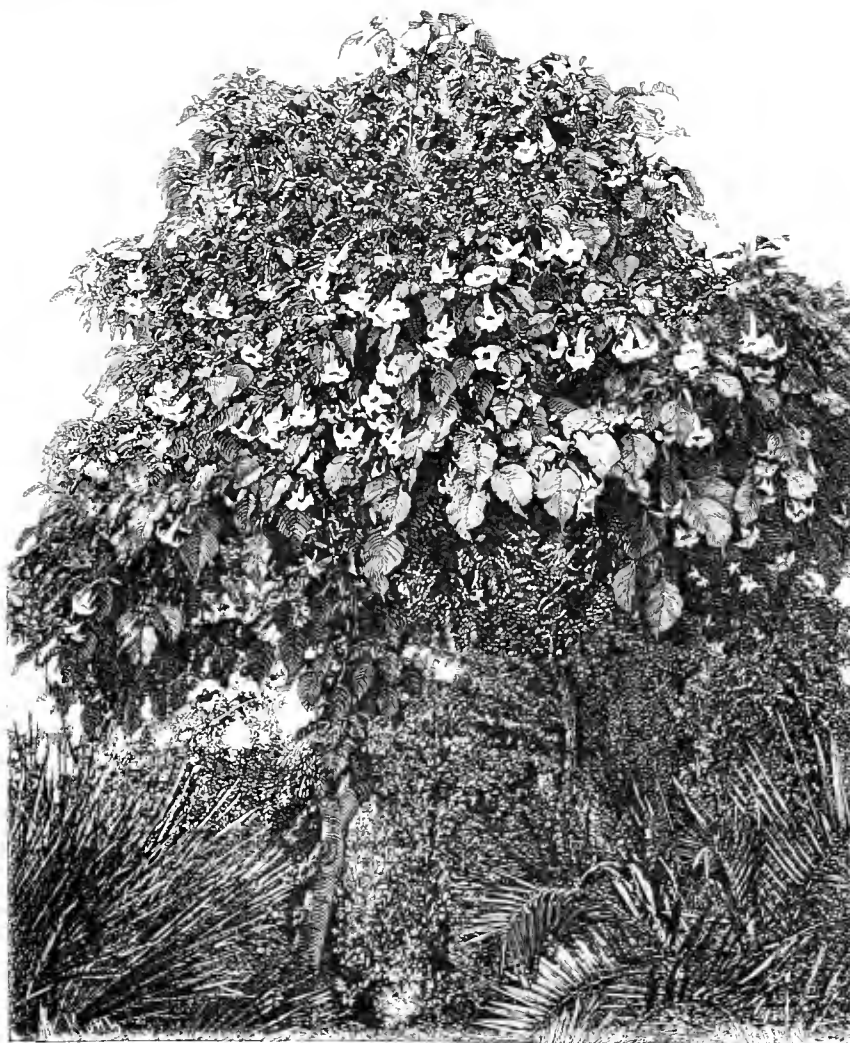
B. ARBOREA is a very old plant, and was known to Linnaeus, who named it. It is the Floripondio of the Spaniards of South America, who grow it in their gardens and much prize it on account of its noble white flowers. In a wild state it is a large shrub or small tree, growing from 15 feet to 20 feet high. It inhabits a wide region in the north-west parts of South America, but it is also found in Brazil. It flourishes on the table-lands of the Andes up to 9500 feet elevation, where the mean temperature is 50°, but it luxuriates most in the valleys by the sides of watercourses. Orchid collectors in Bogota and other districts speak of its being a striking plant everywhere, and say, moreover, that there are yellow and rosy pink-flowered varieties of it to be seen, besides a double-flowered

sort, which is called the Double Floripondio. This double kind is a wild plant, and must be the same as that we have in gardens under the name of *B. Knightsi*, which is perhaps the commonest of the three Brugmansias in gardens; it is sturdier in growth, and is frequently planted out during summer in the London parks. *B. arborea*, in greenhouses, grows from 10 feet to 15 feet high, has broad leaves, often coarsely toothed, and produces noble white trumpet-shaped flowers, from 7 inches to 9 inches in length and pure white. The difference between *arborea* and *suaveolens* seems to be as follows: In *arborea* the flowers have long, attenuated tails to the corolla lobes, whereas in *suaveolens* there

perature is just suited to them. *Datura candida* is the same as *B. arborea*, and so is *Datura cornigera*, a native of the Organ Mountains, figured in the *Botanical Magazine* many years ago.

B. SANGUINEA, the third species, commonly known by its synonym, *B. bicolor*, is very different from the others, but it is also of tree-like growth, varying in stature from 5 feet to 20 feet. It is a native of Peru, where it is known by the name of Red Floripondio, or *Campanilla encarnado*. There is no need to describe here how it differs technically from the white-flowered species, as it may be known at once by the colour of its flowers, which are funnel-shaped, and measure from 7 inches to 9 inches in length. The usual colour is a bright orange-scarlet, lessening in intensity in the tube, until it merges into orange-yellow, and then blends with the green at the base. There is a variety of it, called *flava*, which has its flowers wholly yellow, but this form is rare. The flowers of *B. sanguinea* are produced singly from the tips of the branches, so that by judicious pruning, flowering spurs can be greatly increased. *B. sanguinea* was first introduced to this country by a Mr. Crawley, who brought seeds of it home with him from Guayaquil, in 1833, and since that time it has been more or less popular in gardens. As it grows wild in the mountainous parts of Peru, it is half-hardy, and may be grown in perfection in a cool greenhouse, and even planted out in summer; indeed, the first plant which flowered in this country (which was at Hayes Place, Kent) had withstood the winter of 1833 out of doors.

B. SUAVEOLENS is, next to *Knightsi*, the commonest Brugmansia in gardens, and there are few nobler ornaments to a greenhouse than a large and profusely flowered specimen of it. It is a most abundant flowerer, and the fragrance emitted by a large bush of it is almost overpowering. The



Brugmansia arborea in the conservatory at Lews Castle, Stornoway, N.B. Engraved for THE GARDEN from a photograph.

flowers, which are larger than those of *arborea* and pure white, often measure over 1 ft. in length, and are more bell-shaped than those of *B. arborea*. It is also less tree-like in growth than *B. arborea*, though, in a wild state, it reaches 15 feet in height. It is said to be a native of Mexico, while *B. arborea* is confined to South America. If this be so, it affords additional evidence that the two plants are specifically distinct. It was introduced to Europe so long ago as 1733, and has been grown in English gardens for upwards of a century. The Brugmansia known as *B. Gardneri* is the same as *B. suaveolens*. Among other so-called Brugmansias there was a very beautiful one introduced

is scarcely any lengthening of the segments. In some of the specimens in the Kew herbarium the corolla lobes of *arborea* are 2 inches long. This and other characteristics, not so important to a gardener, are sufficient to distinguish it from *suaveolens*. The flowers are not so sweet-scented as those of *suaveolens*, but are fragrant in the evening. This is the Brugmansia that is said to have become naturalised in parts of California, particularly about San Francisco, where it is much used for room and table decoration. In fact, in all tropical and sub-tropical gardens, Brugmansias are favourite plants; they form a great feature in gardens in the Canary Islands, South Europe, and other places where the tem-

about fifty years ago, and figured in Paxton's *Botanical Magazine*, under the name of *B. Waymanniana*. The flower is represented as being double, or rather a sort of hose-in-hose. The colour is purple and white, and if as beautiful as the plate shows it to be, it must be a most desirable plant. Does anyone know if it now exists in gardens? I could find no trace of it among the herbarium specimens at Kew, but from the description given it seems to be a shrubby plant; hence a *Brugmansia*. Another beautiful plant, once called *B. floribunda*, is now placed in the genus *Juanaltoa*, and is *J. aurantiaca*, which, I believe, is in cultivation.

CULTURE.—One mode of treatment applies to all three *Brugmansias*, as they are of about the same degree of hardiness, and much the same in style of growth. They are not well suited for pot culture unless the pots or tubs in which they are placed are very large, on account of the roots being so bulky and spreading so widely. It is best to plant *Brugmansias* out permanently in a conservatory or greenhouse border, where they can have room to fully develop themselves. They should have at least 15 feet head-room space; hence it is only in good-sized houses that *Brugmansias* can be grown to perfection. The illustration here given is that of *B. arborea* in a Scotch garden, and it shows well what a noble plant the white *Brugmansia* is in a conservatory. Mr. Comings, the gardener at Lews Castle, who sent the photograph, states that the plant in question bears hundreds of flowers every season, and is the chief feature of the garden during August and September. He says, "It gives no trouble when once well planted (it should not be kept in pots), its only requirements being an occasional pruning in order to keep the wide-spreading branches within bounds. No flower," he says, "in my estimation can equal this white *Brugmansia* for purity and fragrance, and for room or church decoration it is unequalled, as, if gathered before the blooms are quite expanded, they last a long time in perfection." The position in the greenhouse in which a *Brugmansia* is planted should be well considered, and the soil for it must be good, such as turfy loam and rotten manure, so as to induce vigorous growth. A hole should be taken out a yard deep and as much across, and a good layer of drainage material put at the bottom. A young, healthy plant will soon shoot up to its full size, after which it may be kept within bounds by close pruning, which is best done in autumn; after that the plant must be kept drier throughout the winter. Subsequent top-dressings or applications of liquid manure will always remedy exhaustion from profuse flowering. Old plants, particularly those regularly pruned, are most floriferous.

Open-air culture used to be much practised here and is now on the Continent, and some of the finest effects in August and September are produced by means of *Brugmansias*. Open-air culture, however, requires more attention than greenhouse treatment. The plants must be grown in pots in order to be wintered well. One plan, and that generally followed, is to plunge three-year-old plants in pots in good rich soil in May, well water them throughout the summer, and in August they will flower abundantly. In October they may be lifted and placed in a greenhouse, or, failing this accommodation, set in a dry cellar, or any dry place out of reach of frost. But by this plan the roots run over the tops of the pots, so that the plants cannot be watered well in winter, so a better way is to enlarge the hole at the bottom of the pot through which the bulk of the new roots will descend, and at lifting time there can be cut off close to the bottom of the pot. Still another plan is to

turn the plants out of the pots at planting time, and then about the end of July cut with a spade round the balls close to the plant, working in at the same time some short stable manure, in which the new roots will run and form a dense mass, which will enable the plant to withstand lifting in autumn and repotting without injury. One of the old growers used to always follow this plan, and in one season extending over six weeks he had no fewer than a thousand flowers on a four-year-old plant 6 feet high and 10 feet through. *Brugmansias* out of doors associate well with noble-leaved sub-tropical plants, even if they do not flower. When grown in large pots or tubs, the best time to replenish the soil is in early spring just when starting into growth. They are all readily increased by cuttings made of the half-ripened shoots. W. G.

Cyclamens planted out.—Having found so many greenhouse plants to succeed so much better when planted out in summer than when kept in pots the whole year round, I last year resolved to try Persian *Cyclamens* in the same way in which we treat *Callas*, *Eupatoriums*, and a host of other things, viz., planted out in the open ground in May. We selected a border close to a wall, and having dug it up deeply and given it a good dressing of manure, the *Cyclamens* were planted out about 1 foot apart each way; and, beyond keeping them free from weeds, they received no attention whatever until September. They then had produced fine heads of young foliage, and many were showing flower. They were therefore carefully lifted with good balls of earth, and the way in which the roots clung to the manure and their healthy, vigorous look proved that they liked a good rich diet, and plenty of it. They certainly were altogether more satisfactory than if they had been kept in pots. When planted out they do not get so dust-dry as when in pots, and they are in a more equable condition both as regards moisture and temperature. They, therefore, enjoy their rest, and start afresh with renewed vigour. I am sure many will find that the plan of planting out a good deal of the stock that is usually kept in pots is a great gain; by it not only are better plants secured, but labour is economised. —J. G. H.

The red and white Lapagerias.—There are two fine plants of *Lapageria*, one red and one white, growing in the large conservatory at Lillesden, Hawkhurst, Kent. *L. rosea* is planted out in a narrow border against the back wall of the house, and *L. alba* is growing in a large slate tub. Both are in robust health and still bear a few blooms, but of the two the white variety certainly appears to be the more vigorous. Many of the shoots are extra strong, some being fully 8 yards long. They receive a dressing of rough peaty compost in spring. There are some positions in which they would do best planted out, but if a large pot, wooden or slate tub can be set in a cool situation they are capable of supporting very fine plants. At Lillesden the border is filled entirely with compost suited to the *Lapageria*, a matter very different from merely filling an excavated hole with specially prepared soil. That plan was many years ago, to my knowledge, tried in the Lillesden conservatory, and, like many other similar attempts, ended badly. Whether planted in pots, tubs, or borders, *Lapagerias* require a rough porous compost such as was described in THE GARDEN (p. 37), and abundance of drainage so arranged as not to easily get clogged. *Lapagerias*, too, require large quantities of water, especially during hot sunny weather, but if this does not pass freely away the soil becomes sour, and therefore poisonous to the roots. The plant of the white variety last autumn perfected a large quantity of seed, and some of this sown in heat as soon as gathered germinated in about six weeks. When I saw the seedlings recently they were about 3 inches high and looking healthy. The greatest difficulty usually experienced with young layered *Lapagerias*

is in effecting a good start, and if they could be more generally raised from seed useful sized plants might be formed much more quickly.—W. I.

SWEET-SCENTED FLOWERS.

AMONG plants with scented flowers that at this season of the year perfect their blooms in the temperature of an ordinary greenhouse, the first place must be assigned to the two forms of the evergreen *Daphne indica*, which are now about at their best, and whose perfume is so pronounced that it scents the whole house in which the plants are growing. The form most commonly grown is the deep coloured one, which is in all respects a more satisfactory subject to deal with than the white-flowered kind. It grows more freely and its foliage is of a deeper green, so that even when out of bloom it is more attractive than the pale sort. Still, the little clusters of pure white blossoms on the latter are so beautiful, and afford such a pleasing contrast to those of the typical form, that both are well worth a place in every garden in which accommodation for them exists. Though by no means particular as regards cultural requirements, they are frequently met with in anything but a satisfactory state. Owing to their not succeeding well on their own roots, many cultivators graft them on the Spurge Laurel, and with good results; while in the hands of some they are equally satisfactory when raised from cuttings. For cuttings, select shoots in rather more than a half-ripened condition, that is to say, a little before they acquire a woody texture, and having removed the bottom leaves, insert them in well-drained pots filled with sandy compost and pressed down firmly. About 4 inches is a good length for the cuttings, and they often root better when inserted around the sides of pots than when placed singly in small pots; contact with the sides seems to hasten the formation of roots. If kept close either in a propagating case or under a bell-glass in a structure warmer than that in which they have been growing, roots are soon produced, and when sufficiently established they may be potted off. A mixture of open turfy loam, well decayed leaf-mould, and a liberal amount of sand is a very suitable compost for this *Daphne*.

Grafting may be performed either on plants well established in small pots or on pieces dug up for the purpose, and potted after the operation is carried out. The first method is, however, to be preferred; all that is necessary to ensure success is to select good shoots in the same condition as for cuttings, and graft them in the wedge or side manner as near the ground as possible; after that they must be kept close till a union has taken place. They will only then require shifting into larger pots when necessary, but in either case their progress is more rapid if kept in a structure warmer than an ordinary greenhouse during their earlier stages. Care must be taken that the pots are not too large, as even if full of roots a little stimulant during the growing season will suffice to keep them in health. Soot water is one of the best of stimulants, as it imparts depth of colour, and may be liberally applied during summer. This *Daphne* is, however, seen in its best state when planted out. Its rate of growth is then much more rapid than in pots, and where it is expected to supply flowers in a cut state this is a great consideration, as the removal of a few flowering twigs can be effected without disfiguring the plant. It is quite at home on a conservatory wall, but before planting care must be taken that the bed for its reception is thoroughly well drained, and that the compost employed is not of too adhesive a character.

Another sweet-scented subject now in bloom is *Jasminum grandiflorum*. It forms a regular growing twigg bush, with deep tinted evergreen foliage, much like that of the common *Jasmine*, and each shoot is terminated by a number of pure white, fragrant blossoms. The common *Jasmine* is such a popular plant, that *grandiflorum* is sure to be appreciated, especially in midwinter. It strikes root readily if half-ripened shoots are

taken during summer and treated as just recommended in the case of the *Daphnes*. *Luculia gratissima*, another winter bloomer, is a grand object when studded with its large Hydrangea-like heads of pink blossoms, which are, moreover, deliciously fragrant. Somehow or other it has acquired the reputation of being difficult to increase by means of cuttings, but I have never found such to be the case. The cuttings should be formed of the young shoots when they are about half matured, and being dibbled firmly in a light sandy compost, they must then be plunged in a gentle bottom heat in a cool part of the stove. It will be necessary to cover them with a propagating case in order to exclude air; indeed, I know of no other plant that is so irreparably injured as this is if allowed to flag, and this, I think, explains the reason why it has acquired the reputation of being difficult to deal with.

H. P.

SEASONABLE WORK IN PLANT HOUSES.

T. BAINES.

STOVE.—Preparation should at once be made for potting most of the stock in this department. Loam, peat, and sand should, if not already got under cover, be brought in where it will get sufficiently dry for use, for it is scarcely necessary to say that when plants are potted in material that is over-moist, the roots never take kindly to it. The floor of a dry, open shed, where the air will have full play upon the various soils, is the best place, spreading them out thinly, and turning them over a time or two. All empty pots should be thoroughly washed, crocks broken, sticks made and painted, and training wires prepared, before potting operations are commenced, in which case the work goes on more smoothly, and can be got through quicker.

POINSETTIAS.—During the time that intervenes between the *Chrysanthemums* being over and the earliest of the spring-blooming plants coming in there is the most difficulty in keeping up the supply of flowers. This is especially felt where large quantities are required for cutting. Where a sufficient number of *Poinsettias* has been grown to admit of some being kept back in a temperature no higher than would keep them in a healthy condition without pushing on the development of their showy bracts, these may now be placed in the stove, where the heads will quickly expand, and be found very useful through the coming month. Where the plants have been retarded in this way, the bracts do not attain so large a size as when they have been subjected to more heat through the later months of the year, but they will generally be found more serviceable for cut purposes, at the same time being more enduring than when pushed on earlier.

EUPHORBIA JACQUINEFLORA.—Where plants of this have been well grown and are strong, they will yield a second, and in some cases a third, crop of flowers after the sprays produced on the leading shoots have been removed. This, one of the best of all plants for giving a long succession of bloom in winter, is found by many growers difficult to deal with, both as regards its propagation and after growth, yet it is easily managed, provided a little attention is given to its requirements. Like all other spare-rooted subjects, it cannot bear large pots; such as are 6 inches or 7 inches in diameter are large enough for the biggest plants that it is possible to grow in a single season. Care must also be taken that it is never over-watered, especially when the temperature of the house in which it is located in winter is lower than that required by the warmest section of stove plants; and under the most favourable conditions the water-pot must be used with caution during the next two months. Manure-water given now will much assist the production of successional flowers, keeping the heads of the plants as close to the roof as can be done without their touching the glass.

BEGONIAS.—So continuous is the habit of blooming of the best of the winter kinds, that where the plants are strong, they keep on giving an uninter-

rupted succession of flowers. Soft-wooded plants that bloom from the successional growth that is made through the winter in the way common to the section of *Begonias* in question are much influenced in the enduring character of their flowers when cut by the conditions under which the growth that produces them is made. When the plants are stood in light houses or pits, with their heads close to the glass, the growth possesses the requisite substance to enable it to yield flowers that will keep fresh for a much longer time than when the growth is made under the adverse condition of insufficient light. Those who have to provide a constant supply of cut blooms during winter will find that by paying due attention to the conditions that will ensure enduring properties in the flowers, fewer will suffice.

AZALEAS.—Amongst the endless varieties of *Azaleas* that have appeared within the memory of the present generation of gardeners there are few, if any, equal for winter forcing to the old white, and the slightly different *Fielder's white*, especially where the flowers are required for cutting. The robust constitution of the two varieties named, and the free growth that when well treated they make, admit of the flowers being cut with long portions of shoot attached to them, which is obviously a matter of the first importance when they are required for filling vases or stands where flowers with short stems are of little use. One of the best properties possessed by these old varieties is that where needed every shoot that bears flowers may be cut without its having any weakening influence on the plants that will interfere with the succeeding year's growth provided that the roots receive the requisite manurial sustenance during the time the growth is being made. Where a sufficient stock of the sorts under notice exists so that they can be brought into bloom in succession, the supply of flowers may be kept up from November to May. To give a succession, one or more plants, according to their size, should be placed in moderate warmth—the temperature of an intermediate house is better than stove heat—every three weeks. Before moving them into warmth it is necessary to see that they are quite free from thrips, the pest which *Azalea* growers to be successful need to wage incessant war against, as however clean the plants may be early in spring, the chances are that they will be affected with the insect before summer is over. Fumigation with tobacco, or some other of its preparations, will kill the mature insects, but not the eggs, that lie securely sealed up under the little black varnish-like specks that will be found on the leaves; there is nothing that combines the destruction of the insects and the eggs with an absence of injury to the plants like strong tobacco water, to which should be added Gishurst compound at the rate of about an ounce to a gallon of the liquid. In this small plants should be dipped; larger specimens require syringing, laying them down during the operation and allowing them to remain in this position until the solution—which must not be washed off—is dry; it is better not to allow it to find its way into the soil further than can be avoided on account of the sulphur contained in the Gishurst, as it is highly injurious to the roots. Where high cultivation with *Azaleas* is aimed at, the whole stock should now be washed or dipped in this way in the case of plants that have been much affected with the insect, repeating the operation in two or three weeks. At no time of the year can this work be so effectually done as in the winter before the young new shoots are in motion, as then the insects are not only more easily destroyed, but the wash may be used in a stronger state than the plants would bear during their season of active growth.

SHRUBS FOR FORCING.—Such things as *Azalea mollis*, and the Ghent varieties of *Azalea*, *Rhododendrons*, *Andromeda floribunda*, *Deutzias*, *Viburnums*, and *Choisya ternata* should be placed in heat. For these, again, a house or pit, where there is an intermediate temperature of, say, 55° in the night, with a rise by day proportionate to

the weather temperature, is preferable to giving them more heat. When the flowers are brought on in much heat their duration on the plants is shorter than where the progress has been slower. When the flowers are required for cutting to stand in rooms where the atmosphere is dry, and the temperature much lower than that of the structure where they have been brought from, they do not last long; in addition to this they often flag to an extent that detracts from their appearance. The merits of the last of the shrubs named when forced are not yet so generally understood as they deserve to be, but when better known this plant is likely to be in much request.

GREENHOUSE.—The use of fire-heat, more or less rendered necessary by the frosts that have occurred, combined with dense fogs, will have caused the flower-buds of *Camellias* to droop more or less according to the condition of the plants and the care that has been exercised in not allowing the atmosphere to get too dry, and in not using more heat than was requisite. Well known as this fine evergreen shrub is, with its cultural requirements supposed to be equally well understood, there are yet few mishaps more common than to see the flower-buds fall in quantity through the incautious application of fire-heat. The favourite old double white variety is one of the first to suffer in this way; it, and others that have a like tendency to cast their buds, should not be subjected to more heat in winter than that of a warm greenhouse, say 40°, or a few degrees more in the night, and this accompanied by sufficient moisture in the atmosphere and no deficiency of water to the roots. In all cases where it becomes necessary to push the fires to an extent that makes the pipes hot the plants should be stood as far away from them as they can be got. It is needless to say this applies to such as are in pots and tubs and are movable. In houses where the *Camellias* are planted out they usually occupy a central position, and on that account are at a safe distance from the heating medium. *Camellias* suffer less than most things from the presence of insects; yet the pest by which they are most affected—scale—if allowed to get numerous, injures the plants both in health and appearance. An effort should be made at this season to go over the whole stock and give it a thorough cleaning. If the work is carefully done much subsequent labour will be saved, and that at a time when there is less opportunity than at present.

GENERAL HARD WOODED PLANTS.—Fire-heat should be employed with care, not using more, even during severe weather, than will keep the stock well out of danger. This is particularly needful during protracted frost, as any excitement into growth at this early period would, in the case of most things, be highly injurious in its effects.

Late-flowering Chrysanthemums.—Within the last few years attention has been bestowed on late-flowering *Chrysanthemums*—that is, on those whose blooms may be had in perfection at Christmas, or even later, though soon after the commencement of the new year they seem to lose most of their freshness. A good deal doubtless depends upon culture, yet some varieties are better suited than others for late flowering, and among the best are the following, viz., *Grandiflorum*, yellow; *Ethel*, white; *Mademoiselle Lacroix*, white; *Meg Merrilies*, white; *Gloriosum*, pale lemon; and *Source d'Or*, deep orange. All these are Japanese kinds; though there is no end to so-called varieties now in cultivation, yet few bright-coloured sorts are available for late blooming; they lose both colour and freshness. The most satisfactory with us this season have been *Incomparable*, brownish crimson; *Souvenir d'Amsterdam*, crimson and gold; *M. Comte*, purple; and *Père Delaux*, velvety brown. In the *Anemone* section, *Virginal* and *Lady Margaret*, both white, are the best; while of incurved flowers, by far the latest is *Princess Teck*, a fine pure white variety. Of this a yellow sport has been exhibited, and it should be a very useful kind.

A promising sort for late blooming is a Japanese variety sent out last year by M. DeLaux and called M.M. Thibaut et Keteleer. It is short and sturdy in habit; the colour of the blooms is of an intense bright crimson, and they do not seem to become pale, as most kinds do, towards the end of the season.—T.

PAMPAS GRASS, BAMBOOS, AND THORNS.

PAMPAS GRASS FOR COVERT.—Where a good stock of the Pampas Grass is on hand and no particular demand for it, I would strongly advocate its use as underwood, affording, as it does, a great amount of shelter as well as being warm and dry. For the margins of woodland lakes and streams it is of particular value, seeming to delight in such situations, provided it is not too much hemmed in and overshadowed by trees. From a little experiment made here, we find that game in general are very partial to the Pampas Grass, affording, as it does, a cosy retreat and resting ground. A good stock of this plant is easily enough procured by dividing large established clumps and planting these out in a kindly soil in the nursery for a couple of years before transferring them to their permanent positions. In dividing large plants it is best to lift these out of the ground, shake away the soil, and cut them up into pieces of, say, half-a-dozen stems each. By so doing, the risk of cutting and maiming the divisions is much lessened, and the plants grow away rapidly and soon form well established masses. When planting out permanently the Pampas Grass need not be placed closer than 6 feet from plant to plant, for it soon increases in size, and the overhanging leaves quite fill up the intervening space. Any good soil suits the Pampas Grass, but that in which it grows most rapidly is, I have noticed, a dampish brown loam that is not apt to get dried up in summer or to retain excessive moisture during winter. A few clumps of from a dozen to forty plants in each placed here and there along the outskirts of woods and plantations have a most imposing appearance, and all the more so if backed up with dark foliaged shrubs or Firs. The New Zealand Flax and Royal Fern may be advantageously placed in similar situations, and when thoroughly established are both useful and effective.

HARDY BAMBOOS.—The present appearance of a truly grand specimen of *Bambusa Metake* in our home nursery tempts me to say a word or two in its favour as an ornamental and otherwise desirable plant. Not every one of the full half-a-dozen Bamboos offered in our hardy plant lists can be recommended as proof against the shocks of an ordinary English winter; but the one in question may be relied upon as being perfectly satisfactory in this way; here, at least, it has stood quite unprotected for nearly a score of years. I cut one of the wands the other day, just to get a truthful idea of the height of this plant, and it measured 13 feet and 1 inch, was as pliable as a hazel rod, and could be bent so as to make base and tip meet in a circle. The roots wander slowly about, sending up every here and there tufts of wands, so that a single plant placed in an ordinary border soon fills it up. Such a plant as that above described would have a truly imposing effect if well placed in an open recess of the shrubbery and contiguous to a sheet of water. In its present position it is, although in a perfectly open position, saved from cold, cutting winds by a high wall on one side and a big Portugal Laurel on the other. The aspect is eastern, and the soil loam of a not very kindly nature, but evidently well fitted for growing *Bambusa Metake* and the American *Oncoclea* (*O. sensibilis*), this latter uniting, or rather mingling, in a by no means unornamental fashion its Elk's-horn-like fronds with the graceful spikes of the Bamboo. Another perfectly hardy Bamboo will be found in *B. falcata*, a far more refined plant than *Metake*, and quite fitted for taking its place in the alpine garden, where but a few days ago I was admiring it growing

freely, and offering a slight shade to the under-growing Irish Heaths, *Andromeda polifolia*, and that lovely, but rarely seen, *Iris* (*I. gigantea*). It is readily increased by division of the roots.

THORNS IN THE PARK.—In the formation of parks and other grounds it is usual to retain a few of the largest and finest hedge Thorns as standards, and these, if carefully grouped in suitable positions, soon assume a very pleasing and picturesque appearance. That the Thorn, if carefully handled, transplants well when of large size is beyond doubt, as some of our largest country parks have been thus ornamented when the plants were from 12 feet to 15 feet in height. Clump-planting is to be recommended in the case of the Thorn, the best way being to place it in threes or fives, and at a distance of, say, 18 feet apart. There are several advantages accruing from this method of planting, and not the least of these is, that a single fence—for Thorns must be protected from cattle and horses—will serve instead of a number, not to speak of the substantial appearance presented by well-laid-out clumps over single specimens. For the sake of contrast it is to be recommended that a few clumps of the pink, scarlet, or crimson-flowered forms be indiscriminately mixed with the normal white-flowered plant, but by all means keep the colours separate, for a conglomerate mass of white, pink, and scarlet flowers is anything but desirable. In order to relieve the sameness or monotony caused by planting in clumps, it is always advisable to have a few single specimens planted here and there over the grounds. Transplanting the Thorn should always be engaged in in autumn or during mild, open winter weather, for as this is one of our first plants to break into leaf, early planting is therefore enforced upon us, and we cannot far err by taking Nature as our guide. The holes for the reception of the Thorns should be large and wide, and made up of extra rich soil, a cartload of well-decomposed farmyard manure acting wonders when inter-mixed with the ordinary loam. All will be benefited if the pits have been opened for some time previous to that when planting taking place.

RHODODENDRON CULTURE.—Many, indeed the majority of persons, are under the impression that in order to grow the *Rhododendron* in anything like a satisfactory manner it must be planted in peat. Nothing could, however, be further from the truth, as the common *Rhododendron ponticum*, and, indeed, all its varieties, thrive well in soil of very opposite qualities—loam, vegetable refuse, rough stony soil, and even clay if but a little trouble is gone to in improving it. The finest bank of hybrid *Rhododendrons* with which I am acquainted is not a dozen miles from where I write, the soil in this particular locality being a free, sandy loam, with a small admixture of decayed vegetable refuse atop, the whole resting at irregular depths of from 12 inches to about 40 inches on shale rock. During the flowering season it is a treat to see this bank, the gently undulating, irregularly-surfaced ground showing off in a peculiarly effective manner the various and rich tints of the flowers in this almost unique collection. In such a soil, and without coddling of any kind, the rare and beautiful *R. Thomsoni* and *R. Ingrami*, *Lady Eleanor Cathcart*, *Mont Blanc*, and that, to me, finest of all, *Mrs. John Waterer*, thrive luxuriantly. With the greatest of success we have planted *Rhododendrons* of all kinds, commonly cultivated in ordinary woodland soil and without preparation of any kind beyond digging good wide holes and collecting with the spade such leaf-mould as was lying within reach of the pits and mixing it with the soil that was placed in contact with the roots. Dampish ground, but not where stagnant water abounds, is preferred by most *Rhododendrons*, although from this it must not be inferred that the plant in question will only thrive under such conditions, for in some of the woods under my charge it succeeds well in very dry rocky soils and at considerable elevations above sea level. Open, sunny portions of the woodland should alone be

chosen in which to plant the *Rhododendron*, at least if it is intended to flower well.

A. D. WEBSTER.

ROSE GARDEN.

THE "Rosarian's Year-book" for 1887* contains papers on "The Orange Fungus of the Rose," from Messrs. Worthington Smith (illustrated), Fish, Burrell, Grant, and the Rev. J. A. Williams; "The Best Show Roses," by Mr. B. R. Cant; "Single Roses," by Mr. Girdlestone; "Roses in New Zealand," by Mr. Robert Trigg; "Eight Years' Experience of Rose-growing in the Perthshire Highlands," by Mr. A. Hill Gray; and "The Rose Weather of 1886," by Mr. E. Mawley. Mr. Burrell writes as follows concerning

THE ORANGE FUNGUS.

Of the enemies attacking the Rose, that known as Orange fungus, or red rust, is, of all others, perhaps the one which most baffles the skill of the cultivator to find a remedy, easy and practicable of application, and effectual in its results. Like ordinary mildew, it rarely attacks the plants until after the first blooming is past, then, if the weather is at all favourable to fungoid growths, the lower leaves suddenly become affected with a red rust-like powder, the fungus spreading upwards, and in bad attacks to such an extent as to cause the leaves to shrivel up and drop off, seriously impairing the second or autumn blooming of the plants. This fungus is much worse in some seasons than in others. In some of the very wet summers of a few years ago, when my experience of Rose-growing was confined to the north of England, and with almost constant moisture in the atmosphere, I have known remarkable instances in which not a trace of this fungus nor ordinary mildew ever made their appearance during the whole growing seasons of these years; whilst, on the other hand, in seasons after a short fit of exceptionally hot and dry weather the plants suddenly became affected with rust and mildew, the smooth-wooded varieties of the Victor Verdier race, and the very dark, thickly-spined varieties, like *Prince Camille de Roban*, showing the earliest and worst signs of the fungus. Different soils, also, appear to have certain influences in the spread of this fungus. Possibly in no season has it been so rife as in the past one. Yet I have seen remarkable instances of Roses growing in old beds which had not been disturbed for years, and where the soil was light and rich in vegetable matter, where scarcely a trace of the fungus was to be seen, and these, too, of such varieties as *General Jacqueminot*, which are among the worst to become infected with this fungus; whilst, at a short distance to these, in strong, rich, highly cultivated yellow loam, considered to essential to the production of exhibition blooms, and where every attention was paid to high cultivation, the plants were most infested. Indeed, I have invariably noticed on light soils, abounding in vegetable matter, that although the attack of ordinary mildew is quite as bad on these soils as on those of a closer and more calcareous nature, that the plants on the former rarely show signs of any serious attack of Orange fungus compared with those on the latter. Whether or not this is owing to the winter rains carrying the resting spores of the fungus on the lighter, more pervious soils, beyond sufficient warmth to enable them to germinate in the following year, I am not prepared to say.

As regards remedies, I am not aware of anything which has been successful in stopping the spread of this fungus, once it has made its appearance on the plants; nor can I learn that anyone has been successful. Several remedies have been suggested, the most common being to pick off all infected leaves and burn them as soon as the fungus makes its appearance. This may minimise the evil, but, to say the least, it can scarcely be called an effectual remedy, for not only does this fungus attack Roses, but, I believe, the same kind of fungus attacks Plums, White Thorn, Poplars, and possibly other trees and plants, and the

*Bumrose and Sons, Old Bailey, London, and Derby.

worst attack I have yet seen was on that beautiful autumn-blooming plant *Senecio pulcher*, the thick, leathery foliage of this being completely coated over with thick rust, so that not only would it be necessary to gather and burn the affected Rose leaves, but the same plan would have to be carried out with other plants and trees before the fungus could be stamped out by this means—a thing impracticable, seeing how easily these fungoid diseases are distributed over a wide area by air.

Although Roses may be badly infested with this and other fungoid diseases in the late summer and autumn months, so as to completely mar and spoil their autumn blooming, I have not observed under good cultivation that the plants in the following season bloom any the worse through the attack of fungus of the previous year, or that it either lessens the quantity or quality of the bloom the following summer, and if science and practice fail to find a remedy whereby we may prevent this fungus from spoiling the second or autumn blooming of our Hybrid Perpetual Roses (for it never appears so early as to affect the first bloom), then might I throw out a suggestion for the more extended culture of the beautiful Tea varieties, so thoroughly proof against the fungus under discussion, for I have never under any circumstances seen a single trace of Orange fungus on any of the varieties of these. They are the real Perpetuals—the first to bloom, and the last to succumb to frost.

Every decade shows rapid strides in the improvement of Rose culture, and probably we may soon see a race of Hybrid Perpetuals as proof against Orange fungus as the already existing varieties of Teas. Among other fungus-proof Hybrid Perpetuals we already possess two remarkable varieties for perpetual blooming and high quality, viz., *La France* and *Ulrich Brunner*. The first named, crossed with the Teas, ought to give a race of first-class light varieties proof against Orange fungus. The latter, a model of healthy growth and vigour, and a free seeder, crossed with the pollen from the darker varieties, would probably give us a race of dark Roses, resisting both mildew and rust.

Everlasting Roses.—Is not "T. W. G." (p. 27) mixing up two distinct types of Rose, *i.e.*, China proper and Bengal? The latter consists of many varieties of most unusual colour—blackish crimson, purplish crimson, and the nearest approaches to blue I have seen in the Rose, but they are plants of small value for garden decoration. Bengals can be had in almost endless variety in Belgian nurseries, but not the Chinas.—T. S., *Newry*.

FLOWER GARDEN.

ANOMATHECA CRUENTA.

A Dainty and brilliant little Cape plant that succeeds out of doors perfectly in the south of England if it has a sheltered, sunny place in rockwork or near a south wall. The flowers are of a lively salmon-rose colour, the lower petals having a blotch of deepest crimson. The seeds, which ripen freely in England and are contained in rather large pods, are round and polished, and of a deep crimson colour, looking much like little drops of blood. It is one of the easiest grown of Cape bulbs, and one of the prettiest and neatest, the whole plant being under a foot high.

Lilies in London.—"Delta" (p. 32) is wrong in his remarks about Lilies in London. I have seen them grow well in the Botanic Gardens, Regent's Park, in Bull's nursery, and in little gardens in different parts even in the heart of London. In St. James's Park last year there were some splendid Lilies, and I have seen good specimens in a lady's garden in Montague Street, Russell Square.

Of course, every Lily would not grow in London, but the common and more beautiful kinds will do perfectly well.—W.

HELLEBORUS NIGER MAXIMUS.

MR. ENGLEHEART (p. 22) gives us a memorandum from his note-book made in March last, describing a Hellebore which he observed growing in Northern Italy (Como-Lugano). It was a strong-growing Hellebore, flower large and cupped, pure white with a slight flush of buff pink, and with pink stigmata. I think we must recognise in this description *H. niger maximus* or *altifolius*, and that herein is a most interesting record of its occurrence in its native habitat. I took considerable trouble to trace out this question in 1883, when it was found to have its home in Carniola and the valleys of the Southern Tyrol. I have since obtained plants from this locality. Mr. Engleheart's observation extends its range into the neighbouring valleys of North Italy. There

which in my experience it never does here.—W. WILKS, *Shirley Vicarage, Craydon*.

— In reply to Mr. Engleheart's query as to the variety of Hellebore found by him between Menaggio and Porlezza, I confess my inability to solve the question with any degree of certainty. The description and specially the existence of the pink stigmata naturally suggest a form of *H. niger maximus*, and though I never heard of its existence in that locality, it might nevertheless very well be found there. The difficulty that occurs is whether in Northern Italy *H. niger maximus* would be in perfection so late as March. The colour and time of year might suggest *H. antiquorum*, but this never has red stigmata, neither has *abchasicus albus*, nor in fact am I acquainted with any white Hellebore, except varieties of *H. niger maximus*, which in their natural state show this character. Can Mr. Engleheart recall to mind whether his plant resembled the niger family in leaf, stem, and shortness of pedicel or how otherwise?—T. H. ARCHER-HIND, *South Devon*.



Anomatheca cruenta. Engraved for THE GARDEN from a photograph.

are numerous specimens in the herbarium at Kew from these districts.—W. BROCKBANK, *Brockhurst, Didsbury*.

— I was in the same neighbourhood as Mr. Engleheart last March (Como-Lugano), and noticed immense quantities of Hellebores; one mountain-side was entirely covered with them, and there were blossoms enough even then to have supplied Covent Garden the whole season through. From the erect stems and huge foliage, I take the variety to be *altifolius* or *maximus*, whichever name be preferred. I noticed some with leaf-stalks over 12 inches in height, and leaves like large Horse Chestnut leaves. I brought home two plants, one a bit of the very biggest I saw, flowers pure white, touched with pink and pink stigmata; the other a beautiful clear creamy pink, precisely the shade of *Anemone japonica hybrida*, and if this latter come true here in England and be not, as I rather fear, due to causes of soil and position, it will be a great acquisition, as it was as large and strong as an ordinary *altifolius*, only of colour as I have said. I do not doubt for a moment that Mr. Engleheart's plant was a true *altifolius*, but if so, *altifolius* must surely ripen seed there,

New Chrysanthemums.—In the remarks of "A. D." (p. 34) relative to the naming of new Chrysanthemums he has omitted to note one of the greatest of all stumbling-blocks in connection with the nomenclature not only of Chrysanthemums, but of many other florists' flowers. I allude to the same name being given to two or more totally distinct varieties, a practice which seems to be on the increase, and which I am able to speak from experience causes a very great amount of confusion. "A. D." states that he is not anxious to see the raiser's name attached to a variety, because all flowers should depend upon their merits, and not upon a raiser's fame or otherwise. Certainly, that should be so, but where the same name is borne by different plants, the name of the raiser is the only distinguishing characteristic. For instance, two distinct kinds are named *Duchess of Albany*, and the same may be said of *Delicatium*, *Rob Roy*, and *Ceres*, while we have two called *M. Hoste* and two *Madame Hoste*. As new varieties, many are worthless. That good kinds have been sent out during the last few years is undeniable, yet, on the other hand, many are seen only for a season or two and then disappear. One cultivator alone offers 100 new varieties for the current year. It is therefore difficult to imagine that even one-half of them are an advance on or fairly distinct from older kinds. Of those sent out from all sources within the last three years, not more than 50 per cent. should have been put into commerce, and if from that number even all that are barely distinguishable from older kinds were expunged, the list would be very considerably shortened.—H. P.

— When new varieties of Chrysanthemums or any other plants are introduced by the hundred and accompanied by long-winded descriptions of a superlative kind, it often follows that the inexperienced are tempted to neglect old and well-tried kinds, which in reality are far superior in merit to the new sorts. In this way love of novelty means too often an actual loss of growth-force and labour. It is not alone true of flowers: it is equally true of Potatoes, as "A. D." (p. 34) will, I am sure, admit. Of one thing "A. D." seems to be unaware, viz., that we have sometimes from two to five different varieties of Chrysanthemum in cultivation under the same name. These are the produce of different raisers, and the addition of the raiser's name in these cases is a *sim qua non*. The old Tulip and Auricula growers introduced the plan of adding the raiser's name to their varieties years ago, and doubtless for the very reason that it is now so essential in the naming of Chrysanthemums. I also notice that the Primrose growers at South Kensington often add the

name of the raiser to that of their pet flowers' *Primula Rosy Morn* (Dean) just occurs to me, and may serve as an example.—F. W. B.

NOTES ON HARDY PLANTS.

Houstonia cœrulea.—Few plants of humble growth are so fully appreciated or so much sought after as *Bluets*, a name by which this little alpine is known in English gardens. We are told, however, that previous to 1830 the only common name under which it was known was *Venus' Pride*, and this name exists still in Washington territory. *Innocence* and *Dwarf Pink* are also local American names for it; near Philadelphia it is called *Quaker's Bonnet*, and elsewhere *American Daisy*, because of its plentifulness. Dr. Chapman described it some time ago as *Oldenlandia cœrulea*, a name which never, however, received general recognition. In America there are no fewer than thirteen species of *Houstonia*, seven recognised botanical varieties, and several garden forms. Probably not more than three of these are in cultivation in England at the present time, viz., *H. serpyllifolia*, *H. purpurea*, and *H. cœrulea*. Of the latter, it is said that no plant is better known in the districts where it grows wild; being amongst the first to bloom in spring, it attracts everyone's attention. It is just the same in our own gardens. It commences to bloom early in spring, and continues laden with its pretty milky white stars nearly to the end of summer, and in moist seasons even longer. I have often been afraid that it would flower itself to death; but no, it seems to carry its American constitution with it, and continues year after year to produce flowers in great abundance. It thrives best in light, peaty soil in a shady, moist situation, and, if possible, almost on a level with the eye. Plenty of water should be given it during the growing season. In the matter of propagation it is most accommodating, as it will withstand any amount of division. Our plan is to lift pieces of it, break them into small bits, and pot them singly in $\frac{2\frac{1}{2}}$ inch pots, or prick them out in boxes, keeping them there until established and planting them out where desired; 2 inches or 3 inches apart will be quite near enough, as they will soon cover the empty ground. Small pieces pricked out in the open air and protected from drip would doubtless answer just as well, although they would require longer time.

Rhodothamnus chamæcistis.—This is a really charming little alpine shrub, much resembling in its way a miniature *Rhododendron* in habit and leaves, as well as in its large purple flowers. It is perfectly hardy in our alpine garden, being a native of high altitudes in Bavaria and elsewhere. In peaty soil in a half shady, moist situation it thrives well, making dense tufts, which at midsummer or later are covered with its bell-like blooms in such profusion as to entirely hide the leaves. The latter are small, oval, dark shiny green, and covered as well as the branches with white villous hairs, giving it quite a unique appearance. It may be propagated readily by layering, and cuttings taken off at the proper time also afford a ready means of increasing it. It is a pigny shrub, with large showy flowers.

Himalayan Primroses.—In the last number of the *Botanical Magazine* (tab. 6916) illustrations of two Himalayan Primroses appear, both of which we had an opportunity of seeing at the South Kensington conference in April last. One is *P. erosa*, a plant generally known, and, we believe, largely distributed under the provisional name of *P. capitata* var. *crispa*. The specific name being that under which the seeds are said to have been received, the varietal appellation being added in the interests of gardeners owing to the distinct crispy character belonging to the leaves. The other was shown, and received a first-class certificate under the name of *P. denticulata* var. *crossoides*. In the figure above referred to, however, it has been placed as a variety of *capitata*, which, owing to the drooping habit of the flowers, it resembles. In *denticulata* the flower-heads are globose, those on the top of the umbel opening and standing up; while in typical *capitata* the flowers droop, and the uppermost usually do not expand at all. From what we already know of the habit of *P. erosa*, it

will be much easier to manage than any of the others. It is more of a perennial than *capitata* as we know it in gardens, and not by any means such a shy bloomer. K.

WHITE DAFFODIL TRIAL.

MR. ENGLEHEART (p. 34) and Miss White (p. 474) having condemned, without a trial, the *Chiswick garden*, as being unsuitable for white Daffodils, there are yet two more things which devolve quite naturally upon them: First, to prove that *Chiswick* really is as unsuitable as they assume it to be; and, secondly, in that case to suggest a better place in as public and central a position, or as near London as possible. Mr. Hartland, of Cork, grows all the white Daffodils finer and stronger than any other cultivator with whom I am acquainted, and possesses more varieties than any other grower; but there are a good many reasons why Cork should not be selected as a trial ground. There are three things which trial grounds of all kinds should possess; in a word, they should be public, central, and, above all things, on neutral ground. Of course, no thorough trial of this kind can take place without considerable self sacrifice, and the sooner we all agree to self-deney ourselves the better. What I mean is this: Mr. Engleheart says (p. 34) that "some of us will require at least two more springs for observing and sorting our plants before we are in a position to send bulbs to the trial ground, knowing accurately what we are sending." If I were to act on this plan, I should require two-and-twenty years rather than two years, and the chances are that by that time *Queen Daffodil* would have abdicated her throne, or that the influx of garden-reared plants would have quite filled up the little gaps and distinctions now observable among wild varieties. My own object in offering to send what bulbs I may have to *Chiswick* for trial is not to satisfy myself on this question. I can do that much better where I am than elsewhere, but I am anxious, so far as in me lies, to afford satisfaction to the *Narcissus*-loving public generally. What has Mr. Barr to say on this matter? And perhaps Mr. James Walker, of Whitton, will, with his usual quiet courtesy, help us with his valuable experience and advice concerning this trial. Mr. Engleheart is quite right about the white Daffodils liking to grow amongst the roots of other things. The finest plants of white Daffodil *Colleen Bawn* I ever saw were growing amongst thickly-matted roots of *Moss* and *Cabbage Roses*; and Mr. Hartland told me that when he obtained bulbs of his *Bishop Mann* they were so firmly massed and embedded among tree-roots, that he had to use a pick instead of a spade, and that many were sacrificed in exhuming them. I wish we knew exactly how, and in what root-society or underground growths the white Daffodils of the Pyrenees are found. Perhaps Mr. Wolley Dod, Mr. Maw, or some other amateur collector will enlighten us on this matter, as in gardens this seems a by-no-means-to-be-despised factor towards their well-being.

F. W. BURRIDGE.

Earthing up tree stems (p. 39).—Apart from the injury inflicted on trees by filling up earth about their stems, there is another kind of harm which such work does, and that is it greatly diminishes the beauty of a tree, and this even a thin layer of soil will do. Gardeners are fond of covering up naked tree roots and continual top dressings, earth up the stems and make the tree look as if set in the ground like a pole, thus detracting from the stability and strength which a few big, rugged surface roots seem to give a tree. I was amused the other day at seeing how carefully a tidy gardener had made little mounds around one of his big trees; his argument was that the extra coating of earth would draw up the little roots, but one might as well try to prick an elephant's hide with a pin as attempt to draw up small roots belonging to a big tree by putting soil round its stem. There is a peculiar beauty in surface tree-roots, and on no account should they be covered if ornament is the first consideration.—G.

TREES AND SHRUBS.

THE ALATERNUS.

CONSIDERING what a beautiful Evergreen this is, it is surprising that it is not more planted. The shrub that is somewhat like it, but very inferior, the everlasting Evergreen *Privet*, you see repeated everywhere, even in the gardens of those who can afford to pay the extra price for the *Alaternus*. As regards the beauty of the two shrubs, there is no comparison. You rarely see the *Privet* at this season densely clothed with leaves, whereas the severest winter does not harm the *Alaternus*. It looks to-day, after 20° of frost, as fresh and green as in May, although I know it has the reputation of being liable to become nipped by frost. The density of its leafage and its deep glossy green colour are not surpassed by any other shrub, and, added to this, it produces myriads of honey-scented blossoms in spring and often before winter has left us. Moreover, it is a rapid grower in almost all soils, hence it makes a capital hedge or screen. Its full height is from 15 feet to 20 feet, but it is only near the seaside that it reaches its maximum size. It is then a small tree. It bears the shears well, and in some old-fashioned gardens you see trimly clipped hedges of it, and it is said that when kept cut close it is rendered hardier. *Rhamnus Alaternus*, it need hardly be said, is no novelty. It was introduced from the south of Europe more than two centuries and a half ago. The celebrated Evelyn claims to have introduced it to general cultivation, and in most old garden books some mention is made of it, always recommending it. There are about half-a-dozen varieties of it, one named *angustifolia*, with much narrower leaves than the original, being the hardiest. There is also a Spanish form, and another from the Balearic Islands, and three with distinct leaf markings, the least rare being that with golden blotched leaves, which character, however, it is apt to lose, and sometimes only a solitary variegated branch on a large bush is to be seen. Though no one need be afraid to plant it in the open shrubbery, it makes a good covering for a wall, which needs to be clothed with greenery in winter, and in old places like *Claremont*, *Wortley*, *Arundel*, you may see large spaces of the walls, once called conservative walls, covered with it. Comparing the nursery price of the *Alaternus* with that of the Evergreen *Privet* shows it to be twice or thrice as dear, but this is probably owing to the limited demand that exists for it.—W. G.

The best Evergreen for London is perhaps the Japanese *Spindle Tree* (*Euonymus japonicus*), the green, not the variegated or golden kinds. In the heart of the city, in *St. Paul's Churchyard*, it looks fresher and cleaner than anything else, and as to its hardiness, the arctic spell we have just had does not seem to have made it hang its leaves even. In the *Thames Embankment Gardens* the same shrub holds its place as the best of all, and perhaps finer bushes of it cannot be seen anywhere about London than in the *Embankment Garden* west of *Charing Cross Railway Station*. There are bushes of it there 5 feet high and 4 feet through, and as dense as it is possible to have them. The green of the leaves is of the deepest, and what is important is the fact that the sooty particles in the air do not stick to the leaves, as in the case of the *Holly*, *Rhododendron*, and most other Evergreens. The *Euonymus*, too, is a fast grower; indeed, it seems but a short time since the plants of it on the *Embankment* were of nursery size. It is, moreover, one of the best shrubs to transplant, an operation which may be done at any season of the year. Shortly before the frost set in some of the big bushes of it were moved and also some at midsummer, and none of them seem in the least checked, as they had such large and matted balls. This praise, however, only applies to the green-leaved kind; the variegated-leaved forms are more tender, and no doubt severe frost will injure them. It is well known that this *Euonymus* is one of the best of seaside shrubs, but were it more generally known that no Evergreen succeeds better

in London, it would be more planted in town gardens. Another excellent London Evergreen is the Japanese Skimmia, which also succeeds in St. Paul's Church-yard almost as well as the Eucalyptus, but its leaves being broader are liable to become more begrimed with soot.—G.

THE LARCH AS A LAWN TREE.

AN old French writer says, "the Larch is admired for its pyramidal shape and spiry head, for the tender green and peculiar disposition of its foliage, and for its tassel-like catkins, which spread over the tree, and, seen at a little distance, resemble wood Strawberries in their form, colour, and size, contrasting pleasingly with the pale green of the beautiful tufts of leaves which crown the slender branches." On the other hand, Gilpin, who is generally acknowledged as an authority as regards the aspect of trees, considers it too formal in growth to be beautiful in this country, though he admits it is elegant. This writer probably regarded it only as a formal tree, when seen, as it generally is, crowded in plantations with a view to profit. We are more concerned at the present with its aspect as a lawn or park tree, and in such places it is, we consider, a most beautiful tree, particularly when between the juvenile and adult stages. At this age, if the tree has been merely sheltered, not crowded, it is feathered almost to the ground with branches. Wordsworth, who held a high opinion of the Larch as an ornamental tree says, "To produce an ornamental Larch it should be carefully nursed, removing the nurses gradually so as to allow sufficient air around the specimen to encourage the growth of the lower branches, but at the same time affording shelter enough to produce length of stem." He continues, "I do not know a more beautiful object on a lawn in the early summer months than a tree so treated, forming, as it does, a delicate Pea green cone from the Grass upwards to a height of 50 feet or even 60 feet. If properly managed, the lowest branches will live as long as the tree. Then, again, its death-like character in the winter is strikingly peculiar to the tree." In many places in this country we have seen Larches which fully justify Wordsworth's remarks, and even some old trees we have seen with branches sweeping the ground.

So much for the ornamental character of the common Larch, so common indeed that it is looked upon as a native. But beautiful as it undoubtedly is, its near ally from the other side of the Atlantic is even more beautiful. In the American Larch we have a naturally weeping or pendulous tree, not an accidental sport or monstrosity, as the majority of so-called weeping trees are, but one that embodies all the elegance of the young Deodar with the addition of being deciduous, which enhances its interest and beauty so much. It is generally admitted that the American Larch is handsomer than the European; and, moreover, possesses wood superior for lightness, strength, and durability. But it is not its utility which now concerns us. The elegance of young American Larches renders them capable of producing an extremely picturesque effect in the landscape. The branches being longer and more slender, and its leaves being shorter, all add to its distinctiveness. Therefore, in places where the common Larch abounds in plantations, this one may be planted on the lawn or in the park for the sake of variety. It is of undoubted hardiness, as it inhabits the coldest, swampy districts from New England northwards. It is known popularly as the Black Larch, American Larch, Tamarack, and Hackmatack, and botanically by several names, the chief being *Larix pendula*, *Pinus pendula*, *Larix americana*, *Abies microcarpa*, and *Larix microcarpa*. The last name is that which generally has precedence among botanists in this country, though nurserymen, as a rule, call it *L. americana*. It is a slender-growing tree, throwing off horizontal branches, and often attaining from 70 feet to 90 feet in height. It is said to be an ungainly-looking tree when old, but in a young state most elegant; the cones are larger, and the foliage of a duller hue than that of the European species. It was first introduced to this country about the year 1739 by one Peter Collinson, to whom is accredited the introduction of many a fine American tree.

There is a pendulous variety of the European Larch in cultivation in this country originally intro-

duced from the Tyrol. In this form the branches are drooping. It is, however, rarely met with as a large tree. There are other varieties of Weeping Larch which grow taller; among these are the God-sall Larch and Lawson's Pendulous Larch, the latter somewhat resembling the American Larch. W. G.

ABIES NORDMANNIANA.

A NOTE in THE GARDEN lately highly commended this tree, saying it was to be the tree of the future. That depends entirely on the soil, and it is very capricious in its tastes, liking neither a strong, cold soil nor a light, dry, sandy soil. When I first came to Cheshire, eighteen years ago, and found plenty of room for experiments in tree planting, I got a good stock of most of the established kinds of the Pine tribe, making nurseries of them. My planting extended over ten years; the trees had every chance of doing well, the ground being well drained and double dug. There has now been time to judge fairly of the results, but it would be tedious to relate them all. I will merely say that on this cold clay and wet subsoil, *A. Nordmanniana* has proved a signal failure everywhere. I have planted at different times and under different conditions in different situations more than two hundred. Some turned yellow at the points and went off at once; others were beautiful and attracted much admiration for five or six years, but finally behaved in the same way. I do not think half-a-dozen healthy specimens now survive. As a contrast to these, planted side by side with them under the same conditions, are two or three hundred *A. Douglasi*. These are now from 30 feet to 50 feet high, well furnished down to the ground, and pictures of health. The only exceptions are the tops of a few in places where they have raised their heads into the track of our furious westerly gales, which few trees can withstand. I have mentioned these two kinds as having given the worst and the best results out of some thirty or forty species I have tried here.

Edw. Hall, Malpas. C. WOLLEY DOB.

Berberis aristata.—This is a vigorous-growing Barberry of the common type, but especially noteworthy from flowering much later in the season than that kind, a circumstance which should commend it to planters. During winter, too, the leafless branches are of a bright reddish colour, and therefore very conspicuous. It is in all respects variable when grown from seed; indeed, I observed last season great differences not only in the flowering of our plants, but also in their colour. This *Berberis* is a native of the Himalayas, and is quite hardy in this country.—T.

Cratægus Oxyacantha var. semperflorens.—This is a comparatively new form of the common May; it originated in a French nursery a few years ago, and has only recently been distributed. It is a compact dwarf grower, and is throughout the summer months hardly ever out of flower. Indeed, on strong specimens, ripe fruits, green ones, as well as fully opened flowers and buds, may be found at the same time. By-and-by when this becomes better known, there is every probability that it will become a popular favourite.

Tree planting around houses.—In tree and shrub planting for ornamental effect one of the chief considerations is the arrangement of the various kinds with regard to their form, size, and rate of growth, so that when they have attained maturity they will combine and form a harmonious whole. Too often planting so as to produce an immediate effect results in an incongruity difficult to remedy or efface after the trees have become large and well established, an occurrence which could scarcely be otherwise where trees and shrubs varying greatly in rate of growth, as well as in habit, are indiscriminately mixed, often on a space too small for them, and still oftener without due regard being paid to suitability of soil or position; hence it frequently occurs that plantations planted only a few years require rearranging, and even in some instances replanting, on account of no attention having been paid at the outset to the points just adverted to. Ultimate effects are always prejudged by

those who are well acquainted with trees, and it is this knowledge that enables the experienced landscape gardener to plant in a proper and advantageous manner. But there is another point connected with planting which requires consideration, viz., the harmonising of trees picturesquely with buildings, a branch of practice which requires to be dealt with skilfully, for even with the same kinds of trees opposite effects are produced, according to the style of building.—W. G.

RENOVATING RHODODENDRON BEDS.

RHODODENDRONS are much benefited by being mulched. I once had to deal with some plants in beds which were treated as follows: In forming them we removed all the soil to the depth of 2 feet 6 inches; the natural soil was heavy and retentive, resting on clay and flints; below this, some 4 feet or 6 feet deep from the surface, was a bed of chalk. As peat or bog soil of any kind was not at hand, it was thought that a considerable saving might be effected by mixing with some peat a quantity of turf, cut and stacked some time and in a good state for use, being about half decomposed. Of this compost, viz., peat and turf in about equal quantities, the beds were entirely made. The plants—good kinds of various sizes and very healthy—were planted in spring, and during the following blooming season made a good display, but during the following winter and spring their leaves became paler in colour, and they did not grow freely the following season—in short, towards the second autumn and winter after planting they presented a sickly appearance; the leaves dropped, and they became very unsatisfactory, so much so that we determined to replant them. When the plants were taken up it was found that no fresh roots had formed, and in some cases those which they had when first planted were decayed. The soil, too, owing to the loam being of a heavy character, went together in a mass as soon as the fibre decayed, and cut out as close and solid as cheese. No doubt much damage was done to the roots by using the turf we did, as I afterwards learned that chalk had been many times spread on the surface to benefit the Grass. This had worked down into the soil and affected the whole mass, chalk in any form being detrimental to Rhododendrons.

Some good sandy peat was procured, also a good supply of sharp silver sand and yellow building sand; the plants were taken up, and the old soil was shaken from their roots, this being easily done owing to the non-production of fresh fibres. The old soil was turned over quite to the bottom of the beds, and thoroughly chopped and beaten up fine so as to get rid of any cheese-like pieces; with it were mixed the fresh materials named. The plants were then replaced in their former positions, care being taken to use some fresh peat around the roots of each. The soil was trodden firmly about the plants, but not too much so. This replanting took place early in April, and the two following months were dry; consequently what flowers were produced were of very short duration, and, not wishing to give much water owing to the rootless state of the plants, mulching with cow manure, amongst which was a good proportion of straw, was resorted to. This had been cast into a heap a few months previously, and was in good order for use. It was laid on about 4 inches thick, and just previous to doing so the plants had one good soaking with water. After this no more water was required; the soil was kept moist by the manure on the surface. Good growths were made during that season, and a great improvement in the colour of the foliage manifested itself. The following April another bed was served in the same manner, adding the same kind of peat and sand. This and also the other beds were again mulched with the same kind of manure, and during the growing season copious supplies of water were given, which washed the juices from the manure down into the soil, and, judging by the colour of the foliage and the vigorous shoots made each year, the treatment must have been beneficial.

Mulching is not practised now nearly so freely, the plants having filled their allotted space. Indeed, we have to thin in order to preserve the form of the bushes, which is sure to get leggy if allowed to grow closely together. The plants at the present time are in all respects most satisfactory. Besides its other advantages, mulching has also the effect of rendering the blooms much longer-lived than they otherwise would be, and it rots down and improves the soil. A thin covering of Cocoa-fibre refuse over the manure gives it a neat appearance if the manure is at all an eyesore. Nothing could be more perplexing than attempting to grow Rhododendrons in a soil that is in any way impregnated with chalk or lime. In such a soil they may exist for a time, but they afterwards fail. E. M.

PRUNING FLOWERING SHRUBS.

THERE are many things in shrubberies that require to be done at the proper time if a full measure of success is to be reaped, and the pruning of flowering shrubs is one of them. For the most part, the proper time is just as they go out of flower. In certain positions we have to keep the red-flowering Currant in a small state, and annual pruning in our strong soil becomes a necessity. We therefore make a point every spring, as soon as it goes out of flower, to cut back all the shoots which have flowered to within a few inches of the old wood. By doing this the branches are kept in proper form, and the plant has time to make new growth, and to get it matured for next year's flowering. In this matter it has all the character of the garden Currant, *i.e.*, it does not object to pruning, and it will invariably yield larger racemes of flower on young wood than on old.

MAGNOLIA CONSPICUA, when trained to a wall and in a good deep soil, usually makes a few vigorous top shoots, and if these were not cut away early in the winter, they should be removed in spring. This Magnolia forms spurs similar to those of a Pear tree when trained, and if they are getting so far from the wall as to require shortening back, now is the time to do it; but do not cut back too hard into the old wood, or it may not break into growth again. A safe point is to leave 6 inches of the old spur, which will invariably break out into new growth.

Where *Berberis stenophylla* is used as a climber, it is impossible to keep it in good form without pruning; but it will do the plant no harm if useless branches are cut away as soon as the flowering season is past. It must not, however, be delayed after the flowers have faded, or there will not be time for flowering wood for next year to be made. When grown in the shrubbery in a suitable soil it also gets somewhat unruly in growth, and, although one may feel reluctant to cut such a beautiful plant, pruning is sometimes a necessity.

CHIMONANTHUS FRAGRANS should be pruned in February. Young plants growing vigorously should not have their leading branches cut back until they have filled the space allotted to them, but strong branches may have all the breast-wood cut back to within 3 inches or 4 inches of the stem so soon as they have reached the limits assigned to them. This shortening back will cause them to break afresh, and it is the growth which they make next summer that will produce flowers early next year.

Concerning *Ceanothus azureus grandiflorus*, a word of caution is needed in the case of those who may not be acquainted with the treatment which it requires. Like some other good wall plants, it flowers on the young wood of the current year; and the caution I would give is, that the young growth must be preserved. Where there are vacant spaces to be covered, leading shoots must be trained there as they advance in growth; but all the other growth should be allowed to grow in its own way, as it will flower more freely and have a much better effect when not stiffly trained to the wall. As this *Ceanothus* is not quite hardy in all places, the pruning should not be done until all danger of severe frost is over. As a general rule the middle of March is soon enough, and then, if the plant is vigorous and in a warm position, all the young growth that flowered the previous year should be shortened back to within 3 inches of the main branches.

WEIGELA ROSEA, when grown in a shrubbery border, is best allowed to have its own way, and then it will flower with great freedom; but as a wall plant it requires some care in pruning in order to have it in flower every year alike. As it does not flower until the end of June, it cannot be dealt with in the same way as plants which flower two or three months earlier; but when once the right treatment is understood, it can be had in bloom every year as easily as any other. The way in which this is effected is to thin out the shoots that have flowered as soon as the blossoms fade, which will give room for the growth which is then being made.

SPIREA ARLEFOLIA for the shrubbery border is the most stately of all the Spiræas, and, when in flower, as effective as it is stately; but it must be remembered that nearly all the Spiræas are dwarf growing shrubs; therefore pruning must be avoided until they get too large for the positions assigned to them. The system of pruning should be the same in all cases. Although they do not flower all at one time, no one can err if they prune them so soon as they go out of flower. Whether the variety be *Thunbergi*, which flowers early in June, or *ariefolia*, which blossoms six weeks or two months later, how much or how little pruning will be necessary depends upon the size and condition of individual plants. As a general rule, a judicious thinning out of the branches is all that is necessary, except in the case of those that are getting too large. Then a somewhat severer cutting back may be given without running any serious risk, as the centre of the plant should in such cases be left untouched for one year.

As the single-flowered varieties of *Kerria japonica* are getting fashionable, a brief reference to them may not be out of place in this list. We find that, grown in bush form in the mixed border, they do not thrive so well as one might wish. They make more growth than is desirable, and there is a proportionate scarcity of flowers; while in another garden not far distant, where this plant is trained to a wall, it makes less growth and flowers more freely than our plants of it do which have more room. As it is a very hardy plant, the pruning should be done in autumn; all that is required is to cut away some of the old wood, leaving the last season's growth its whole length.

THE GUELDER ROSE (*Viburnum Opulus*) is another plant that when allowed to grow in its own way flowers more freely than when pruned, and is more effective when large than small; but that is no sufficient reason why it cannot be had in small gardens more generally than it now is, for it is as amenable to pruning, in order to keep its growth within certain limits, as any other shrub. As soon as the flowering season is over, the long growths should be headed back, and where the branches are too thick they should be thinned out to make space for young growth, for it is on the growth made during the current year that it flowers the next season. C.

The Copper Beech.—This tree is undoubtedly far too often planted haphazard. Little regard is paid to its grouping, even if a thought is given to soil or to the danger of overcrowding. The consequence is that we have many well-grown specimen trees of it, whilst we seldom see an effective tree group. Beautiful in itself, no tree can more readily have its beauty enhanced by judicious arrangement than the Copper Beech. I have no more pleasing recollection of a sense of colour than that of the sun shining on a well-shaped Copper Beech in happy proximity to a Laburnum. This is a much-to-be-commended coupling. The homely white clusters, too, of the Snowball tree (*Viburnum Opulus*) have their beauty much intensified by a background of Copper Beeches, adding richness to their own bright green foliage, as a velvet mount sets off the grace of a Wedgwood plaque, and if it be not gilding refined gold, I may even add that the queen of the woods herself, the Silver Birch, seems to have an added glory even from a copper frame. For a neighbouring large tree nothing can surpass the common green Beech, simply on account of its spring-tide verdure. As accompanying underwood, I will only mention the Broom, the Furze (double), and the Bracken. The Copper Beech reminds me of that little known tree, or rather, let us say, shrub, the Copper Hazel.

Neat in habit and iron in constitution, it is, in my opinion, an admirable variation on the Holly, Laurel, and Hornbeam fences one sees often enough. Pleasing as these latter are, variety is so also, and I never remember seeing but one hedgerow of Copper Hazel.—S. B.

GARDEN FLORA.

PLATE 579.

IRIS AUREA.*

THIS stately, late-flowering, golden-yellow, beardless Iris is a native of Cashmere. It was first described by Lindley (*Botanical Register* t. 59) after plants raised from seed brought by Royle from that country, and was a few years ago re-introduced into cultivation by Dr. Aitchison, who found it growing near Shrinuggur, in the same country. I am not aware of any habitat outside Cashmere having been recorded. It possesses all those marked general features which characterise the spuria group of Irises (*I. spuria*, *notlia*, *Güldenstädtii*, *ochroleuca*, *Monnieri*, &c.). Thus, the rhizome is hard and compact rather than fleshy, and the terminal bud gives a piece of the rhizome when dried the appearance not unlike that of the not too curved rough end of a walking-stick; the tall leaves, somewhat narrow, 4 feet or more in length, are strong, stiff, and pointed, and die down completely in winter; the strong and stiff, but relatively thin, tall scape bears a terminal bud of two or sometimes three flowers, compressed within the long, stiff, spathe valves, so that there is hardly room for the two flowers to expand together, and also bears a similar lateral bud; the flower is beardless, rigid; the fall, with a narrow claw separated by a notch from the wider blade, spreads horizontally, the style being closely pressed down over the claw of the fall so as to leave a very narrow, almost perfect, tunnel down to the nectary, while the somewhat narrow standards are erect or slightly connivent; the ripe capsule is large, oblong, more or less beaked, with three conspicuous longitudinal ridges, each of which is double; the seeds, which are numerous, are compressed into discs (except the upper and lower one in each *loellus*, which are conical or pyriform), and possess very loose, wrinkled, white, grey, pink, or sometimes black coats.

All the various members of the spuria group possess these characters, and the question may be raised whether they do not really form one species; but *I. aurea* may be at once distinguished by the golden yellow colour of all parts of the flower, and by the blade of the fall being a long oval with peculiarly crimped edges. In *I. Monnieri*, to which *I. aurea* comes nearest, the blade of the fall is a more rounded oval with even edges; the whole flower is of a paler yellow, more nearly of a lemon-yellow, and the flower, spathe-valves, and foliage are all larger and broader. In the other members of the group the flower is white, blue, or purple, or at best a dingy yellow, and in *I. spuria* and *I. Güldenstädtii* the flower is smaller and narrower, as indeed is the whole plant.

Like nearly all the spuria group, *I. aurea* seems to me to do best in rich, fat, damp, somewhat stiff soil, but it will also flourish in lighter soil if adequately damp, and will thrive in places far too dry for the *I. virginica* group or for *I. Pseud-acorus*. It will repay with bloom rich feeding, provided that the manure be adequately rotten and digestible; and for the full development of its beauty full sunshine is needed. I imagine that in cold climates it will not do so well in an

* DRAWN FOR THE GARDEN IN M. Godefroy-Lefebvre's garden Argentueil.



IRIS AUREA

actual peaty bog as in damp, though not absolutely wet, rich loam; but on this point I cannot speak from experience.

It flowers late in the summer, about the same time as or a little after *I. Kämpferi*, and a little before *I. Monnierii*. It bears transplantation at almost any time, but is best moved immediately after flowering; for though the foliage may die down owing to removal, the autumn rains stir up the rhizome to send out new roots, and indeed new foliage, so that it gets firmly established before the hand of winter is upon it, and consequently starts vigorously in the spring. Seeds sown as soon as ripe, in October for instance, will germinate freely the next year, and the seedlings will flower freely in the third or fourth year, sometimes in their second year.

The flowers open well when a spike is cut in the bud, and being stout last a good while. Hence the plant may be made very useful for decorative purposes. M. FOSTER.

FRUIT GARDEN.

WINTER PEARS FROM WESTERN NEW YORK.

MESSRS. ELLWANGER & BARRY, of Mount Hope Nurseries, Rochester, New York, sent us a very interesting collection of Pears, with the following note:—

We send you to-day (9th December) a small box of Pears as an experiment. We desire to ascertain whether it is practicable to ship Pears to London at this season of the year. Be kind enough to inform us on their arrival what condition they are in, and what time they have been on the way. September was very wet here, and Pears ripened sooner than usual; those which we usually keep till 1st January are already sent to market. November was a wintry month here—far more so than usual, there being heavy falls of snow and hard frost. The weather now is, however, mild, and the frost so far out of the ground that we can dig up trees. The Pears sent are as follows, viz.:—

6 Easter Beurré	6 Josephine de Malines
6 Anjou	6 Winter Nelis
6 Beurré Gris d'Hiver	4 Lawrence
6 Columbia	3 Duhamel

Owing to certain delays, caused by agents or some misunderstanding, the Pears did not arrive until the 5th of January—nearly a month after they were despatched. They were not sent in what we consider, from our experience of the London markets, the best way to ensure their safety, and this is not surprising in an experiment of this sort made under unknown conditions. They were sent in a rather deep box, and unfortunately the pressure left a space between the fruit and the lid, and the consequence was that the fruit was knocked about considerably during the long and perhaps stormy voyage. Notwithstanding this, and that a great many were battered and almost unrecognisable, some very fine fruits of the best kinds came to hand safely: and we have not the slightest doubt that if sent in shallow trays, each fruit wrapped up carefully in paper, and all packed carefully with paper shavings, so that they could not move about, no matter what vicissitudes they went through, such fine fruit as Easter Beurré would arrive in a perfectly safe condition—as safe, practically, as the fruit that comes to us from Western France, and they would in that condition find a ready market in London, bring a very high price, and pay the American fruit-grower much better than Apples, because the climate of England and Western Europe, while it permits of the perfect growth of the Apple, and of as fine specimens of that fruit as can be shown, is not nearly so suitable as many parts of Eastern America for ripening the Pear, which is never seen at its best except in a climate some-

what better than that of England or Northern France. These remarks refer particularly to the fine market Pears, such as the Duchess or Easter Beurré, which bring the highest price in the London market, and, as we think, are worth it. The Pears that travelled most successfully were those referred to below.

JOSEPHINE DE MALINES.—Large, perfectly formed, and most excellent in flavour—such fruit as we rarely see of this variety, first-class in every way. For it, we have no doubt, an excellent market could be found in London.

EASTER BEURRE.—Very handsome large specimens of these, somewhat injured, however, but sufficiently good to show that with ordinary care in packing this fine Pear now sent to us from France could be sent here from America, and would find a very healthy market in London when fine winter Pears after Christmas generally bring a high price. We should say that such specimens as these are well worth 1s. apiece. The flavour was not quite so good as that of the best French samples, but we tasted the fruit immediately after the voyage for the sake of seeing how it travelled, and did not try to bring it to maturity. We have not the slightest doubt that these would hold their own with the very best French Pears, and in size they are better than those to which we are accustomed.

WINTER NELIS.—Handsome brown specimens, larger than those usually seen in the London market. Much battered about, owing to loose packing, but having all the precious qualities of this fine winter Pear.

BEURRE D'ANJOU.—Beautiful specimens of this, with a clear, waxy skin and handsome form, travelled well. Although of fair flavour, not to be classed with the others in respect to quality. The flesh is juicy and melting, but it lacks the fine high quality of the first mentioned. We believe our American friends think highly of it. Another Pear of delicate flavour is Columbia.

PACKING FRUIT FOR TRANSPORTATION.

Messrs. J. W. Draper and Son, of Covent Garden, inform us that such fruit as is sent from America should be packed in single layers in cases of half-inch clean deal. The dimensions of the case—which must not vary in size—should be, length 18 inches, width 12 inches, and depth 5½ inches (outside measurements). Each Pear should be wrapped separately in tissue paper (with which also the case should be lined), and a sufficient quantity of paper shavings should be used to prevent oscillation, absolute firmness being essentially necessary. All the fruits in a case should be uniform in size; the number it contains, eighteen, twenty-four, or thirty, as the case may be, together with the name of the fruit (thus: E. B. for Easter Beurré, W. N. for Winter Nelis, &c.) should be stencilled outside each case. Despatches of irregular numbers, or Pears of irregular sizes, or careless packing will surely have a bad result. Too much care cannot be taken in the packing, and the result compensates for the expense incurred, as the fruit would be sold in good condition to willing buyers. The name of the firm to whom the cases are consigned should be marked plainly on the box, while the consignor should have a distinctive brand, by means of which he could find a reputation, which would be of the greatest service to him in getting a good market. Shipments are best sent *via* Liverpool to London, as this route is quicker and not so expensive as sending to London direct, the dock dues, &c., and expenses from Liverpool being 3d., while those of London are 10d. per cask, &c. As regards the general question of the demand for winter Pears in London, we think it is practically

inexhaustible, and it is not now fully met by supplies from any country. At the time when this experimental package comes to us the supply of French Pears has virtually ceased, and no other country meets the demand for this fruit. It would not pay American growers to send us early Pears, but Pears of these fine old kinds are perhaps the best and most paying fruit that could be sent to us.

APPLES ON THE PARADISE STOCK.

"I AM planting a large piece of ground with Apples on the Paradise," said a Middlesex grower the other day, "because I am assured that in that way I shall get the finest fruit, and only good fruit will pay to grow." This statement comes from a grower whose opinion is certain to be received with respect. There remains, however, the important question of the endurance of the Paradise stock, especially if actively engaged during a series of years in producing exhaustive fruit crops. Now, where too liberal an expenditure is indulged in by growers under the impression that the Paradise stock is to bring back the command of the Apple market, it would be well if those familiar with this stock over a considerable number of years would furnish some proof that it would endure not merely for a few years, but for a lifetime. I have no intention to imply that these dwarfing stocks are essentially non-enduring, but there can be little doubt that the French Paradise did prove so exceedingly restrictive, that after the lapse of a few years it has almost invariably become a failure. The so-called English stock, a broad-leaved Paradise, without doubt gives more robust growth whilst still developing early fruitfulness. What remains to be shown is that this stock, if not so long lived as the Crab, will at least endure through an ordinary lifetime, for it will never pay to plant over a wide area of ground Apple trees which are not to be as prolific twenty-five or thirty years after planting as at five or ten years after planting. Very likely some will advise that along with precocious fruiting Paradise trees shall also be planted standard trees on the Crab, and with that action I agree, because there is then due provision made against failure on the part of the dwarf trees. The assumption that the two forms will not thrive together remains to be proved, but there is no more reason why dwarf Apple trees should fail beneath standards than that Gooseberry or Currant bushes should, and these latter, it is known, seem never to thrive better than in such company, as may be seen in hundreds of market orchards and over thousands of acres of land.

There are seasons when the protection of top trees proves valuable to the dwarf trees below, and if the bloom on the standard trees suffers, the loss is considerably minimised if the sacrifice above has saved the crop below. I remember a practical fruit grower saying not so long ago that he would never become tenant of an old orchard, because the trees, being thick, were all top and had no sides; hence, had all the bloom exposed to the weather. No doubt that is often the case, as it is found in the pruning and thinning of old trees that the lower branches must be from time to time sacrificed to the spreading top. On the other hand, if the centres of the heads be cut out, in the hope of promoting side growth, then the only result is a lot of strong young shoots, which must either be thinned, the best being left to form a fresh centre, or must be removed altogether. When an orchard consists of all top trees, of course they are permitted to remain thick, because this top crop is almost the sole crop. But when dwarf trees on the Paradise stock are planted beneath, there is ample inducement to keep the standard trees thinner, and thus side branches are encouraged as well as top ones.

The dwarfed trees ensure the production of the finest fruits, first, because the roots exist in the richer portion of the soil, and second, because there is a less tendency on the part of the trees to produce useless wood. For all early market purposes the

finer the fruit the better, because good samples always mean the top price. On the other hand, it is very doubtful whether these large samples are so useful for keeping as are more medium-sized fruits grown rather more slowly and on older trees. Thus it is well to advise the planting of dwarf trees for early supplies, but on the whole it is most probable that well-established standard trees on the free stock produce the best keeping because the more slowly grown fruits. I do not assert this to be a fact, but incline to the belief that such is the case. The metropolitan market growers are in favour of early kinds, and of kitchen Apples, large fruiting ones, chiefly for the following reasons: First, the early season finds less competition, and, of course, rather the best prices; second, the trees get early relief from the crop, and are by no means so much drained as are trees which carry out a good crop till so late as October; and third, the samples of early kinds are almost invariably the larger. I might have added that late kinds, if to be sold in plentiful seasons at a remunerative price, need storing and sampling, entailing much cost and trouble, which may not be repaid. It is held preferable to gather and run into market direct, even if there be some reduction of profit, than to store and take many risks.

It is thus evident that the London public must look to the provinces for stocks of late-keeping Apples, and these stocks are best furnished from districts where Apples thrive fairly well, and that is a very wide area indeed. Having regard to the fact that we import American and Canadian Apples in such enormous quantities, it is evident that there are seasons when our home supply must fall very short indeed of the demand. To meet that demand, it seems odd that landowners have not taken the Apple in hand and planted it largely either on their own account or on behalf of their tenants. A little saving in costly pastimes would soon pay for standard Apple trees, and it is very possible that tenants would gladly find land and labour for planting. Certainly several years would elapse ere the general cropping of the ground was interfered with by the trees, and when it was, then it is evident the trees would be producing fairly remunerative crops. No doubt our climate is so unstable that, plant as we may, we cannot ensure crops with any certainty, but the probabilities are in favour of good averages, and where the outlay is so small the average produce should be profitable. Certainly there is no reason why a million or more of Apple trees should not be planted in proper districts at once, and with a few more such plantings in future years we ought to be able to furnish less favoured nations with Apples rather than be so largely dependant upon America for our winter supplies. As a rule we are too sparing of the saw and hook in dealing with standard, and especially old trees. Not merely is a good thinning needful over five-sixths of the Apple orchards of the kingdom at once, but such hard thinning is imperative if good samples of fruit are to be had at least every two years. Myriads of trees need now that one-half their heads should be cut clean out, and if that were done, the character of the fruit sample would soon be wonderfully improved. I see in the Middlesex orchards the most distressing absence of the saw where plenty of labour might be profitably furnished and ample wood obtained to pay for that labour. One reason of the comparatively poor price returned for so much of our home-grown fruits is because of the indifferent size of the sample. The Canadians send us their best, and if we are to compete with them we must grow the best only, and that, too, of kinds which give fair average quality. Canadian Apples have rich colour and much beauty, but I know of none which excel our best Blenheims and Wellingtons for quality. A. D.

Barking Vines.—It takes a long time to get rid of established customs, but annually scraping the bark off Vine rods is about as useless work as one can well engage in, and when carried to excess is

positively injurious to the Vines. This sort of work is, as a rule, done by young men and boys, and although the directions to only remove the really loose bark may be partially attended to, it is fortunate if any rod escapes without the inner bark being broken and more or less injured; therefore the sooner such work is discontinued the better. The insecticides commonly used now-a-days are sufficiently powerful to exterminate any living thing on the Vines. This scraping business used to be a heavy item in the garden expenditure. I have myself spent weeks at it at this time of year. Now, however, we simply dress the Vines and leave the old bark to fall off naturally; thus we are gainers in all ways, *i.e.*, we have better Grapes and a lower labour account; in fact, the prices at which Grapes are sold now-a-days will not pay for scraping.—J. G. H.

HOME-GROWN V. FOREIGN FRUITS.

If foreigners can send fruits here and find a ready market for them, all we have to do is to grow as good an article as they do and one that will suit the daily wants of the masses. "We do not want dry American Apples or tasteless Tomatoes," say the public; "we will rather pay the extra price required for home-grown produce." Now there must be good grounds for this decision, for the appearance of foreign fruits is usually inviting. British fruits have got a reputation for good quality, and therefore growers must not only keep it, but improve it. The question then arises, what shall they grow? Well, for open-air culture nothing yields so good and speedy a return as

APPLES.—I have therefore for the last few years been planting young Apple trees instead of vegetables and bush fruits, finding these already overdone. Of course, there are times when common soft Apples, such as Codlins that will not keep are very low in price, but the orchards of the future must be stocked with a better class of fruits than one frequently finds in old orchards. Not that old sorts of Apples are bad; on the contrary, we are not likely to have anything superior to some of the oldest of Apples when well grown—and by well grown I mean when the trees get constant attention to clearing them of useless spray that chokes the good bearing wood, when Moss and Lichen are got rid of, American blight and other insect pests destroyed by a thorough dressing of paraffin oil, the best and cheapest of insecticides, and when the roots find plenty of rich food on the surface and are not driven down into cold or water-logged subsoils. The modes of pruning or training may be made to suit the varied tastes of cultivators, for if other conditions are favourable, whether the tree is confined to one shoot or cordon or spreads into a widely branched head, good fruit will be borne. The only difference is that cordons will produce a few grand specimens, while the latter will yield a full crop of average sized fruit. In the sheltered valleys in Kent, where the soil is strong and holding, the large standard is the form adopted, but here, in a wind-swept locality and shallow dry soil, dwarf bushes suit best. Of varieties, let Lord Suffield be the type for early culinary use, and for a late supply Blenheim Orange, Lord Derby, and French Crab. For dessert, Red Quarrenden, Golden Pippin, Cox's Orange Pippin, Court Pendu Plat, and others of that type always command a ready sale. Storing of late sorts ought to be more carefully done than it is. Why are sorts that would keep until the new year sent to market and sold for half their value? Why, simply because growers have frequently no storeroom, and their holdings are of too precarious a kind to induce them to erect buildings of any sort, for which they would get no compensation when leaving.

As to Pears, if anyone wished to form an estimate of the demand for them, they should watch the cargoes of boxes that come from France of Williams' Bon Christien and other popular sorts, and take note of the prices which they realise. I do not, of course, say that every county in the kingdom is suited for producing good Pears, but

I am certain that there are thousands of acres in the southern counties that would grow Pears quite equal in quality to those that are imported. But the old-fashioned Swan's Egg, Windsor, Lammas, &c., although useful in some cases, are not the varieties to drive the foreigner out of our markets. We must go in for dwarf bushes, cordons on walls of any kind, either brick, board, or any other material, so long as the sun's rays are fully utilised. I had fruit last season from pyramids of Pitmaston Duchess that realised 3*l.* each; such fruits are certainly far more profitable than bothouse Grapes. Pears must have good culture; the fruit must be thinned; good store rooms must be provided. If anyone wants to see really good home-grown Pears they should go to Petworth in autumn, and Mr. Breeze will show them what well-grown Pears really are.

As to Plums, it may seem folly to talk of growing more of them when so many were left to rot on the trees last year; but the fact is, growers have over-done the common mid-season kinds; really good early, or, better still, very late sorts pay well. The best for late work is Coe's Golden Drop; it is one of the best of dessert fruits when the glut of other kinds is over; for Plums wooden fences would answer perfectly. Damsons, although so plentiful in some parts, are by no means well grown in others; at the time when they were hardly paying market expenses in London they were realising good prices here; had railway rates not been so heavy, any quantity of them could have been sold here.

Cobnuts, Filberts, and Walnuts are unequalled by those imported, and home-grown ones in provincial towns rarely fail to meet with a ready sale. It is surprising that, when land of good quality is uncropped, such a valuable tree as the Walnut should be so much neglected. Its crop is not only profitable, but it is such a valuable timber tree as well. Landowners who have a small nursery ground could easily raise their own stock of trees, and thus permanently improve their estates at trifling cost. The fact is we let our trees stand so long that they get hollow and worthless, and then we send abroad for a supply of the very Nuts we can produce equally well at home.

Tomatoes, whether grown under glass, on walls, or in the open air, are the crop that one feels sure of not over-doing—at least for some time to come, and the difference between home-grown and imported ones is nearly 100 per cent. Last season the price for home-grown fruit was 8*d.* per lb. for a long time, and only for a short time was it as low as 6*d.* per lb.; while foreign Tomatoes could be had in any quantity for 3*d.* and 4*d.* per lb. The demand increases so rapidly, that it is evident everyone is becoming a consumer of Tomatoes.

Grapes are now sold so cheaply, that one can hardly recommend an extension of their culture. But if any branch of the trade proves a good investment, it certainly is that of the latest keeping black sorts, such as Gros Colmar, Alicante, Lady Downes, or Barbarossa. These realise good prices after Christmas, and where their culture is well attended to they are by no means a bad investment. Selling the produce to advantage is certainly quite as important as growing it in the best way, and there is no valid reason why much of the goods now sent to the salesman could not be sold direct to the retailer, if not to consumers, if growers would only take the trouble to do it. Of course, sending to London makes it compulsory to sell through a salesman; but London does not monopolise the markets of the kingdom, and new starters will find it advantageous to study the requirements of sea-side and provincial towns more than they have done. J. Groom.

Gosport.

5740 **Woodlice & fruit.** "R." cannot do better than trap the woodlice. Small garden pots laid on their sides with a piece of Potato, Turnip, or Apple at the bottom, and half filled with dry Moss, form very useful traps. Potatoes and Apples cut in halves and partly scooped out, placed with the hollowed-out part downwards, so as to allow the woodlice to creep under them, are also worth trying. Woodlice may be poisoned by boiling small pieces of Parsnip in water in which

a little arsenic has been dissolved. Care should be taken not to allow any other animals to have access to the poisoned Parsnip. Toads are very fond of woodlice. G. S. S.

SEASONABLE WORK AMONG FRUITS.

W. COLEMAN.

THE advent of the jubilee year will long be remembered by gardeners if by no other body, for hardly had they commenced clearing away the magnificent branches snapped off their Conifers and Evergreens when a dense black fog overspread the land, and the temperature gradually sank lower and lower until the thermometer on the evening of the 1st touched 7° Fahr., or 25° of frost. This, fortunately, was the lowest point, for the wind by this time had veered round to the south, a falling barometer told us we were nearly out of the coil wave, and ten hours later the figures were reversed, the thermometer standing at 25°, or 7° of frost. Cold rain is now falling, and the snow which has been quite a God-send to vegetable gardeners, although a demon amongst ornamental trees, will, we hope, soon leave the ground clear for further pruning operations. It is not, however, a good plan to prune in severe weather, neither is it wise to tread upon the soil, be it light or heavy, immediately after a thaw, but there are ways and means where there is a will, and those who have the misfortune to be behind must fall in where treading the wet ground will do least injury. All wall paths, for instance, may be lightly covered with long litter from the stables, and the pruning and nailing of Morello and other Cherries may be completed. When finished, soap-suds or other washes of lime or soot may be syringed over not only the trees, but the walls also with the greatest possible advantage. A dry day should always be selected for this work, and in order to thoroughly penetrate old walls whose joints are faulty, a stout garden engine will be found preferable to the syringe. Plums, Pears, Apples, and bush fruits in like manner may be washed once, twice, or as often as the supply at command will admit. Years ago it was the practice to paint choice trees, including Morellos and Peaches, with the old-fashioned mixture of soap, sulphur, lime, and clay, and in not a few places that finest of all insecticides—glutinous soap-suds, which cost nothing, were allowed to run to waste. All this is now changed, at least in well managed gardens, and fruit trees of all kinds show by their bright clear bark and spurs how thoroughly this material suits them, both as an insecticide and a manure. Soap-suds may be used pure and simple direct from the laundry, but I prefer keeping them for a few days or weeks in open-headed casks, and applying them to the trees and walls on dry, mild days. The soap, soda, and other chemicals known only to the female craft then form a fine glaze on the wood and flower-buds, which renders the latter impervious to the attacks of feathered vegetarians.

BUSH FRUITS.

We at one time left all our Gooseberry bushes unpruned until the spring, but this delay is no longer necessary, as birds do not seem to relish the saponaceous addition to their favourite food. But why prune Gooseberries and Currants to within an inch of their destruction when it is a well-known fact that unpruned trees often bear full crops of fruit where hard spurred skeletons fail? Some thinning to let in light and air and favour the introduction of the hand is necessary, but the less trees are spurred and the longer the outward extending shoots are left the finer and heavier will be the crop of fruit. Some years ago, having two long rows of condemned trees, they were left unpruned and the crop was excellent, whilst others from which all the superfluous wood had been cut away were a perfect failure. Although made secure against birds, a late spring frost destroyed the exposed fruit when in flower. It cuttings of bush fruits were not put in early in the autumn, straight, well-ripened pieces of wood should now be selected and heeled in as soon as the weather becomes favourable. Bushes can be bought at a cheap rate, but from only a few nurseries can trees equal to those of home manu-

facture be obtained, and for this reason every gardener should put in a batch of cuttings every year. If not wanted for home use, help and encouragement can be given to cottagers and tenants by an annual distribution of surplus trees. When bush trees are pruned, they should be well top-dressed with manure, fresh compost, or burnt refuse, as opportunity, in the way of weather, favours wheeling ready for forking in when the soil is in suitable condition.

RASPBERRIES.

too, may be heavily coated with light, rich manure, leaf-mould, peat, lime rubble, or charred refuse, but on no account must the borders be forked or dug, as the most valuable roots run close to the surface and quickly resent disturbance—I may say destruction. If still undressed, no time should be lost in getting them staked and tied, topping being deferred until the buds commence swelling in the spring. The modes of training Raspberries are numerous, but good rustic stakes being plentiful, I question if the old-fashioned system of placing three to each stool and equally dividing the canes is not as good as any. Much, however, depends upon the nature of the soil and the surroundings. If cold and heavy, single rows running from north to south and trellis training answers well; whilst on hot, dry land planting in blocks may be preferable, as the bushes shade and keep the ground moist and cool—no unimportant matter in the growth of fine juicy fruit. In model gardens where taste prevails, we often see Raspberries festooned or trained in the form of arches, and for this mode they are planted from 4 feet to 6 feet apart. When thoroughly established, a stake is driven in midway between the stools; half the canes belonging to one stool and half of those from the stool on the opposite side of the stake are then bent over towards each other and firmly tied together, also to the stake, to keep them in position. The advantages are neatness, security from wind and birds, as the major part of the fruit hangs beneath the arches, and economy in stakes where these useful articles are scarce. The Raspberry in many gardens is much neglected, and yet I question if any of our most valuable fruits can be turned to so many uses in our daily economy. Possessed of a delicious aroma, it is universally used for flavouring our earliest fresh fruit tarts, for jams, for raspberry vinegar, brandy, wine, and ices, and for the dessert it is most grateful and wholesome. To prolong its season, Cutbush's Prince of Wales should be planted in the warmest part of the garden for coming in early; Carter's Prolific for the main crop, also on a north border for succession, and, space being unlimited, the strong-growing Semper Fidelis, which comes in a fortnight later than the others, should have a place for leading up to the autumn bearers.

APPLES.

Now is a good time to wage war with American blight on infested trees, that is, provided they have been pruned and trained, and every old cankered branch that can be spared has been cut out and burned. We sometimes hear of the restoration of debilitated trees by heading back, but all cannot afford to decapitate, and unless the branches are very badly cankered, I should prefer pruning down the affected parts and painting with a strong emulsion of Gishurst compound and paraffin in the proportions of 1 lb. of the first to a wineglassful of the second. If preferred, the tar mixture, half a pint to a gallon of stiff loam and reduced with boiling water, answers equally well. One or other of these mixtures should be thoroughly worked into every old spur and wound before the sap begins to move, and a close watch must be kept upon the trees when insects that have escaped return to activity in the spring. The winter dressing will destroy the greater part, but in order to make a complete clearance the remnant must be waylaid as they emerge from their winter fastnesses. Newly grafted trees that have been allowed to grow to their fullest extent will now require attention. If the scions have

taken well and are considered capable of receiving the rush of sap from the stocks, all spray which has been allowed to grow wild throughout the past summer may be cut away, otherwise, the stocks being large and strongly rooted, shortening back will be found preferable to complete removal—at least, for another year. When this clearance has been made and extra strong growths have been shortened to secure evenly balanced heads, all old clay and ligatures must be cleared away, when the largest limbs still showing bare wood may be well plastered with fresh clay and cow manure. A mixture of this kind having wonderful healing power keeps out the elements and favours the completion of the union, always provided the trees are free from woolly aphid. If this existed on the stocks before they were grafted, or has been introduced with the scions, there, beneath the old clay, a colony will be found awaiting the tar or Gishurst mixture as a preliminary to the application of the healing mixture of loam and cow manure. Finally, all strong grafts, especially in situations exposed to wind, must be made safe by means of light stakes driven into the ground or tied to the main branches. To these the scions can be secured by light, tarred twine, but it will not be wise, at least for the present, to draw the young shoots out of their natural line of growth, as the slightest pressure frequently leads to their separation from the stocks when the sap begins to flow. Where grafting in the spring is contemplated, good scions should now be selected from clean, healthy trees, labelled and laid in under a north wall. The heads of trees about to be operated upon also may be partially cut back, leaving a foot or more of wood to be cut off each branch when the grafts are attached. A dozen grafts will quickly form a good head, but where the stocks are more than an inch and a half in diameter I prefer putting two on each shoot for the twofold purpose of getting the stump quickly covered with new wood and forming a great number of channels for the first flush of sap. These eventually may be reduced to one, as the strongest not unfrequently forces the weakest out of position when two are left.

PEARS.

Being more precocious than Apples, are first ready for grafting, and for this reason the selection of scions should be made forthwith. In all other particulars the preparation and manipulation of the two are identical. American blight, fortunately, does not attack the Pear, but the small grey scale, the exact colour of the bark, often produces a hide-bound and encraving condition before it is detected. Trees worked on the Quince and planted against hot south walls are most subject to it, and speedily assume a hard, stunted look, especially if the roots are allowed to feel the want of water. A mixture of loam and Gishurst compound, or soft soap and lime well worked into the old stems and branches, generally settles the account at one dressing; but in order to prevent a return, the trees should be generously mulched and copiously watered throughout the growing season. Last, but not least, the saponaceous wash should be freely and frequently plied from the time the leaves fall until the buds commence swelling in the spring. Pears, like all other fruits, become a ready prey to insects under starving treatment, and soon recover their health and vigour when these conditions are reversed. When well planted on open quarters or in good orchards, the rainfall, combined with annual top-dressing, generally keeps the roots moist enough, but no matter how well a wall border may be made, there are periods when copious supplies of water passed through heavy mulches become absolutely necessary.

PEACHES.

The ground at the present time is deeply covered with snow, and the severe frost which set in at Christmas, fortunately before we commenced detaching our trees, will delay this work for the present. But whenever the change to milder weather sets in, every nail will be drawn and

cleansed with fire, and the branches, after being carefully washed, will be made secure to upright poles a foot or so from the walls. Pruning having been performed immediately after the crop was gathered, the final dressing over will be deferred until the time arrives for nailing in. Meantime advantage will be taken of dry days for washing the walls with quicklime, soot, and sulphur, with a little linseed oil added, and a sufficient quantity of Venetian red to produce a warm old brick colour when dry. To some the removal of every shred and nail, and drawing the trees away from the wall, may appear superfluous labour, but a Peach tree worthy of the name requires re-training every year, and I can assert that the time devoted to this work in the winter and early spring is paid back with interest in more ways than one. In the first place, a new start is made with the wood and walls quite free from the larvæ of insects; consequently dressing to destroy the myriads of aphids which spring into life almost before the blossoms are open is avoided. The young shoots grow on freely without undergoing a check and ripen early, and the fruit, well sheltered with fresh healthy leaves, generally escapes late frosts and swells to maturity. In the second, detachment enables the pruner to examine his trees thoroughly, and after cutting out every bit of cankered or faulty wood, they can be trained into perfect form and balance in much less time than it would take to alter unwashed trees whose first growths get crippled by insects, and, independently of the check to the fruit, the second do not have time to ripen. The seasons of late many people think less favourable than they were in their boyhood, and some assert that the fruit is not so large, but this, I think, is a very natural mistake, and so long as good crops of the finest late Peaches can be obtained from properly managed trees, our time may be better employed than in dwelling upon the past.

APRICOTS.

If these have not been pruned and trained I would suggest their being allowed to stand over until the weather breaks. Meantime the materials for protecting the flowers should be prepared and in readiness for hoisting on the shortest notice. Apricots, especially Moorpark, are neither satisfactory nor profitable, and, try all we may, large branches in otherwise healthy trees die off annually—I ought to say towards the latter end of the summer. All the theories hitherto put into practice have not arrested the disease, by some supposed to arise from sunstroke, by others from the action of frost on the sap vessels. If either of these causes is correct, our trees after mild winters or cold, unless summers should be free; but such is not the case, as a year never passes without leaving its mark upon the finest trees in the best managed gardens throughout the kingdom. I have often thought that mildew to which the Apricot in warm, dry soils is very subject, may affect the shoots when young, and although they do not die off at once, the time comes when the roots in a dry soil cannot supply, and the damaged vessels cannot allow a sufficient quantity of moisture to pass into the leaves beyond. Prevention of mildew, if this theory be correct, must be secured at any cost, but sulphur, the usual remedy so long as the roots are dry is only temporary in its action; hence the importance of supplementing it with copious supplies of water and heavy mulchings. In almost every work on the management of fruit trees we are told the Apricot should be well watered in the spring, but well acquainted with the fact that this tree evaporates an immense quantity of moisture from its leaves, it is only reasonable to assume that August and September are the best months for thoroughly soaking the soil down to the drainage. In fact the Apricot should be unnailed and washed every winter, and the walls thoroughly dressed with the Peach wall composition before they are nailed in again. The roots, too, should be treated precisely as we now treat those of Peaches whose new season commences as soon as the last fruit is gathered, and no one who wishes to succeed would think of allowing them to lie high and dry throughout the

autumn and winter. Under the false impression that the roots of fruit trees become dormant as soon as the leaves fall, many people think a dry border does no harm; but let them plant a Peach or Apricot, say in October, let them wash the soil well home, and they will find it has made a quantity of new roots by the end of November. Check these by drought and the work of bud feeding will come to a stand just when slow, but steady, progress is imperative.

OBITUARY.

MARSHALL P. WILDER.

AMERICA has lost one of her greatest and brightest horticulturists, viz., the Hon. Marshall Pinekey Wilder, who died at Boston, U.S., on December 17, in his eighty-ninth year. He was one of the oldest and most successful of Boston merchants. But trade and the acquisition of wealth had by no means been the all-engrossing aim of his life. His inherent love of rural pursuits led him, in 1832, to purchase an estate in Dorchester, where, after devoting a proper time to business, he gave his leisure hours to horticulture and agriculture. There he cultivated his own grounds, imported seeds, plants, and trees, and endeavoured by his example to encourage labour and elevate the rank of the gardener and husbandman. Here he prosecuted his favourite investigations, year after year, for at least half a century. Soon after the Massachusetts Horticultural Society was formed, Marshall Wilder became its president, an office which he held for eight years, and from that time till he died he was one of its most efficient members, constantly attending its meetings, taking part in its business and discussions, and contributing largely to its exhibitions. In 1879, on the occasion of its semi-centennial anniversary, he delivered an address (a copy of which is before us) alike remarkable for eloquence and ability. When he retired from the office of president, the society voted him a silver pitcher, valued at £30, and caused his portrait to be placed in its hall. As president he headed a circular for a convention of fruit growers, which was held in New York, October 10, 1848, when the American Pomological Society was formed—a grand association, to which we have no equal. He was chosen its first president, an office which he held for thirty-six years. Its biennial meetings, held in different places, are great occasions, on one of which, held in 1883, President Wilder, with his usual foresight, proposed a grand reform in the nomenclature of fruits for America, and asked the co-operation of other nations in this important matter. He said—

When we think of the irrelevant and inappropriate names by which many of our fruits are known, we feel the importance of keeping up our warfare until the victory is won, and our catalogues are purged of these improprieties. Long, superfluous, ostentatious, or unmeaning titles hitherto applied would be avoided in the future. Like the Baldwin Apple, the Bartlett Pear, the Concord Grape, and other renowned fruits, let such varieties be dedicated to perpetual remembrance by appropriate names, and thus let us hand down to future generations a system of nomenclature pure and plain in its diction, pertinent and proper in its application, and which shall be an example, not only for fruits, but for other products of the earth. Let us have no more names of generals, colonels, captains, presidents, governors, monarchs, kings or princes, mammoths or Tom Thumbs, or such titles as Nonsuch, Seek-no-further, Ne Plus Ultra, Hogpen, Sheepnose, Big Bob, Ironclad, Legal Tender, Sucker State, or Stump-the-World. The terms Pearmain, Pippin, Beurré, Doyenné, Bon Chrétien, &c., applied to Apples and Pears once described classes of fruit which are now so confused and blended that the names have lost their significance. The cases are

very few where a single word will not form a better name for a fruit than two or more. These reforms have been adopted in the catalogue of the American Pomological Society, and other prominent horticultural and pomological societies have voted to adopt improved nomenclature. It has been suggested that the work might be carried farther than has been done in the catalogue of the Pomological Society, as, for instance, by substituting *Lucrativa* for *Belle Lucrativa*, and *Nelis* for *Winter Nelis*. Pomologists may differ as to how far the reform should be carried, but by comparison of views they will come to a final agreement. I desire especially to enforce upon nurserymen the duty of aiding in this reform, by revising their catalogues so as to correspond with the improved nomenclature. Horticultural and pomological associations have thus far been our most powerful auxiliaries in this good work, but they do not come in contact with the people at so many points as the nurserymen whose catalogues are distributed broadcast. Let us push on the work so constantly and vigorously while we live, that future generations, seeing its advantages, shall avoid the evils we have encountered, and shall enjoy the benefits of the improved system, and look back with gratitude to us for our labours.

In February, 1849, the Norfolk Agricultural Society was formed, and Mr. Wilder was chosen president, an office which he held for twenty years; and as to other horticultural and agricultural societies with which he was connected, their name is legion. He was one of the commissioners appointed to the Universal Exposition in Paris, 1867, when he was placed at the head of the committee on horticulture and the cultivation and products of the Vine, the report of which was published by act of Congress. In short, his published speeches and writings amount to nearly one hundred in number, and Dartmouth College, as a testimonial to his services in science and literature, conferred upon him, in the year 1877, the degree of Doctor of Philosophy.

In all his pursuits and avocations, Mr. Wilder seems to have realised and practised that grand principle, which has such a bearing and influence on the whole course of life—the philosophy of habit. Part of his leisure hours he devoted to his pen, which has filled several large volumes with descriptions and delineations of fruits and flowers, proved under his own inspection. In a letter sent to us in July last he says:—

I am largely interested in the culture of the Pear and Strawberry. Of the former I have about 800 varieties, and at the late exhibition of the Horticultural Society, I placed on the table thirty varieties, or more than double that of any other exhibitor. My collection of Camellias and Azaleas is still large and choice, and I have many seedlings, such as Wilderi, Mrs. Abbie Wilder, and others well known in Europe for more than forty years. I still keep up my interest in cross-fertilisation of plants, and the proving of everything new and promising.

Marshall Wilder has, indeed, shown us by his life what an individual may accomplish by the concentration of one's intellectual powers on grand objects. He has been pre-eminent in the establishment and development of institutions. Few men have been called upon so often to preside over constituted societies, and few have acquitted themselves so happily in such positions. At a complimentary banquet given him in September, 1883, on his completing the age of eighty-five, Mr. Winthrop said—

No other man has done so much for our fields, gardens, and orchards as Marshall Wilder. He has also distinguished himself in many other lines of life, and his relations to the Legislature of Massachusetts and to the Historic Genealogical Society will not soon be forgotten. But his name will have its most enduring and most enviable association with flowers and fruits, for whose culture he was foremost in striving, both by precept and example. He deserves a grateful

remembrance as long as a fine Pear is relished or a brilliant bouquet admired.

Marshall Wilder was a foreign member of our Royal Horticultural Society, and on the occasion of his eighty-eighth birthday a congratulatory letter was despatched to him from the scientific committee.

KITCHEN GARDEN.

EARLY PEAS UNDER GLASS.

ONE of the best kinds of Peas, if not the best, for culture under glass is the American Wonder. Peas will not bear much artificial heat. As soon as they begin to run up, if the night temperature exceeds 50°, they become spindly and weakly. The seeds will germinate in a high temperature, of course, but anything partaking of the character of forcing, as commonly understood, does not produce satisfactory results. I have had very good early Peas in a pit in which there was just a little bottom-heat from a bed of leaves made up now. The leaves were made firm to prevent too great a settlement, and the pit was filled full enough to lift the Peas up near the glass. About 8 inches or 9 inches of soil were placed on the leaves. It was taken from an old Melon bed; and was consequently of good quality and in a healthy, mellow condition. Under such circumstances the Peas grew rapidly. They were properly sheltered at night, and daily ventilated when the weather was suitable. All Peas, whether dwarf or tall, under glass should be well supported with sticks. It does not answer to allow them to fall over and become entangled in their growth. A little dry, mellow soil should be placed in a ridge on each side of the rows as soon as they require support, and they should be staked whilst still in an erect position. Nothing is gained by sowing too thickly in the rows or by placing the rows too near each other. From 16 inches to 18 inches between the rows will be none too much space for the American Wonder and other dwarf varieties. Peas may be grown in pots equally easily as planted in a bed. They involve more labour, but all the care required is to keep them in a light position in a greenhouse temperature and to ventilate freely when not absolutely freezing. They succeed very well in 8-inch pots on shelves near the glass. They will do with only the protection of glass without artificial heat, but it is a great advantage to have enough warmth to keep out frost.

Peas if sown now in the open border, or as soon as the weather breaks, will not be much behind those planted in November, even if the latter escape injury from the late spell of cold weather. It is an advantage to lay the seeds in dry, mellow soil, and some effort should be made to obtain as much of the same material as will cover the seeds in situations where the soil of the border is wet and cold. Where there is room under glass Peas may be sown in 5-inch pots, and be transplanted in March when the weather has become suitable, sheltering them when first turned out with Evergreen branches. There are other expedients which may be adopted for raising Peas in heat for open-air planting later in the season when the weather is more

suitable. Peas raised under glass are not exposed to the same vicissitudes as when planted in the open air at this season, and as they transplant well, those having glass houses or warm pits will doubtless, acting on the principle of having two strings to their bow, plant a part of the first early crop in this manner. Sods of turf from 6 inches to 8 inches long, 4 inches wide, and 3 inches thick, with a groove hollowed out down the centre to receive the seeds, will do very well for raising Peas for turning out. The Peas are sown along the hollow, scooped out with a trowel and covered with light, rich soil. They may be placed in any house or pit in which there is just a little warmth, and when up an inch or so high they should be moved to a cold frame till the weather is suitable for planting them out. The sods of turf should be set in the drill without disturbing the Peas.

he might help us a bit; but there is scarcely a worse case of wasted energy than this eternal talk about new Potatoes. Soils have a great deal to do with Potatoes—everybody must know that—and it really should be a question for private growers whether they should grow Potatoes at all if their soil does not give them a good result. I myself have a stiffish soil and grow Potatoes, but they are inferior. Gilbert gave me some of his best, and he knows as well as anybody what good Potatoes are; but they are so inferior to the Regents of the London market, that I take down a bag of Regents with me, and leave the rest to the crows and pheasants. I fear all this talk about new Potatoes is not in the public interest, but in that of certain raisers and sellers of new varieties. —E. T. G.

RAISING CUCUMBERS, MELONS, AND TOMATOES.

Not a little depends upon the start made with these plants. I hold it indeed to be of the utmost importance that healthy, sturdy, and clean plants be always put out, and therefore I bestow rather more than ordinary pains upon their preparation. Drawn and weakly plants are frequently a long time in becoming sufficiently strong to perfect good crops, and it is certain that if plants infested with either thrips, red spider, or mealy bug are used, they will never be thoroughly clear of these pests. The old-fashioned plan of raising Cucumber and Melon plants in frames over a hotbed has still much to recommend it, as although it involves more trouble, the plants are much less liable to be infested by insects than those raised in a hothouse. If placed anywhere near the hot water pipes, red spider soon infests them, and even when raised on a hotbed in a forcing-house other plants are apt to infect them with green fly, or, worse still, black fly, bug, and thrips. As a rule, the first week in January is quite early enough to sow Cucumber and Melon seeds, though, for my part, I prefer the end of the month; there is then more light and sunshine, and the plants raised are much sturdier than those got up at an earlier date. For all ordinary purposes, a good strain of Telegraph is yet unsurpassed, and a good companion for it is Cardiff Castle. The latter is the smaller of the two, but it possesses a stronger constitution, is very prolific, and in quality it is excellent. Telegraph being wonderfully prolific is apt to be weakened by over cropping, but if the young Cucumbers were oftener freely thinned, undesirable gluts would be avoided, and the plants would remain cleaner and in better bearing order than is generally the case.



THE LATE MARSHALL P. WILDER.
Engraved for THE GARDEN.

Varieties of early Peas are now very numerous, but one need not plant many kinds in order to obtain an early supply to continue bearing till the second earlies and the main crop kinds come in. As a dwarf Pea there is nothing better than the American Wonder. Ringleader is one of the best of early white Peas, and William the First is a good kind to follow in succession. E. HOBDAV.

New Potatoes.—I have seen "A. D.'s" article on the best Potatoes, and I have read a great deal in THE GARDEN about them, and heard of Potato shows and all sorts of exhibitions devoted to this popular root; but surely it is the most futile fuss that can be made about anything, considering that not one of these new varieties equals in flavour the Regent of the London market. If "A. D." would mention the best half-dozen old or new Potatoes

MELONS.—For the earliest crops of these, whether to be obtained from plants in pots or on beds, there are none to surpass the true stock of Blenheim Orange. This usually sets well, ripens quickly, and though a scarlet-fleshed variety is excellent in quality. The good old Victory of Bath is still to be recommended for early crops, and is certainly to be preferred to a mongrel Eastnor Castle. If the latter can be obtained true, it is well worth growing; but who now-a-days has it uncrossed or undegenerated? Hero of Lockinge still keeps popular for either house or frame culture, and another very handsome green-fleshed sort will be found in Cox's Golden Gem. Longleaf Perfection requires special treatment; otherwise it is unprofitable. Owing to its high quality, many will, however, be tempted to cultivate it for the first time this season. From the

foregoing it will be seen that I am not much in favour of novelties; on the contrary, I prefer to grow sorts with which I am well acquainted, and which give satisfaction to those who eat them. After all, everything depends upon the way in which Melons are grown and ripened; it is possible to have nearly every known variety sufficiently good to gain approbation anywhere.

Incredible as it may appear, there are yet cultivators who sow the seeds of Cucumbers and Melons thickly in pots much in the same way as they would sow Mustard and Cress in a box. Plants thus raised are sure to be much drawn and weakly, and as the practice also necessitates shaking out and potting off singly, much valuable time is consumed in bringing these weakly subjects into a condition fit for planting out. The plan long adopted by us is to sow singly in clean 3-inch pots filled with rather light loamy soil; the seeds are buried about an inch below the surface, the thin end being uppermost. The pots are then plunged in a brisk bottom-heat either in a frame or forcing-house, in either of which the seeds germinate strongly and quickly. Little or no water is needed at the outset, especially if the heat of the bed is below 70°. If kept too moist the seeds will be liable to decay, especially early in the year. We do not dislike the seedlings being somewhat "long in the leg"; in fact, Melons with a good length of stem below the seed-leaves are much less liable to canker at the collar than if shorter. The hotbed being in a fairly light position, the young plants may remain plunged, thus encouraging brisk root action. At an early stage of growth each plant should be lightly staked, and when the rough leaf is well developed and the pot filled with roots the best of the plants, or rather more than will be eventually required, should be at once given a shift. For this purpose we use good loamy soil, thoroughly warmed, and clean 6-inch pots, and pot firmly. On no account should dirty pots be employed. If well attended to the young plants soon become established in the fresh soil, and should be finally transferred to their fruiting quarters before they become badly root-bound. No greater mistake can be made than unduly delaying the planting out, as when once the plants harden and branch out it is almost impossible to get them right again. From the first they ought to be kept steadily growing; it is even better to raise fresh plants than to depend upon stunted ones. While the plants are being prepared, the beds or pots, as the case may be, ought also to be got in readiness for their reception. Small bodies of soil are preferable at the commencement to accumulations of greater bulk. Small quantities are more easily warmed, remain in sweeter condition, and there is less danger of the bottom-heat being confined, and thereby seriously crippling the roots. Warm, fresh compost can be added at leisure, and Cucumbers and Melons, when growing strongly, soon take possession of it. One, or at the most two sowings are necessary in the case of Cucumbers—one at the present time to furnish plants to keep in fall bearing at least till midsummer, and another in May or early in June to provide plants for frames and pits. A long succession of Melons being required, four or five sowings in their case are necessary, or, say, in January, February, March, and April, allowing each batch of plants about four months in which to mature fruit. Much less trouble need be taken with the later sowings than with the earlier ones. The seed may be sown in $\frac{1}{2}$ inch pots and the plants put out when a good rough leaf is formed, but in every case they should be reared well away from old plants of the same sorts, as well as all kinds of stove plants, or the chances are that dirty plants will be the result.

TOMATO PLANTS also well repay any extra trouble that may be taken in raising them. Many prefer plants struck from cuttings to seedlings, and I have known good growers strike the tops of seedlings and throw away the bottoms, the idea being that they thus obtain dwarfer and more fruitful plants. This is, however, a fallacy, and the practice ought to find no favour, except it is only by means of cuttings that any particular

variety can be had. It is true that seedlings of many kinds of plants are much longer in attaining fruitfulness than cutting-raised plants, but the former are invariably the strongest. Seedling Tomatoes, however, may easily be had in a dwarf, fruitful state, and as far as my experience goes are always preferable to cutting-raised plants. The former may be raised clean or free from the troublesome little Aleyrodes that infest them, but it is frequently a very difficult matter to obtain clean cuttings. The Aleyrodes can never be thoroughly eradicated unless Tomatoes are cleared out for a time, and the house and all its other inmates subjected to a thorough cleansing. Hathaway's Excelsior, Large Red, Hackwood Park Prolific, Dedham Favourite, Reading Perfection, Dwarf Orangefield, and Carter's Perfection are all well adapted for pot and house culture. Large Red and Dwarf Orangefield, both corrugated sorts, set more freely than the rest and are also good in quality. For early supplies the seed should be sown now, thinly, in well-drained 8-inch pots filled with light soil. After being watered they may be plunged in a gentle hotbed, and a square of glass placed over each pot materially hastens germination. The glass should be removed soon after the seedlings break through the soil, and when the seed leaves are well unfolded the pots should be placed near the glass in the same house. If at all crowded they ought to be thinned out freely, the aim being to keep them sturdy from the commencement. When two leaves besides the seed leaves show themselves, the time has arrived for potting off, for which either 5-inch or 6-inch pots may be used—in the former place one plant, and in the latter two. Any good loamy soil will suit them, and this should be well warmed by plunging hot bricks in its midst prior to using it. The seedlings should be carefully shaken out of the soil and at once potted, this work being done in the house in which they are growing. One crock and a little rough soil constitute drainage sufficient for each pot, and the seedlings should be sunk up to their seed-leaves in the soil and lightly potted. If returned to a warm position, carefully watered and shaded from bright sunshine, plants thus treated soon commence growing afresh and emit roots from the whole length of the stems buried. Directly they seem to be recovered from the check thus sustained they ought to be transferred to a warm shelf near the glass, and if properly attended to will rapidly develop into fine, sturdy plants. Many succeed very well up to this point, but manage to spoil their plants afterwards from keeping them too long in the small pots. Directly they are root-bound the growth becomes spindly, and this should be anticipated by early transference to their fruiting quarters. Last season some of our first bunches of fruit nearly touched the soil, and nearly all commenced to fruit at about a foot from it. The plants were dwarf and sturdy when put out and were placed rather deeply in the pots, thus both further dwarfing them and admitting of a subsequent liberal top-dressing of loam and manure. For such sturdy plants stakes from 3 feet to 4 feet in length are quite long enough; all being grown with one stem (the side shoots being rubbed out as they appear) and heavily fruited, prove both ornamental and profitable. Those planted on mounds of soil and trained under the roof were equally profitable, most of them commencing to fruit long before the trellis was reached. Any plants not wanted for the earliest crops are best consigned to the rubbish heap. Where plants are required for cool structures, March is quite early enough to sow the seed.

Two favourable seasons in succession will give a stimulus to open-air culture, and more would succeed in less favourable years if more attention were paid to the proper preparation of the plants. Instead of sowing very early in March and according starvation treatment from the commencement, the end of March or early in April should be chosen, and the plants be kept steadily growing, either in warm frames or on shelves in a green-

house till near the time of planting out. If time and space can be spared, I would recommend that the seedlings be first potted singly into 5-inch pots, and when well rooted be shifted into 8-inch pots, good loamy soil and very little drainage being used in each instance. Then, if properly staked and given good room either in a light, airy greenhouse or pit, they will soon form a strong bunch of bloom; this will set and perhaps another not far behind it prior to planting out early in June. Then if they are given a warm position against a wall and fairly rich soil to grow in, a quantity of good fruit will ripen in July and August, or some time before the disease makes an appearance. Much starved plants lose their first and sometimes second bunch of bloom, and a late and uncertain crop is the result. W. I.

KITCHEN GARDEN NOTES.

W. WILDSMITH.

My contributions under this head will not be in the ordinary calendrical style, but they will be seasonable, *i. e.*, sowing, planting, or general cultivation, as the case may be, of whatever is under discussion, may begin when my notes appear. By thus omitting details, we shall have increased space to fully explain the cultivation, &c., of the various vegetables that may come under review; and further, to be practical, my observations shall consist of what we ourselves are doing at the time, or what is in immediate contemplation. With this introduction, I begin with

POTATOES.—Opinions may differ, but mine is that this is the most important of all vegetable crops. Others evidently think the same, for we have never yet been told to grow fewer Potatoes. The inquiry begins about the middle of April. When are you going to give us new Potatoes? and it is of almost daily repetition till a full supply is forthcoming, either from frames or warm borders. We are now preparing for these supplies by starting the sets in shallow boxes of leaf-soil. They are about half-buried in the leaf-soil, and as soon as roots have well laid hold of the mould, they are planted in frames, being disbudded to a couple of eyes as they are taken out of the boxes, and laid on trays ready for planting in drills, that are drawn a foot apart and 4 inches deep, and the sets are planted 9 inches apart in the row. I ought to have mentioned that the beds are made up with tree leaves (Oak and Beech principally), two-thirds of these to one-third of long stable litter. The heat from this mixture is never intense, and, as a rule, lasts the whole season without needing the renewal of linings. Larger proportions of litter give out a greater heat, but it is a spurt, and soon over, and new linings must be had recourse to to keep matters right. "Slow, but sure," is the best motto in forcing operations of every description. The best soil for frame-cultivation is roughish vegetable mould and light loam in about equal proportions. The siftings from under the potting-bench and the soil that has been emptied out of boxes that have contained bedding plants we reserve for the purpose, and after it has thus done duty twice over, there is sufficient vitality left by adding to it a sprinkling of bonedust or a few bushels of droppings to make it an excellent compost for the growing of ridge Cucumbers and Vegetable Marrows. The sets that are intended for planting on warm borders in the open air are still on shelves in the Potato house, but are laid out singly, that those disposed to sprout may develop strong sprouts. We shall put the first batch in boxes of leaf soil a fortnight hence; meantime the borders will be got ready—in fact are so, except levelling down, the soil having been left rough when trenched in the autumn. From close observation, I am persuaded that we do not exercise sufficient care in the application of manure for Potato crops. Indeed, I have very nearly attained to the conviction that we do wrong in manuring at all for that crop, and that it would be desirable to plant on ground that had been well manured for a former crop, such as Onions, Celery, or French Beans.

I say nothing as to produce under these conditions, but I have proved that it is but little inferior and that quality is largely advanced, whilst in a season when murrain was prevalent there were fewer bad tubers. The best manure for ordinarily good garden soil is leaf-soil, or well rotted stable manure, or both in mixture, and it should be well incorporated with the soil. Fresh, what I call raw, manure is only fit for very hungry soils, and even then I would hesitate to plant Potatoes on such ground unless the manure had been trenched in during the winter. Except bones and bone dust, I have little faith in the lasting qualities of artificial manures. Soot and wood ashes are most excellent fertilisers for Potatoes, and so is salt for dry, gravelly sandy land; this last we have used with excellent results, applying it as soon as the tubers were planted. I cannot say the quantity to a given space, and therefore perhaps the best way to convey an idea as to quantity used is to say that it was a thick sprinkling and done by hand. With regard to varieties for frame and earliest open-air supplies, there are none, taking all points into consideration, that excel the old Ashleaf types, but as first succession sorts to these, several kinds have of late years come to the front, which, whilst equal in quality to the Ashleaf, are a long way in advance in respect of productiveness. The best of these are First and Best, Early Regent, and perhaps Early Market.

PEAS.—For some years now we have discontinued the once general plan of sowing these in November or early in December, simply for the reason that the crop was never ready a day earlier than that from Peas sown early in February; very naturally, therefore, we resolved to give up the practice, and save ourselves several weeks of anxiety as to the parloinings of the seed by mice, or the pecking out of the points of the young shoots by birds. Our first sowing will very shortly be made in small pots, and be placed to germinate in a cool Peach house, and from there be transplanted to the open border about the end of February. They will be thickly screened from cutting winds by staking them at once, and by using a few Spruce or Laurel boughs along the bottoms of the sticks. The border for this early crop slopes to the south, and is well sheltered from the north and east, as it is from those quarters that during spring-time our garden suffers most. I need hardly say that ground for Peas cannot well be too rich or too deep, and manure of any kind can be used. The number of first early varieties is bewildering, and when all are said to be "the best," one feels somewhat diffident about mentioning any. I, however, risk the censure I may incur by first saying that dwarf varieties find no favour with me, solely because there is never a crop on them, at least not one worthy of that designation, even when the haulm is covered with pods. Sutton's Ring-leader and Veitch's Extra Early are very early good kinds, both being from a week to ten days earlier than Laxton's William the First, which, taking quality into account, is the best first early Pea that has yet come under my notice. There are at least a dozen of most excellent very early kinds, and out of so many there is no doubt that the experience of others may be altogether the opposite of mine.

TOMATOES.—We have just made our first sowing in 5-inch pots, and placed in a temperature of 65° Earliest of All and Hackwood Park Prolific. The rapidity with which Tomatoes have come to be regarded as indispensable is surprising; a very few years ago we were never asked for them; now it is impossible to grow too many, and very fortunately their cultivation is of the easiest description. Those now sown are intended for growing in pots in vinerias, Peach houses, or any warm place having an average temperature of about 60°. The seedlings will be potted off as soon as of sufficient size to handle, and be potted singly in small pots, and as the roots reach the sides of the pots they will be shifted into larger, the final size being 10-inch. Good loam, not too

heavy or broken up too finely, with a small quantity of bone-dust, is the compost they relish. Manure is not required till the plants are in full fruit and the roots are cramped in the pots; manure water is then of great assistance, and should be given on alternate days. A compost overlone with manure is apt to cause the plants to miss fruiting at the right time; growth is so strong, that the flowers fail to set, and will so continue till the growth gets a check through the roots getting pot-bound. This can and should be prevented by using soil containing little, if any, manure. Soon as the clusters of fruit are formed and swelling, all deformed ones should be pinched off to ensure size and space to aid the fruit to ripen on all sides alike, as well as for appearance sake.

THE CHRYSANTHEMUMS OF FIFTY YEARS AGO.

ONE of the earliest and most remarkable contributions on the general history of our now popular queen of autumn was that of Mr. Sabine, to be found in vol. v. of the Transactions of the London Horticultural Society, published in 1826, with coloured figures of some of the varieties, but the earliest figure seems to be that of Rheede, which was published as early as 1699, and presumably represents *C. indicum*, of which our present Pompon varieties are considered as the modern representatives. But the fact is that, supposing three specific wild types of the Chrysanthemum of China and Japan ever existed, which is doubtful, we can assure ourselves that cultivation has quite obliterated them in the garden of to-day. The seed from almost any one variety of Chrysanthemum is now-a-days found to yield us varieties of all kinds, forms, and colours—incurved, re-dexed, singles and doubles, with quilled or strap-shaped florets, or of the Pompon or Anemone groups, so that I think we may bid good-bye to the old specific names of *C. indicum*, *C. sinense*, and *C. japonicum*, which possess no real meaning in the gardens of our time. To find out the early history of the Chrysanthemum one would need a few years' residence in China and Japan, where it would be possible to consult the native books and drawings, and more especially to study the pictorial representations of this their national flower as it appears on porcelain and lacquer ware, or on old textile fabrics of many kinds. I am told there is a room in the Mikado's palace at Tokio which is entirely devoted to carvings and paintings of this favourite Japanese flower. As is well known, the Dutch were amongst the earliest traders to deal with the Japanese, and the Chrysanthemum is said to have been introduced to Holland long before it reached our English shores. To say nothing of Breynius (1689), both Kämpfer (1712) and Thunberg (1784) allude to the flower, and original drawings may linger unseen and forgotten in some of the libraries of Holland or of Spain. Haworth also wrote on the Chrysanthemum on or before the year 1833, and proposed a new arrangement of the then existing kinds, which is as follows:—

Ranunculus flowered.

YELLOW INDIAN (Hort. Trans., v. 4, p. 330, tab. 12, and v. 5, p. 346). Of short stature (in its group) with very late and double, but small, flowers; and forms, with the next, a distinct species.

WHITE INDIAN (Hort. Trans., v. 4, p. 347). Shorter than the preceding, with very late and similar, but white, flowers.

WABERATA YELLOW (Hort. Trans., v. 6, p. 344). Flowers very late, with the preceding, and of similar size, but has much more entire leaves, and larger flowers, which make it a distinct species.

SPANISH BROWN (Hort. Trans., v. 4, p. 488, and v. 5, p. 420). Of short firm stature, but rather early and beautiful flowers, the size of the preceding, and with smallish leaves a little more pinnatifid, and probably a distinct species.

BLUSH RANUNCULUS-FLOWERED (Hort. Trans., v. 6, p. 328). Of short firm stature, and incrimed early flower, of a bluish colour, and peculiar neatness of form. I think I have two variations of it.

SMALL DEEP YELLOW, PAIR'S SMALL YELLOW (Hort. Trans., v. 6, p. 327). Taller and weaker than the last, early and small-flowered, with small and blunt pinnately-lobate leaves. Perhaps it may be a distinct species from its small leaves and flowers.

SMALL DEEP YELLOW, SMALL WINDSOR YELLOW (Hort. Trans., v. 5, p. 415, and v. 6, p. 335). Also called 'Aitons' Yellow. Of short stiff growth, and early flowering, and but little merit.

SMALL FLAT YELLOW, SMALL YELLOW (Hort. Trans., v. 5, tab. 17, and v. 5, p. 422). Of shortish growth, and with pure yellow and expanded early flowers, the shape and size of the three subsequent varieties, of which it is presumed to be the origin, as yellow is the most predominant colour in these plants. Their forms are very neat and regular.

THE BUFF, or BUTTER (Hort. Trans., v. 5, p. 420). Also called the Orange, or Buff. Resembles the preceding in everything but colour.

THE ROSE, or PINK (Hort. Trans., v. 4, p. 344). Also called the Luteo. Resembles the last in all things but colour, and is now the most common kind in cultivation, although introduced after the old purple, hexamerid-emanate.

THE PALE PINK (Hort. Trans., v. 6, p. 336). Raised in Mr. Colvill's nursery, being a sportive branch from the last, and differing in nothing but colour. This and the three preceding doubtless sport mutually into each other, and are perpetuated by cuttings of their respective sports in the first instance, and offsets as well as cuttings afterwards, but are all liable to sport again, from pale pink through deeper pink, and copper or light orange to bright yellow; but their shoots and leaves are inimitable.

EXPANDED LIGHT PEARLE (Hort. Trans., v. 5, p. 153, and v. 5, p. 421; and Hort. Mag., tab. 2250). Of middling size, and with flowers in the middle season (of its group), but nearly twice as large as the last, though resembling it in form, and far more handsome.

QUILLED LIGHT PEARLE (Hort. Trans., v. 5, p. 155, and v. 5, p. 421). A sport only from the last, but now made permanent.

Incurving Ranunculus flowered.

INTERVING LIGHT (Sweet, Brit. Fl. Gard., tab. 7). Called LIGHT (Hort. Trans., v. 5, p. 155 and p. 421). Also called the Quilled Light. Grows tall, and flowers early, and is an elegant plant, allied to the preceding, and has produced the following one from a sportive branch.

QUILLED BLUSH (Hort. Trans., v. 6, p. 326). Has been called the Double Blush and Double White. The flowers, which are rather early, large, and showy, dying off nearly of that colour. It is of middling stature in its group; and, although a sport only of the preceding, is now an established and more beautiful variety than it.

THE QUILLED PINK (Hort. Trans., v. 4, p. 350, and v. 5, p. 351, 420, 421; and Hort. Reg., v. 8, tab. 919). Of tall stature, and one of the very latest in blooming; but very handsome, and repaying by its beauty every care bestowed upon it by the gardener. It has been called the most beautiful of all; but with me it yields to the Gold-bordered Red.

LARGE QUILLED ORANGE (Hort. Trans., v. 5, p. 152, tab. 3 copper figure, and v. 5, p. 421). A tall and large (dist.)-flowering variety, of considerable beauty, and at present uncommon.

GOLD-BORDERED RED (the TWO-COLOURED INCURVED OF Hort. Trans., v. 6, p. 32, 333). Of tall stature, very late, with the most perfect and beautiful flower of all its genus, although only of the middle size. The red petals are striped with gold beneath, and golden-tipped there; which tips, merging strongly and gracefully, show the gold in a front view of the flower, which is golden likewise at its base within. I consider it the most complete of all.

THE SUPERB WHITE (Hort. Trans., v. 4, p. 338, and v. 5, p. 190; Hort. Reg., pl. 479). A late, very tall, and splendid plant, with large, incurving, very double, pure white flowers.

China Aster flowered, often showing a disc, and then much resembling China Asters.

THE SULPHUR YELLOW (Hort. Trans., v. 4, p. 341, and v. 5, p. 420). A beautiful variety, of tall stature, and free and early blooming, with middle-sized Aster-like flowers.

THE TWO-COLOURED RED (Hort. Trans., v. 6, tab. 4, and v. 6, p. 342, 343). A very fine and showy variety, of the middle size in stem and flowers, but rather late, which sometimes shows a disc, and is then very Aster-like. The bipinnatifid leaves are far more limited than any other kind; and I think they constitute it a distinct species.

THE EARLY CRIMSON (Hort. Trans., v. 5, tab. 5 (inferior figure), p. 151 and p. 421). Of light, small stature, delicate, and apt to lose its leaves before its bloom is finished. The flowers are middle-sized, early, and very beautiful; they show a disc, and when well managed, have ripened perfect seeds in England.

THE CLUSTERED PINK (Hort. Trans., v. 6, p. 336). Also known by the name of the Changeable Blue. One of the tallest of its tribe; flowers in the middle season very abundantly; and, although the flowers are but middle-sized, and little better than half-double, showing a considerable disc, and greatly resemble China Asters, they make a very fine and durable appearance, standing the weather well, and becoming much darker by age, though less delicate. This is a very likely variety to produce seed in this country.

THE EARLY BLUSH (Hort. Trans., v. 6, p. 326). This tall and almost unimpeded variety is also called the Double Blush and Double White. It flowers very early, beautifully, and freely, and its flowers are large, and scarcely show any disc; and their colour without is light blush, but within they are exactly of the peculiar tint well known by the name of French white; and, like many other varieties, they are very durable. They have ripened seeds in England.

THE PALE WHITE (Hort. Trans., v. 5, p. 417, 422). This exquisitely white-flowering and noble variety is of tall stature, and early blooming, and makes a splendid appearance in a general collection. Its flowers are of the middle size.

Marigold-flowered: with well formed double flowers resembling Double Cape Marigolds in shape and size.

GOLDEN BRONZE-BACK, GOLDEN YELLOW (Hort. Trans., v. 6, p. 342; and Bot. Reg., tab. 4 (superior figure)). Also called the Large Yellow and the King's Yellow. A very tall, handsome, and free-flowering variety. The flowers are early, and of a high rich yellow colour, but bronzed or orange in the buds and on the outsides. This is one of the best to grow as a standard; and, if parted at the root and annually transplanted, succeeds very well as a herbaceous plant, especially if in a warm or sheltered situation, duly supported by a stick.

THE SUPERB CLUSTERED YELLOW (Hort. Trans., v. 5, p. 156, and v. 5, p. 421; and Sweet's Brit. Fl. Gard., tab. 14). One of the finest and tallest of the group, being higher than the preceding, and with more clustered, and more neatly formed, pure yellow flowers, but they are later in opening.

THE GOLDEN LOTUS-FLOWERED (Hort. Trans., v. 6, p. 340). A very splendid and large long-leaved variety, and nearly or quite the tallest of this genus of plants; having late pure and deep yellow flowers, above the middle size, and larger than those of any other yellow kind of the Marigold form, and which partly endure until the heavier frosts of winter destroy them.

THE CHANGEABLE PALE BUFF (Hort. Trans., v. 6, p. 380, and tab. 3). Also called the Pale Cluster. This plant, when flowering as perfectly as it is represented on the above-cited table, is one of the most showy and splendid in the group; but this has not been the case during the autumn of 1832; all the flowers, and in various gardens, which met the writer's eye, being, as it were, degenerated into almost buff-coloured and spuriously quilled flowers, of more upright appearance than the large, expanded, flat-petalled, and variegated purple whitish and yellow-buff ones so charmingly depicted in the figure cited. They are of the middle season.

STARRY CHANGEABLE PURPLE, THE STARRY PURPLE (Hort. Trans., v. 6, p. 339). This beautiful plant is one of the most variable-flowered in the genus, its very late flowers first opening of a purple colour, with the exterior petals at first few in number, starry, and paler, especially at their expanded spoon-shaped tips, soon, however, becoming still more pale until the whole well-expanded and very double blossom becomes regularly more bluish coloured and white than purple, and is a very fine, well-formed, variegated flower. The stature of the plant is of the middle size, but its remarkable leaves are much more laminated than usual, and often broader in their outline than long, which is not the case with any other in the group, and of very considerable size. Wherefore I conceive it may be a distinct species from all the others.

THE LATE PURPLE, THE LATE PALE PURPLE (Hort. Trans., v. 5, p. 413, and v. 5, p. 422, and v. 6, p. 353). Also called Large Pale Purple. This is a very late-flowering and rather tall variety, whose middling-sized and well-expanded blossoms are very neat, and resemble in shape those of the preceding, but are much smaller.

THE BROWN PURPLE (Hort. Trans., v. 6, p. 341-2). A tall and slender-twigged very late-flowering variety, whose middle-sized flowers resemble the last in shape, but are not quite so flat and neat in expansion, and their colour in the group is very remarkable, being of a very dull brownish or reddish purple. The leaves are so small, and so bluntly lobed and on such slender shoots, terminating in such long and graceful peduncles, that the plant is probably a distinct species from *Chrysanthemum sinense*, and differs not so much in leaf as in flower from the Small Deep Yellow above.

Tassel-flowered: being tall or very tall plants in their genus, with very large double, and more or less conspicuously drooping flowers, whose petals are usually elongated and quilled, and often greatly resemble the form of a tassel.

THE TASSELED FLAME YELLOW, THE QUILLED FLAME YELLOW (Hort. Trans., v. 4, tab. 14, p. 341, and v. 5, p. 421). The magnificent flowers of this tall plant appear rather late, and often measure above 5 inches in expansion, and make, perhaps, if not a more neat, at least a more showy appearance than any other of the group, being double, and composed of innumerable chiefly quilled incurving petals, hanging more or less downwards, and when at their best resembling a flame-coloured tassel.

THE TASSELED SALMON, THE QUILLED SALMON (Hort. Trans., v. 5, tab. 17 (inferior figure), p. 414, and p. 422). This is a late-flowering, slender, and graceful plant, with large tassel-like and half-expanded drooping quilled salmon-coloured flowers, and is very uncommon.

THE TASSELED YELLOW (Hort. Trans., v. 6, p. 329). A very tall and strong-growing, large-leaved variety, with numerous tassel-formed flowers of the largest and most showy kind, often measuring more than 5 inches over, and appearing rather early. It is one of the most desirable and free-growing of the whole collection.

THE QUILLED YELLOW (Hort. Trans., v. 4, p. 341, and v. 5, p. 420). This is a tall variety, with rather large flowers, of the middle season, or later, producing its blossoms in clusters at the top of the strong upright shoots. It is also known by the name of the Quilled Straw.

THE LATE QUILLED YELLOW (Hort. Trans., v. 6, p. 343). This has been called a very late and not very desirable variety in collections. It appears to be of the middle size, but it has not yet opened its blossom-buds with me, not having long possessed it.

THE LARGE LILAC (Hort. Trans., v. 4, p. 343, and v. 5, p. 420). Also called the Late Lilac, the New Lilac, and the Semi-double Purple. A very tall, upright plant, bearing but few double large and clustered flowers at the summits of the branches, and those so late in appearance, that in cold seasons they cannot expand well, and are consequently in but little repute. I have only seen one plant in blossom, and that in my own garden.

THE TASSELED LILAC (Hort. Trans., v. 6, p. 332). A middle-sized, or rather tall, plant of very great beauty, and one of the most desirable of the whole group, having very showy tassel-formed flowers, 5 inches or more in expansion, very numerous, early, and elegantly drooping from their weight, but they often show a disc. It is a likely variety to produce seeds of the most promising kind, but I have not hitherto heard of its ripening any in England.

THE TASSELED PURPLE, THE PURPLE (Hort. Trans., v. 4, p. 334). Has also been called the Old Purple, the Old Red, and the Quilled Purple, and is figured in the Bot. Mag. (tab. 327). This is a very beautiful and rather early-flowering plant of almost the middle size. The flowers are very numerous, gracefully drooping, and of middling size, and are at first of a reddish purple colour, but become paler by age, and in mild seasons will continue in succession from the end of October to the second week in January. It acquires the name of Old from being the first China *Chrysanthemum* that came to England in modern times, and bloomed in Mr. Colvill's nursery in November, 1795, but was said to be at Kew in 1790. The great horticulturist Miller certainly had one, or more likely two, of these Chinese, or Indian, *Chrysanthemums* in cultivation at Chelsea long before; but it is not yet quite satisfactorily explained what sorts they were. See Hort. Trans., v. 4, tab. 12, p. 228, and following.

THE CHANGEABLE TASSELED WHITE, THE CHANGEABLE WHITE (Hort. Trans., v. 4, p. 336, and v. 5, p. 419; and Bot. Mag., tab. 2042). It has also been called the Old White, being the first white flowered variety known in our gardens. It is recorded in the Hort. Trans. to have been raised from a sporting branch of the preceding, and, indeed, resembles it in everything but colour. It is a very graceful and elegant plant, and in warm situations its flowers are often more or less tinged or dotted with purple or bluish colour.

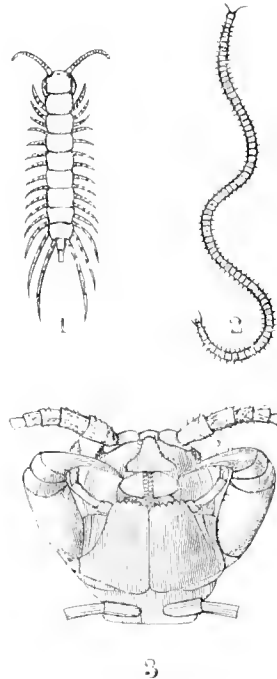


Fig. 1, the common centipede (*Lithobius forficatus*); 2, numerous ditto (*Geophilus longicornis*); 3, underside of head of centipede, showing the mouth organs (magnified).

THE NARROW QUILLED WHITE, THE QUILLED WHITE (Hort. Trans., v. 4, p. 337, and v. 5, p. 419). This rather slender variety is almost of the middle size, and has the slenderest and most completely quilled florets, and the earliest flowers of the whole group, which hang in gracefully drooping tassels, and form a strong contrast to the next in almost every respect.

THE GREAT TASSELED WHITE, THE TASSELED WHITE (Hort. Trans., v. 1, p. 339, and v. 5, p. 420). Has also been called the Expanded White. This large, strong and broad, deep-green shining-leaved variety is one of the latest of all in blooming, but its lovely flowers are larger and more showy than those of any white-flowered variety, and endured to the end of January, 1833, the date of the present paper. No flower in this chilly climate stands the cold so well, or so long continues to beguile the fancy of a florist by its protracted opening, by its hardihood in expansion, and by the soft hue of its snowy blossoms, carrying on, as it were, the flowery beauty of lingering autumn into the very bosom of winter, whose ice at length closes the temple of Flora for a time, until the herald flowers of spring appear amidst the melting snow, as if impatient of delay.

Half-double. Tassel-flowered: with only half-double flowers, and narrow elongated, quilled petals; often drooping, and somewhat resembling a tassel.

HALF-DOUBLE QUILLED WHITE, SEMI-DOUBLE QUILLED WHITE (Hort. Trans., v. 5, p. 158). A very tall, robust variety. The flowers are among the latest varieties, and more inclining to be single than usual, yet of too late occurrence

to ripen seeds with us. They are very large, and the narrow quilled petals are very singularly waved, and as if pursuing each other from right to left, making a pleasing and almost animated appearance.

HALF-DOUBLE QUILLED PINK, SEMI-DOUBLE QUILLED PINK (Hort. Trans., v. 5, tab. 17 (inferior figure), p. 157, and v. 5, p. 422, and v. 6, p. 351). This variety grows rather tall and flowers bluish, but its flowers, although but half-double, and only of the middle size, possess a degree of graceful elegance and lovely hues peculiarly their own. It is at present a rare variety.

HALF-DOUBLE BRONZE BUFF, PALE BUFF (Hort. Trans., v. 6, p. 334). Also called the Semi-double Pale Buff, and Reeve's Pale Buff, and Quilled Buff, and the Buff. It is a very tall and free-growing variety, and its half-double buff large flowers, which in their early stages are much bronzed, though of course hues, make a showy appearance, and stand the weather better than all others, opening rather early, and continuing late, until all the bronze is gone, having faded to a dull buff.

HALF-DOUBLE QUILLED ORANGE, SEMI-DOUBLE QUILLED ORANGE (Hort. Trans., v. 5, p. 412 and p. 422, and v. 5, tab. 17 (left-hand figure), and v. 6, p. 352). A tallish plant, with but few large and almost single, and also some nearly half-double, flowers, of good size, but making a poor show.

HALF-DOUBLE PALE QUILLED ORANGE, SEMI-DOUBLE QUILLED PALE ORANGE (Hort. Trans., v. 6, p. 337). Also called Semi-double Deep Yellow. Of the middle stature, with few and late flowers, of good size, but comparatively poor appearance, on loosely drooping footstalks.

F. W. B.

GARDEN DESTROYERS.

CENTIPEDES.

THESE well-known creatures are not encouraged and protected as they deserve to be; on the contrary, most persons look on them with great dislike and horror. This, no doubt, is owing to the fact that they usually move very rapidly. Slugs, snails, caterpillars, and other creatures which are slow in their movements, persons do not shudder or shrink from so readily; but a spider, blackbeetle, an earwig, or a centipede are generally objects of great aversion. The account often given of the venomous nature of the bites of the large tropical species of centipedes, no doubt is an additional reason to regard these useful creatures with disgust. Useful they most certainly are, for they live almost (if not quite) entirely on animal food, such as insects, worms, &c. Centipedes usually feed at night time, and during the day hide themselves under stones, brick-bats, pieces of wood, rubbish, &c., or in crevices of the earth. The common centipede (*Lithobius forficatus*), fig. 1, is undoubtedly carnivorous; their active movements and the formation of their mouths, provided as they are with a powerful pair of poison fangs, point to their being creatures which prey upon living things, even if we had nothing else to guide us. There is, however, another very common centipede, the luminous centipede (*Geophilus longicornis*), fig. 2, which has been found under circumstances which seem to show that it does not at all times confine its diet strictly to animal food, although the organs of its mouth are formed in just the same manner as those of the other species; it is, however, a much more sluggish creature, and would be quite incapable of catching any tolerably active insect, for in spite of its great number of legs it moves very slowly, and with much deliberation, and it is quite probable that if when near the roots of plants, the supply of its ordinary food were to fall short, it would feed on them. This, and some other nearly allied species, seem to form a link between the Julidae (or snake millipedes), which are undoubtedly vegetarians, and those centipedes which are decidedly carnivorous. If it is suspected that they are injuring the roots of a plant, they may easily be found by turning up the earth round the plant, as their length (2½ inches) and pale colour render them very easy of detection; but though these creatures are common, they are seldom so abundant as to be the cause of much injury to plants. When near plants they are generally found in the company of snake millipedes, and like them they are protected by such a hardened skin that few, if any,

insecticides would reach them with fatal effect, unless they were very near the surface. Watering with brine has been recommended as a means of killing the snake millipedes, and would be worth trying in the case of these centipedes.

The centipedes belong to the same class (the Myriapoda) as the snake millipedes. They differ from them, however, in various particulars, but chiefly in the formation of their mouths; the latter are not provided with the powerful poison fangs (fig. 3) which are so conspicuous in the former. When the head is examined, another difference which may be easily recognised is that the snake millipedes have two pairs of legs attached to each joint of their bodies, while the centipedes have only one. All the snake millipedes crawl very slowly, but many centipedes are very quick in their movements. I have figured two of our commonest species, *Lithobius forficatus* (fig. 1) and *Geophilus longicornis* (fig. 2). The former species is, as I have already mentioned, undoubtedly carnivorous. It measures about an inch in length, not including the legs and antennæ; the latter consist of about forty joints; the legs have seven joints, and terminate in a single claw. The front pair of legs have become modified in form, and now serve as a pair of mandibles, terminating in poison fangs. Fig. 3 shows these fangs, in each of which is a poison gland, from which the poison is ejected through an aperture at the point of the fang. The points of the mandibles in the drawing touch the maxillæ or jaws, which are furnished at their edges where they meet with sharp teeth. Below these jaws is the under lip or labium, which is toothed along the upper edge. This lip appears as if divided longitudinally into two, and in young specimens it is really in two parts, but in full-grown specimens the two halves grow together and form one organ. Above the points of the mandibles is the upper lip. The eyes are situated just below the antennæ; the whole of the latter are not shown. The luminous centipede (*Geophilus longicornis*), fig. 2, is a remarkably long, narrow creature, measuring when fully grown about 2½ inches in length and not more than 1-20th of an inch in width. Its body is composed of a great number of joints, each of which is provided with a pair of legs. The last pair in the males are considerably longer than the others, and have very much the appearance of antennæ. The organs of the head are just the same as those of the common centipede. These creatures move in a slow, tortuous manner, and seem to glide along rather than walk; their legs are so small that they are scarcely observed.

At certain times, generally in the spring and autumn, supposed to be the breeding seasons, these centipedes emit a phosphorescent light, and they often leave an illuminated trail behind them some few inches, and occasionally 2 feet and even 3 feet, in length when they move about. Persons are often surprised to see a streak of phosphorescent light on a pathway, and wonder what can be the cause, for unless careful search be made, the author will not be noticed. The female lays her eggs, numbering nearly fifty, together in a cluster in a cell, which she forms in the earth. In this cell she remains coiled around the eggs until they are hatched, the period of incubation occupying a fortnight or three weeks. The centipedes hibernate during the winter.

G. S. S.

Beetles (*I. J. II.*)—The specimens you send are those of the common Vine weevil (*Othiorhynchus sulcatus*), a most destructive pest in all its stages. The beetles hide themselves during the day, and feed upon the leaves of almost any plants that come in their way at night. The best method of catching them is to place a white cloth or paper under the plants which they attack, then enter the house after dark with a light; this, usually causes them to drop

upon the cloth, when they may be gathered up and destroyed. The plants should be slightly tapped in order to bring down any which may be secreting themselves amongst the leaves.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL.

JANUARY 11.

THIS, the first meeting of the year, opened with a bright display—far brighter than had been expected in such wintry weather as that which we are now having. The great feature of the meeting was an extensive and magnificent collection of new double and single Chinese Primulas, shown by Messrs. Sutton, of Reading, who seem to have made great strides in the improvement of these beautiful winter flowers. This was such an exceptional display, that it is worthy of notice beyond the report, and a detailed account of the sorts shown will be found in another column. The rest was a miscellaneous gathering of winter flowers, most of which were submitted to the committee, and these included not a few choice Orchids. The following plants were awarded first-class certificates:—

LÆLIA ANCEPS STELLA.—A splendid variety; the largest flowered of the numerous forms of this ever-popular Orchid. The flowers are a third larger than those of the ordinary form; the sepals and petals are pure white, and the large labellum is white also, adorned with a golden crest and very rich pencillings of plum-purple in its interior. This variety is second only to the lovely *Dawsoni*, but is fortunately not so rare. Some cut spikes of it were shown by Mr. Ballantine, gardener to Baron Schroeder, The Dell, Egham.

LÆLIA ANCEPS SANDERIANA.—This variety may be best compared with *Dawsoni*, that being the form it most nearly resembles, though inferior to it in every respect. The sepals are white, but not so snowy white as those of *Dawsoni* and not so broad; the petals, too, are narrow. The lip is of much the same form as *Dawsoni*, but the colouring is not so heavy nor so beautiful. It is, however, a good substitute for *Dawsoni*. A well-grown specimen, carrying two flower-spikes each with four flowers, was shown by Mr. Hill, Arnott's Hill, Notts; and some cut spikes were shown by Baron Schroeder, and to both exhibitors first-class certificates were awarded.

KOROLKOWIA DISCOLOR.—An ugly name for an unlovely plant, which is scarcely showier than its relative, *K. Suwarowi*, which has been grown in gardens a long time. It is like a *Fritillaria*, of dwarf growth, not more than 6 inches high, and with broad, glaucous-green leaves. The flowers are bell-shaped, about an inch across, produced from the axils of the leaves, and of a sort of bronzy yellow. It is said to be hardy, but the plant shown had evidently not been grown in the open air. It may be considered interesting, but is scarcely a good garden plant. It was shown by Mr. Ware, Hale Farm Nursery, Tottenham.

KALANCHOE CARNEA.—A pretty South African Crassulaceous plant, nearly allied to the common scarlet *Kalosanthes*, which it nearly resembles in the size and form of the flowers, and the way they are borne in dense clusters. The flowers are of a delicate pink, and sweetly scented like honey. Its natural flowering season is January and February, and it may be grown in a greenhouse; therefore it is a valuable winter plant, and one that will be, no doubt, much appreciated. Some cut trusses of bloom were shown by Messrs. Veitch, of Chelsea.

PTERIS TREMULA FLACCIDA.—A most elegant variety of a well-known and popular greenhouse Fern. The fronds of it, though not really crested, have that appearance, the pinnae being much wavy and of a cheerful green. A well-grown plant has widely-spreading fronds, and has a very graceful appearance. A fine specimen of it was shown by Mr. H. B. May, of Edmonton, with whom it originated, and who, no doubt, will find it invaluable as a market plant.

BARKERIA VANNERIANA.—A new and very beautiful Mexican Orchid, perhaps the finest of all the *Barkerias*, lovely though the others are. It is most like *B. elegans*, as it possesses the same graceful habit

of growth. The flower-spikes are slender, from 2 feet to 3 feet long, terminated by a dense cluster of flowers. These have narrow sepals and petals, and rounded oblong lips. The colour is a bright rosy purple, varied only by a white spot on the lip, and margined by a zone of deep carmine. Exhibited by Mr. Vanner, Camden Wood, Chislehurst, after whom the species was named not long since by Professor Reichenbach.

CYPRIPEDIUM LEEANUM SUPERBUM.—One of the finest of all the hybrid *Lady's Slipper* Orchids and greatly superior to the original *C. Leeanum*, which was also the result of intercrossing *C. Spicerianum* and *C. insigne*. The beauty of these two handsome species is continued in the hybrid in a striking way. The flowers are nearly as large as those of *insigne*, and the colour of the lateral sepals and pouch is much the same as that of *insigne*, but the upper or dorsal sepal is like that of *Spicerianum*, but much finer, being over 2 inches broad, pure white, adorned with numerous minute spots of purple. Flowers representing the best variety yet seen of this hybrid were shown by Mr. Ballantine, from Baron Schroeder's garden.

CHRYSANTHEMUM GOLDEN GEM.—A first-rate new late-flowering variety belonging to what is vaguely termed the decorative class. The flowers are of medium size, loose, as in other Japanese sorts, and produced in heads of five and six, so that it may be considered a free flowerer. The colour is a warm yellow, deepening towards the centre into a rich apricot tint, and this variation of colour adds greatly to the beauty of the flower. Flowers of it were shown by Mr. R. Owen, Floral Nurseries, Maidenhead.

CHRYSANTHEMUM MRS. H. JONES.—A clear canary-yellow sport from the well-known white, late-flowering Japanese variety *Ethel*. The flower of the sport is the counterpart of the original, and the colour is most pleasing. Being so late, it will be of great value for cut blooms. The variety has been in bloom since the first week in December. Some cut blooms of it were shown by Mr. Ware, of Tottenham.

PRIMULA SINENSIS FILICIFOLIA DOUBLE BLUE.—A beautiful and very distinct, new, double-flowered Chinese Primula with Fern-like foliage and double flowers of a rich purplish blue colour. Exhibited by Messrs. Sutton, Reading.

PRIMULA ROSY QUEEN.—A single-flowered sort with great trusses of large and perfectly shaped flowers of the loveliest colour imaginable, it being a kind of blush-pink shaded at the edges with white. This was the queen of a large collection shown by Messrs. Sutton.

PRIMULA DOUBLE SCARLET.—A sturdy and compact-growing sort with dense trusses of double flowers scarcely over-topping the foliage and of a brilliant carmine-crimson. From Messrs. Sutton.

PRIMULA DOUBLE BLUE.—The counterpart of the double blue Fern-leaved, except that the leaves are of the ordinary form and not as in the *filicifolia* variety; the leaf-stalks are of a conspicuous reddish brown. Exhibited by Messrs. Sutton.

PRIMULA DOUBLE ROSE.—Flowers very double, numerous, produced in compact trusses, and of a delicate rose-pink colour. One of the best doubles in Messrs. Sutton's collection.

PRIMULA GIPSY QUEEN.—A single-flowered variety with large white flowers, which contrast beautifully with the dark green foliage and ruddy tinged stalks. Exhibited by Messrs. Sutton.

Among the other exhibits the following were the most noteworthy. The Orchids from Baron Schroeder's garden were the centre of attraction, as among them were several not often seen in bloom. There were no fewer than six distinct varieties of *Lælia anceps*, including the rare *Dawsoni*, which is the queen of the series. There were spikes of this with three and four flowers. Then there were *Stella* and *Sanderiana*, both certificated; *Percivaliana*, a pretty tinted form; the true pure white *alba*, whose flowers have no trace of colour, except a dash of yellow on the lip; *Williamsi*, another white form, but marked with lines in the interior of the labellum; and, lastly, *Barkeri*, an old variety still unsurpassed for richness and depth

of colour. Besides the *Laelias*, Baron Schroeder showed some fine spikes of *Cattleya Percivaliana* *superba*, a variety justly worthy of the name on account of the huge size of the flower and splendour of its colour. Another rarity was *Laelia triophthalma*, one of the Veitchian hybrids, having *C. superba* for one of its parents. It is a distinct and brightly-coloured flower, as large as that of *L. elegans*, the distinct point about it being its round-lobed labellum. Mr. Pollett, of Fernside, Bickley, showed a spike of *Oncidium brevifolium*, a species rarely seen in bloom. It is a near ally of *O. coronarium*, and, like it, bears a cylindrical spike of flowers, which are as large as those of *O. crispum*, and of similar colour, a sort of reddish orange with bright yellow lip. Mr. Tantz, Studley House, Hammersmith, showed a new hybrid *Cypripedium*, named *Marshallianum*, which, however, is not a great beauty. It looks like a cross between *C. concolor* and *C. venustum*, both of which species we consider finer than the hybrid. Mr. Hill, of Nottingham, showed a new *Odontoglossum*, called *Arnottense*; it looks very much like *Coradinei*, if it is not that species. M. Vervae, of Ghent, sent two good spotted varieties of *Odontoglossum crispum* and a pretty little *Restrepia*, like *R. elegans*, but with striped instead of spotted flowers; therefore considered new. Various new sorts of Chinese *Primulas* were shown besides those from Messrs. Sutton. Two pretty sorts came from Messrs. Cannell, of Swanley, both singles, one with blush-pink flowers, the other of an intensely deep carmine. Mr. James Woodside, Farnham Royal, had a few new sorts, those named *Mary James*, a purplish mauve, and a good white, named *Advance*, being the best. Mr. R. Clarke, of Twickenham, sent some new seedling *Cyclamens*. Two of these were placed before the committee, but it was considered inexpedient to certificate individual plants of seedling *Cyclamens*, and, therefore, the strain only was commended. The *Cyclamens* included a very fine pure white and an intensely deep crimson named *Albert Victor*, certificated three or four years ago. Mr. Ware, of Tottenham, sent an interesting group, including *Christmas Roses*, very fine plants, the white Algerian *Narcissus monophyllus*, *Laehenalia pendula*, with bright red flowers, the little yellow *Primula floribunda*, which seems to flower throughout the winter, and *Freesia refracta alba*, whose snow-white flowers, deliciously fragrant, are invaluable for cutting at this season. A large group of the white *Erica byemalis*, from Mr. Kinghorn, showed what a beautiful plant this white *Heath* is at this season.

Fruit and vegetables.—Among the few exhibits put before the committee were two monster *Smooth Cayenne Pines*, from Mr. Roberts, gardener at Gunnersbury Park, to whom a cultural commendation was accorded. A new Grape, named *White Gros Colmar*, was shown by Mr. Roberts, Charleville Forest, Tullamore. Though called *White Gros Colmar*, the new sort does not bear a great resemblance to that variety, for, though the berries are round, they are not so large, neither are the bunches of the two identical in form. The colour is too green to be nice-looking, and the flavour is not first-rate. The committee desire to see this variety again. Mr. Norman, gardener at Hatfield House, was accorded a cultural commendation for a fine basket of *Mushrooms*, and the same award was voted to General Hutt's gardener, Appley Towers, Isle of Wight, for a dish of very fine fruits of *Diospyros Kaki*, gathered from a tree grown against a wall in an orchard house. The fruits are like large *Acme Tomatoes*, and of a bright orange colour. Some seedling *Apples* were shown, including a seedling from *Cornish Gilliflower*, shown by Mr. William Paul. Messrs. Wrench showed examples of *Curled Broccolo* or *Kale*, which is considered an excellent winter green.

NATIONAL CHRYSANTHEMUM MID-WINTER SHOW.

JANUARY 12 AND 13.

THERE is exceptional interest attached to a January show of *Chrysanthemums*, and the National Society acted wisely in making the experiment of holding a show so late in the season. That a *Chrysanthemum* show in the second week of January is possible was amply proved by the really excellent and large gather-

ing which was brought together from various parts of the country in the Royal Aquarium this week. It was larger by far than was expected, and the quality on the whole was excellent. True, there were many flowers shown which were out of season, or, in gardeners' language, "stale;" but, on the other hand, the show brought to light numerous little-known varieties, which because flowering so late naturally do not find a place at the November shows. One of the chief objects of this society in holding this late show is to encourage growers to treat their plants specially for the production of late bloom, and further to encourage raisers of new sorts to turn their attention to swelling the now meagre list of really good late kinds. As the matter stands now the grower is most successful at a late exhibition who possesses the best means of preserving his blooms, and it was surprising how successfully this had been done by several exhibitors at this Aquarium show. No doubt some had made special provision for this one show, but they must also have well considered their selection of sorts, for only a few can be kept in bloom so long. It needed only a glance at the table to see which class was most represented. There were scarcely any of the old-fashioned incurved sorts, only a few of the *Anemone*-flowered section, the bulk being of *Japanese* kinds, which are undoubtedly the best for preserving in bloom. The best dozen sorts, taking the show through and reckoning only those that looked as if they were still in season, would include *Ceres*, *Meg Merrilies*, *Jupiter*, *Ethel*, *Pelican*, *Mrs. C. Carey*, *Yellow Dragon*, *Mdme. Lacroix*, *Duchess of Albany*, *Boule d'Or*, *Mrs. Jones*, and *Golden Gem*. The two last named were unquestionably the best in the show, and stood out conspicuously from all the rest, and the raiser who can give similarly fine late sorts will be rewarded. We give the names of the chief sorts in the collection shown, as some readers may like to see which sorts are capable of holding out so long.

Mr. R. Owen showed the finest collection in the chief class, that for the best stand of blooms. He had a very numerous selection of sorts, the finest among them being *Meg Merrilies*, *Exposition de Chalou*, *Mdme. Anna DeLaux*, *Engène Mizard*, deep purple; *La France*, deep purple; *Mrs. Charles Carey*, single white; *Mons. Raoux*, pink; *Snowdrift*, white; *Tintamarre*, *Caprice*, yellow; *Yellow Dragon*, *Zaire*, bronze reflexed; *Comtesse de Beauregard*, *Reduplicata*, carmine-purple; *Pelican*, white; *Diana Vernon*, purple; *Nuit d'Atomme*, *Mdme. Deville*, *Ceres*, flesh; *Jupiter*, reddish orange; *Géante de Valence*, pale pink; *Mons. de Brazza*, *M. Maxime Cornu*, purple reflexed; *Virginale*, large white *Anemone*-flowered; *Belle Paule*, *Bush*; *Moonlight*, white; and *Golden Gem*, the beautiful new sort.

Mr. Bolas, Hopton House, Wirksworth, showed the second best collection. He had good blooms of *Mons. Paul Fabre*, red-chestnut; *Fleur de Marie*, *Cœur Fidele*, white; *F. A. Davis*, deep red; *Mdme. Lacroix*, white; *Peter the Great*, yellow; and *Excellence*, deep crimson. An extra prize was taken by Mr. Stevens, St. John's Nursery, Putney, whose chief sorts were *Ceres* and *Mrs. Charles Carey*.

The best collection of twenty-four cut blooms was shown by Mr. Walters, Sunnyside, Burton-on-Trent. His best blooms were of the following: *Ceres*, *Meg Merrilies*, *Baronne de Prailly*, *Boule d'Or*, *Duchess of Albany*, *Marguerite Marrouch*, chestnut; *Fabias de Maderanaz*, *Sunflower*, large yellow *Anemone*; and *Mons. Freeman*, rose-pink.

Mr. Stevens, of Putney, was second, his best blooms being of *White Ceres*, *Mrs. C. Carey*; and Mr. Hamlin was third with a stand of *Princess Teck*, fairly good blooms.

The best dozen blooms were from Mr. Stevens, Putney, who had a really good stand containing the following sorts in fine condition: *Ceres*, *Mrs. Carey*, *Duchess of Albany*, and *Jupiter*. Mr. Walker, of Staines, was second, his blooms of *Princess of Teck* being the best; and Mr. Seale, of Crediton, was third. The best twenty-four *Japanese* blooms were from Mr. Stevens also, and again he had *Ceres* and *Mrs. Carey*, very fine, two sorts he seems to grow rapidly. The best twelve *Japanese* blooms were from Lord Brooke's gardener, Easton Lodge, Dunmow. He had good blooms of *Sceptre Toulousaine*, *The Daimio*, *Boule d'Or*, *Thunberg*, *Belle*

Paule, *Fanny Boucharlat*, *Comtesse de Beauregard*. Mr. Stevens' second best dozen blooms were again of *Ceres* and *Mrs. Carey*; and Mr. Walker's third dozen contained *Fabias de Maderanaz*, *Boule d'Or*, and *Jupiter*. Mr. Owen showed the best six blooms, which were of *Ceres*, *Golden Gem*, *Le Spectre Toulousain*, *Baronne de Prailly*, *Mons. Ivon*, and *Mons. Freeman*. *Boule d'Or*, *Belle Paule*, *Comtesse de Beauregard*, *Fanny Boucharlat* were the best in the second half a dozen.

Mrs. Norman Davis, a new yellow reflexed, was shown by Mr. E. Mizen, Mitcham, who had a stand of four dozen fine blooms. It is evidently a first-rate late sort, and Mr. Mizen, being a market grower, no doubt sees its value for his work. Mr. Waller, of Norwich, sent a golden yellow sport from *Ethel*, which appears to be identical with the new *Mrs. Jones*. A new sort, showed by Messrs. Carter, High Holborn, was highly commended by the committee. Its flowers are bright yellow, and may come larger another season. The two best new sorts shown were *Mrs. Jones* and *Golden Gem*, referred to elsewhere.

First-class certificates were awarded to the variety *Golden Gem*, the same as that shown and certificated the day previous at South Kensington, and also shown by Mr. Owen, who won a certificate likewise for his *Princess Blanche*, a large-flowered, reflexed *Japanese* with pure white flowers. A dwarf plant was shown carrying three fine blooms, and this represented the natural growth of the variety, it is said; if so, it will be valuable.

CHINESE PRIMULAS were as great a feature in the show as the *Chrysanthemums*, and as there was a class set apart for them, some first-rate specimens were shown in competition. No finer lot of plants could be seen than the collection to which the first prize was awarded. This was shown by Mr. Braid, of Winchmore Hill. He had some good sorts, too; one of which, named *Braid's Seedling*, was of exceptional merit. It has brilliant carmine flowers, with a central zone of an intensely deep crimson. It is one of the finest sorts we have seen. The second collection, from Mr. Holmes, Upper Tulse Hill, was not inferior in point of quality. Messrs. Carter, of High Holborn, who make a specialty of *Primulas*, had a large and varied collection of sorts, which they have wisely named according to their colours, and hence may be termed the *Holborn* race. Thus there are the *Holborn Carmine*, *Vermilion*, *Salmon*, *Blush Carmine*, *White*, *Rose*, *Mauve*, and *Gold Leaf*, the latter with with pale gold foliage. It is an excellent series, and was shown admirably. Besides the *Primulas*, there were miscellaneous groups of plants. Mr. Wright, of Lee, took a special prize for a large mixed group, in which forced bulbs were a feature. An excellent group was also shown by the secretary, Mr. Holmes, of Framp-ton Park Nursery, Hackney, but lacked the variety which Mr. Braid had in his group. Messrs. Sutton, of Reading, showed the large collection of *Primulas* they had at South Kensington on Tuesday, and were awarded another silver medal here. *Primulas* were shown very finely, too, by Messrs. Cannell, of Swanley, who possess one of the finest collections of single sorts in the trade. There were many kinds shown, the following being those we thought the best: *Delicata Improved* (pink), *Swanley Purple*, crimson; *The Queen* (white, very large), *White Perfection*, *Swanley Purple*, *Emperor*, and *Swanley Giant*.

First-class certificates were on this occasion awarded to Messrs. Sutton, Reading, for eight of their *Primulas*. Six of these were the same as those certificated on Tuesday by the Royal Horticultural Society, the two additional sorts being the *Single Blue Fern-leaved*, which has flowers of rather a richer tint than the plain-leaved *Blue* and *Double Carmine*, which is as pretty as the *Double Red*, but not so effective in point of colour. Messrs. Cannell were awarded a certificate for their lovely new sort *White Perfection*, which we imagined is matchless as a white both in habit, flower, and purity.

Names of plants.—*F. H. L. (Gynanthus)*.—1, *Cyrtanthium falcatum*; 2, *Pteris cretica*; 3, *Phymatodes pustulata*; 4, *Eranthis umbellifera*; 5, *Hibiscus Cooperi*.—*S. (Gynanthus)*.—1, *Pinus excelsa*; 2, *Pinus rigida*; 3, *Pinus Strobus*; 4, *Pinus excelsa* var.; 5, *Pinus pithusa*; 6, *Bupleurum fruticosum*; 7, *Illicium Alaternis*, var. with narrow leaves; 8, *Myoporum laetum*; 9, *Siphia nana*; not determinable in this state.—*G. Harris*.—*Crotalaria Cunninghamii*.

WOODS & FORESTS.

THE "ART" OF THINNING FOREST TREES.

I did not know thinning had been reduced to an "art," as "J. B. W.'s" remarks last week would seem to imply. It might be called a practice, which each forester carried out according to his own notions, and very often with no clear notion on the subject at all, but that is all. If I was to advise owners of forests, I would say to them, Whatever you do, do not let your woodman do any thinning on the so-called scientific principles of the past, because it may cause thousands of pounds of loss to the estate. "J. B. W.," I presume, has a hankering after the "art" on the old lines, but recent discussion on the subject has apparently made him cautious. He does not believe in Nature's thinning, and yet he gives an example of Nature's way of working that speaks more for that system than all his other statements do for artificial thinning. He writes:—

For example, in thinning a natural plantation of Scotch Fir some years ago, I found a patch of trees in one portion of the plantation about 30 feet high, and growing at a distance of some 10 inches or 12 inches apart. These trees were straight and free from branches, with the exception of small bushy tufts at their summits. Now, had these trees been thinned in early life, there can be no doubt that they would have attained the size of useful timber; whereas by leaving them to Nature they were only fit for paling rails or other similar purposes. These trees, being all about one size, grew up like a crop of Corn or Wheat, but had they been of different sizes the results would have been widely different, as the larger trees would then have killed their weaker neighbours, which is Nature's system of thinning under ordinary circumstances. This may be taken as a fair illustration of the difference between natural forests and such as have been planted.

I have now and then given you examples of Nature's plan and its advantages, but this example, although unconsciously given by "J. B. W." to point a moral in the other direction, is one of the best I have yet come across. Just consider its purport. At the quantity given to the space, a plantation of Firs would produce between 40,000 and 50,000 trees—30 feet high, as regular as "a crop of Corn or Wheat," straight and free from branches—to the acre. Think of it! And "J. B. W." declares he has seen such an example. Be it remembered that, by the old planting and thinning method, half as many hundreds are not grown to the acre by the time the trees are 30 feet high, and then they are pruned afterwards! And these crowded trees were fit for paling rails—a very fair size for the age under any circumstances, because the Scotch Fir is never fit for much else under the most favourable conditions at a height of 30 feet. I presume "J. B. W.'s" "patch" was not old, or he would have "found" it sooner "in one of his plantations." I like to dissect this statement of "J. B. W.'s," because it affords an excellent lesson, although it hardly appears to be read by the author of it. The fair and indisputable presumption is, that if a Fir plantation will rush up to a height of 30 feet, 10 inches asunder, as straight and even as a crop of Wheat, what possible reason can be advanced for thinning young plantations of the same kind planted from 3 feet to 4 feet asunder at the outset, let alone pruning what is left? There is, no doubt, a healthy ratio between the distance asunder and the height attained if we could find it, but apparently there is no need for thinning under ordinary circumstances. This is the conclusion enforced by "J. B. W.'s" example taken on its own merits, but his example is ill-chosen for all that. We do not want a plantation of young rails with presumptions as to what might have happened had they been treated differently, but we want examples of mature timber crops grown on Nature's plan, and these "J. B. W." could have found had it suited his purpose, and had he chosen such examples he would not have been under the necessity of guessing at "might-have-beens." Both in the Highlands of Scotland and elsewhere in these islands, and in vast tracts all over both the temperate and cold regions the natural forests exist, and wherever found the timber is tall, straight, sound, and produced in far greater abundance on the ground than in our artificial plantations, and

also in less time, and the timber beats hollow any thing the British forester can produce by his artificial thinnings and prunings. That is the broad fact, and it is borne out on every wharf and in every timber yard in the kingdom. I am not opposed to thinning when it consists of removing weedy specimens that can be turned to better account at the time, but I am impressed with the wisdom of doing as little in that way as possible.

In conclusion, I would just point out that "J. B. W.'s" acre of poles 30 feet high, and from 10 inches to 12 inches apart, and all so straight and regular, would here fetch nearly £400 at 2d. apiece, equivalent to a rental of £16 an acre, supposing the poles took twenty-five years to grow. This is a result that probably neither "J. B. W." nor anyone else ever attained or approached by the most elaborate culture, and can never hope to attain, and yet it is the example he has chosen—let us hope without reflection—to show how Nature mismanages our plantations. I do not myself claim anything like such results from leaving our woods to Dame Nature, but if there be any truth at all in "J. B. W.'s" figures they show results that are highly encouraging even after being heavily discounted.

YORKSHIREMAN.

SLIDE-RULE TIMBER MEASURING.

I OBSERVE what "Young Forester" says about my answer to a previous query of his regarding the method of calculating the true cubical contents of a tree from the dimensions taken in the usual way. "Young Forester" must be very young indeed if he failed to perceive from my article on timber measuring that I did not suggest any alteration from the customary style in which timber measuring has so long and so generally been conducted, but merely mentioned a method of determining the true cubical contents by slide-rule computation as a speedy way of satisfying curiosity, not as a necessity in timber-buying or selling. There are many questions of extent and quantity that may be asked of the forester or estate manager that are only resolvable by an intricate manipulation of figures, occupying time, and not always resulting in absolute accuracy. Many questions of this kind may be rapidly and correctly solved by the aid of the common slide-rule, which should be a constant pocket companion. A few examples may demonstrate its usefulness, and incite to a further study of its capabilities and general utility. To compute the area of a piece of land, when the dimensions are taken in chains. Set the length in chains on B to 10 on A, then opposite the breadth in chains on A; find the contents in acres, and decimals on B.

Example: What is the area of a piece of land 7½ chains long and 6 chains broad?

A	6 chains	10
B	4.5 acres	7.5 chains

A piece of land is 650 links long and 308 links broad. What is its area?

A	308 links	10	1700 links
B	2 acres	6.50	11 acres

Or a piece of land 17 chains long by 6½ chains wide, would give—by the same setting—11 acres and a small decimal, which practice alone would enable the operator to value approximately.

Should the dimensions be taken in yards, set the length in yards on B to 484 on A, and opposite the breadth in yards on A find the contents in acres and decimals on B. One piece of land is 30 yards long by 20 yards wide, another is 161½ yards by 30 yards, another 323 yards by 30 yards. The areas of these three separate pieces are ascertained from the slide-rule by one setting, as under:—

A	20 yards	484	161.4 yards	323 yards
B	1.21 acre	30 yards	1 acre	2 acres

The figures upon the slide B opposite any width in yards on A up to 161.4 yards would give decimal parts of an acre. And opposite any other figures on A between 161.4 and 323 would give

1 acre and decimal parts of an acre on slide B, with the first setting of 30 yards wide. But if we call the 30 yards 300 yards, and the 20 200 yards, then the reading opposite 2 on A would be 12.4 acres on B, and so on.

To find the quantity of land occupied by fences, roads, or rivers running through an estate or parish. Set 4 on B to 11 on A, and opposite yards wide on A; find area in acres in each mile of length.

Example: A road is 4 yards wide, another is 5½ yards wide, and a river is 20 yards wide. What are the respective areas of each in one mile of their lengths?

A	4 yards	5½ yards	11	20 yards
B	1.46 acres nearly	2 acres	4	7.28 acres nearly

Or, should the dimensions be taken or stated in chains, set 8 on B to 10 on A; then opposite the widths in chains on A; find areas in acres on B per mile in length.

A	2 chains	2.50 chains	4.50 chains	5 chains	10
B	16 acres	20 acres	36 acres	49 acres	8

The diameter of a circle being given, to find the side of a square of equal area. Set 44 on B to 39 on A, then opposite diameter on B; find side of equal square on A.

A	39	find side of = square
B	44	above diameter

The circumference of a circle being given, to find the side of equal square. Set 39 on B to 11 on A, then opposite circumference on B; find side of equal square on A.

A	11	find side of = square
B	39	above circumference

Example: Above 20 on B, find	5.65 on A.
" 30 "	8.47 "
" 60 "	16.94 "

The solution.

The diameter of a circle being given, to find the side of an inscribing square. Set 75 on B to 53 on A, then opposite diameter on B, find side of inscribing square on A.

A	53	find side of inscribing square
B	75	above diameter

The circumference of a circle being given, to find the diameter, and *vice versa*. Set 7 on B to 22 on A, then opposite circumference on A; find diameter on B, and *vice versa*.

A	22	circumference
B	7	diameter

To find the area of a circle in acres. Place 10 on C opposite 11.28 on D, then opposite diameter in chains on D, find area in acres on C, and *vice versa*. Or, place 1 on C, opposite 78.5 on D, then opposite diameter in yards on D; find area in acres on C, and *vice versa*.

To convert imperial acres into Scotch or Irish measures.

For Scotch. Set 5 on B to 3.98 on A, then opposite imperial acres, and decimals on B, find Scotch acres on A, and *vice versa*.

A	3.98	Scotch acres
B	5	imperial acres

Example: In 28 acres, and 70 acres, imperial, how many Scotch acres?

A	3.98	22.2	75.5	Scotch
B	5 gauge points	28	70	imperial

For Irish. Set 13 on B to 8 on A, then opposite imperial acres on B, find Irish acres on A.

Example: In 18, 23, and 60 acres imperial, how many Irish acres?

A	8	11.11	16.2	37	Irish
B	13 gauge points	18	23	60	imperial

Examples might be multiplied *ad infinitum*, but the foregoing may be sufficient to stimulate young foresters and others to study slide-rule calculations, and make further discoveries of its many uses. A. P.

Allowances for bark.—"W. B. H." in his recent article seems to have been in ignorance respecting allowances being made in measuring timber for bark. I should imagine that he never went far from

home, as in every county where I go to measure timber it is a usual occurrence. Never did I come across a man yet so unreasonable as not to allow for bark. It is an absurdity for any forester to object to such, because I believe it a difficult matter indeed in these times for a forester to find a merchant who is foolish enough to buy timber without allowance being made for bark in measuring. Another thing is we never take quarters in girthing; we always allow the odd inches in cubing up the timber. This is not a custom of to-day, but one which has existed between forester and merchant for upwards of 100 years in this part.—YOUNG FORESTER.

The Corsican Pine for timber.—Though a good deal has been written already with regard to the Corsican Pine as a timber tree, I think too much cannot be said in favour of it. I strongly recommend its being extensively planted in woods and plantations with a view to profit, for unquestionably it is one of the most valuable of all Coniferae, and succeeds well where many others would fail. Near the seacoast, for instance, it grows with a vigour equalled by few, but in such situations there should be plenty of other things planted with it to assist in breaking the force of the winds, and, when thinning is done, it should be gradual, as those left get out about through sudden exposure, and sometimes completely uprooted. It seems a pity that so much ground should be occupied about the country by the growth of so many trees that are quite worthless for their timber, and more particularly so, as we are dependent, in a great measure, for all we use on the supplies we get from abroad, but, somehow or other, Spruce appears to have been the favourite with our foresters, but why this should be so I am at a loss to conceive, as it has no special merit beyond its symmetrical shape in an ornamental point of view, and in other respects it is almost worthless, except for fuel.—D.

Disadvantages of mixed planting.—My opinion is contrary to the prevailing fashion on this subject, for we are constantly told that there are certain kinds of trees, such as the Larch, Spruce, and Scotch Pine, which are good nurse plants, and are accordingly recommended to be mingled with the hard-wood and intended to be grown as a protection to it. They are good nurse plants, it is said, because they grow fast. Now this is a very excellent property in any kind of tree, and if with this property they unite strength and durability, which the trees mentioned do to a very considerable extent, then these of all others are those which a view to profit would recommend us to grow. That, however, is not the mode generally adopted, and the Larch, the Spruce, and the Scotch Fir are cut down to make way for the more tender and less profitable growth of a hard-wood plantation. We do not here advocate the growth of these trees to the exclusion of the Oak, the Beech, and other hard-wood trees; all that we here mean is that it is unprofitable to attempt the growth of hard-wood in situations where these nurse trees are required, and it is highly so to use these nurse plants in situations where the hard-woods flourish without them.—M.

Italian Poplar wood.—The Black Italian Poplar for timber purposes is the most valuable; and it is one of the best trees we have for planting on strong, wet, clay soils, on which it thrives well, provided there is no stagnant water. It grows to a great height, and generally leans a good deal to the leeward, especially when much exposed. Owing to its growing so much quicker than any of our other forest trees, it is not suitable for intermixing with them, as it soon overtops them. It should be planted 16 feet apart, and filled up with Birch to 4 feet apart. Its timber is of comparatively little value when it is of small size, but after forty years of age it commands a good price. It is the most suitable for making "breaks" for railway wagons of any of our timber, but for that purpose it must not be less than 14 inches in diameter. In soils unsuited to its growth, such as wet, peaty soils, it is liable to throw out excrescences on the trunk. On good, loamy soil, its quickness of growth is quite astonishing. The White Poplar, or Abele, is the only other species valuable as a timber tree. Unlike the Black Italian, this grows well on damp,

peaty soil, and in such situations it is most valuable to plant; it also grows well on stiff loam. Its habit of growth is not so spiral as the other, but partakes more of the habit of the Oak or Beech, and when grown singly is very ornamental. The timber is most useful when of large size.

ENGLISH FIREWOOD.

PERSONALLY, I would not give a fire of coals for any fire of wood I ever saw, either for warming a room or for cooking, excepting it be in the bakery oven, because it does not make such a satisfactory fire, and to have wood in blocks fit for regular firewood it is almost as dear as coal. These are good reasons, I take it. Still I know wood fires are occasionally preferred by those who can afford mansions, fireplaces in imitation of old-fashioned hearths constructed for the purpose and have forests of their own from which to fetch the wood, and the question of which is the best wood for fuel is an interesting one. Here much of the winter's work for some of the men consists in procuring and splitting firewood, and of the sorts of timber readily available for the purpose, Ash and Birch are preferred to all others, and these are first sawn into lengths about 10 inches long and then split into halves and quarters according to the size of the trunk. The Oak has been condemned as inferior to either, owing to its crackling and sparking, otherwise it gives out a good heat. Probably the best and quietest burners are the Yew and the Holly, whether in the fagot or timber state. There are no better materials for lighting a fire in the woods than the dead branches of either of these. If the twigs are dry they will ignite from a match without any other assistance and burn readily, and the larger pieces burn and glow with an intensity possessed by few other woods. The Scotch Fir burns well, I am told, in the highlands owing to the spirit it contains, and a portion of the root is sometimes lit and carried as a torch at night. So far as I have seen, all woods burn readily when dry, and in this state there is little or no appreciable difference between young and old wood. I imagine "J. C. C.'s" statement on this head to be imaginary. Much depends on the elements of the wood's composition. If these are of an inflammable nature, the wood will burn fast and *vice versa*, but whether these abound most in the old and comparatively inert heart wood or in the young wood is an open question. Still density has a good deal to do with it no doubt. The different qualities of wood as fuel have been ascertained and published, but when or where I cannot at present recollect. I think it has been found that, as a rule, the heaviest timber burns longest. The two bodies on which heat from combustion depends are carbon and hydrogen, and the amount of heat produced by each is different, but much depends on the fire. These are matters, however, which perhaps do not affect the question of the best kind of wood for a grato fire. A wood that burnt brightly, but quietly and at the same time lasted well, would probably answer best, and these, as we have before stated, we find to be Ash, Birch, Holly, and Yew. Y.

The Weymouth Pine (p. 39).—The merits of this as a timber tree are scarcely recognised sufficiently, and I was glad to see some words in its favour. It may not grow, as was remarked, so large as the Douglas, but a tree that will girth an even 6 feet for a distance of 20 feet, as some which I have just measured, is of a very good size for most purposes for which it is likely to be required. They will not grow in too dry a position, but it should be remembered that the greater the amount of moisture which they have at the roots, the less good will be the quality of the timber; hence, though they may be planted in swampy ground, such good results in the workshop are not to be expected. Another point to be noticed with regard to planting is that the closer they are put in together, or are allowed to be drawn up by other trees, the more free will they be from knots.

This, it may be said, is what was to be expected, but it is more noticeable in the Weymouth than many other trees, and one may see specimens with the branches up one side no stouter than a Cedar pencil, and dead stumps sticking out on the other side as thick as a man's wrist. It should be remembered that the sooner the tree, when cut down, is sawn up into planks and put in the dry the better, for if allowed to lie on the ground the ends or any part exposed to the damp are apt to get discoloured and turn blue; whereas when kept under cover the board will work up as bright and nice as possible any time afterwards. For cupboards, shelves, &c., it is most useful, and also for panels in doors on account of the width it may be cut without any fear of curling or winding. Of its appearance as an ornamental tree I need scarcely speak, for the glaucous green heads appearing about among the woods in contrast with the colours of the Scotch, Spruce, &c., is always pleasing. Lastly, it has the recommendation of producing an abundant supply of cones which are usually covered with turpentine, and invaluable for lighting or drawing up sulky fires in a house. I should like to see Pinus Strobus planted more extensively than it is. I am reaping the benefit of the wisdom of one of my ancestors in this respect, and in my gratitude intend to follow the good example set me.—C. R. S. D., *Sussex*.

Weeping trees.—The association of the common Weeping Willow with water leads people to think that it will not succeed elsewhere; but there are few spots, even away from water, in which it will not thrive if the soil be deep. I have seen really grand specimens of it growing on lawns. Scarcely less beautiful is the Weeping Birch; for, although its spray is not so long as that of the Willow, yet, owing to the tree being more lofty, it is nearly equally effective. Not so graceful perhaps as either of these, but a better arbour tree, is the Weeping Ash. Owing to its extremely pendulous habit, it is necessary that it should be worked on very tall stocks, as if height is not secured at first, it cannot be obtained afterwards. The Weeping Ash should be planted in quiet, secluded spots, where, when fully grown, it may form a pleasant retreat during sunny days. It will be found that a tree with a stem considerably bent or inclined at the top will form the most convenient arbour tree, as the position of the stem will then be at one side, instead of in the centre.—A.

Qualities of the Austrian Fir.—Some twenty or thirty years ago it was written of this Fir that "so highly is it esteemed by many, that it is thought it may ultimately supersede the Scotch Fir, but for the higher price of young plants which has hitherto acted in some measure as a check upon its universal diffusion." The tree, it appears, has a greater adaptability for different soils than the Scotch Fir, produces better timber in the south than the latter does, and is a far better tree for shelter. The Austrian Pine is now much commoner and cheaper, and, speaking from experience of it on a large scale with living trees of all ages up to about forty years, I am prepared to say that the Scotch Fir cannot be compared to it in any way under equal conditions in the south. It has been planted on a more extensive scale here during the past twenty-five years than any other Fir save the Larch and Scotch Fir, and, in taking a general survey of these plantations lately, it was plain to the most casual observer that the Austrian had the advantage over the Scotch Fir in all cases, both being planted in equal quantities on the same ground. For shelter purposes the Scotch Fir cannot compare with it, and it is not affected by the white blight as the Scotch Fir is in numerous instances, and to a very serious extent, in the same plantation. I notice also that the Austrian Fir contains an unusual quantity of resin—an important factor in the quality of Pine timber, and one which constitutes the main difference between good and bad examples of the Scotch Fir, the best examples containing most resin, and *vice versa*. I am not the only one who has noted this, for I have either heard or read somewhere that the Austrian Fir produces more resin than any other European tree.

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"This is an Art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE ROSE OF SHARON.

OF all Biblical plants, the Rose of Sharon is decidedly the most famous, but, curious to say, this flower of all others is the one we know least about. Some commentators affirm it is the *Polyanthus Narcissus*, some the autumn *Crocus*, some the wild Rose, some even the Daisy. Of these, none seem near the mark; some seem even far and away from any mark. Of course there can be no certainty what the flower was; but it seems a plant could be brought forward coinciding with all the passages in which this mysterious flower is alluded to, and this is more than can be said of any previously suggested. The plant I mean is the *Nelumbium speciosum*.

From a comparison of the texts, this Rose is generally conjoined with the Lily (cf. *Eccles.* xxxix., 13), which, if we admit of the supposition that the Lily was the *Nymphaea Lotus* (cf. Kitto's "Biblical Dictionary," article headed "Shushan"), and the Rose the *Nelumbium*, seems very natural. We may note that Herodotus and other ancient historians connect these two plants also; and by this supposition, "a Lily among thorns" can easily be accounted for, as there are thorns on the *Nelumbium*, "which are so hard," says Theophrastus (iv. 10), "that the crocodiles avoid the plant for that reason." This Rose, we see, was a prolific bloomer—"Blossom as a Rose, it shall blossom abundantly" (*Is.* xxxv., 1). It grew in marshes or pools by rivers—"A Rose growing by the brook of the field" (*Eccles.* xxxix., 13). It was evidently well known and highly esteemed in ancient times—"I was exalted as a Rose plant in Jericho" (*Eccles.* xxiv., 14). Lastly, it was used for making garlands—"Let us crown ourselves with Rosebuds before they be withered" ("Wisdom," ii., 8).

The first and most important question is, did the *Nelumbium* grow in Syria? It most undoubtedly did, for we have the testimony of Theophrastus that it grew there. As to the other points, the *Nelumbium* is an abundant bloomer, and identical in its habit of growing; and it is easily provable that this plant was held in high estimation, even as a sacred flower, by the ancient Jews, else it never would have been used as an ornament for the top or finial of the Jewish high priest's mitre (cf. "Josephus," *aur.* iii., 7, 6). As this Rose was used for making garlands for the head, so also was the *Nelumbium*. Indeed, wreaths made of this flower were very celebrated in ancient times. Plutarch (*Isid.* and *Osir.*, 14 and 28) speaks of a sacred *Melilotus* wreath which Athenæus (*Deipn.* iii., 2) tells us was made of the blossoms of *Nelumbium speciosum*, and these wreaths were exported so largely from Naukratis—a town recently discovered on the delta of the Nile—as to be one of the chief exports of that town. Another garland made of the same flower, and called Antinean (*Athen.* *Deipn.*, xv., 6), was, in Egypt, worn as a crown for the head, and in Greece this plant was cultivated, according to Nicander, for its blossoms, which, likewise, were there used for garlands. Another important point in connection with this Rose garland is, that it was generally (cf. context to "Wisdom" ii., 8) used at feasts in the time of Solomon. Now, if the Book of Wisdom be the production of Solomon, it may be presumed to contain allusions to Egyptian customs, as he was

connected by marriage with that country, and what is more common than to see represented on the old bas-reliefs of that ancient nation the Egyptians feasting crowned with the buds and full-blown blossoms of the Sacred Lotus?

Unhappily, from the Hebrew name of this Rose (*Habazeleth*), we cannot obtain any clue, but it must be borne in mind that the Greeks, in translating it, used the word *κρινον*—Lily—the same which Herodotus used for the most noble of all aquatics, the *Nelumbium speciosum*. Of such a kingly flower Solomon might well have said, "I am the Rose of Sharon."

Upper Norwood. PERCY E. NEWBERRY.

GARDEN IN THE HOUSE.

DOUBLE PRIMROSES.

"I HAD a grand display of double Primroses last spring in my window garden, but I am afraid they are not hardy, for I planted them afterwards in the open ground and they all died." Thus writes a grower to whom some were sent for trial. They were found to have no root-hold upon the soil, and they succumbed to the rigours of the winter. The fact is, the plants should have been potted in small pots, in a good soil, pressed firmly about them, and placed in a cold frame. Really, when these plants are bought in October, up to the end of February they should be established in pots. I have bought strong plants, with good roots, in October and November, and potted them; but they have always appeared to make but little use of the roots. There is but little root action until the spring, and when it occurs the feeding roots appear to be put forth from near the lower leaves, and but little use comparatively is made of the old ones. I think the best time to have these Primroses is about the beginning of September, or even earlier; then there is a chance of their doing something before the winter sets in. Some plants came to me last year about the end of August, and, as there were three each of some five or six sorts, I put the three plants of one variety in one pot, round the sides of it, using a compost made up of good yellow loam and leaf mould in equal proportions, with a little sand thrown in. They were fully exposed to all weathers, standing on a cinder border, until about the end of November, when they were placed in a cold frame, and they have done remarkably well. About February they will be potted singly into 4-inch or 5-inch pots to flower, according to the size of their roots, and they will have a compost of loam, leaf-mould, and sand, used pretty moist, and pressed firmly about the roots; they will not have any water for a week at least. I am persuaded that the plants do best when transplanted, if they are put round the sides of pots, as they root better in consequence. The grand old double crimson variety is one of the most difficult to manage; consequently its culture is much restricted. There are many who would be glad to grow it if they could only succeed in doing so. I got a strong plant from Cork some time last year, and potted it; it is doing remarkably well, and growing into a strong plant, and I hope to flower it well in the spring. I think that Mr. Samuel Barlow has hit upon a good plan of growing this charming variety at his place in North Wales; he has planted it on a turf bank facing the north among the Grass, and it is doing as well as can be desired. It is in the company of some choice single and other Primroses, all of which do well on this cool grassy bank. *Crousi fl. pl.* is another pretty variety, but I find it somewhat delicate, and, like the crimson, it wants careful management. *Platypetala* (or *Arthur Dumollin*) is a better grower, and does well in the open ground, in a moist, sandy loam. The double purple is a fine variety also, with large, fully double, crimson-purple flowers; it is a good grower, and one of the best among the double varieties. I am not quite clear what the Scotch Red is; if I get the red double Primrose from some parts of Scotland, I find it is the rose-

coloured variety, with its large double flowers, but they are sparingly produced. It is, however, a very strong grower, yet it is difficult to get anything like a good head of bloom upon it. What I sometimes get as the Scotch Red is like the crimson-purple, which throws up a stem surmounted by a truss of flowers like a *Polyanthus*. But it is very free indeed; I think the freest to bloom of all the double Primroses. But it is possible there is a variety known as the Scotch Red which is quite distinct from the crimson-purple, purple, or the rose. I regret to find that the fine old late or giant yellow (*Cloth of Gold, The Duchess, &c.*) is very scarce this season. It has very large full flowers, and is in all respects a great beauty. Last summer the Hon. and Rev. W. T. Boscawen sent me a double yellow variety, which he informs me is a natural sport found in a hedgerow in Cornwall, and which I hope to flower this season, to see if it differs from the ordinary late yellow. The Scotch have two early-flowering yellow or sulphur-coloured double flowers, but I do not know if they are distinct. The early double sulphur, or Harbinger, as it is sometimes called, is pretty plentiful in places; it is both very early and very free. Everyone knows the double lilac, the commonest, perhaps, of all the double forms, but by no means the least attractive. It is a charming subject in the border in spring, and it and the common white—quite a gem also—will do well in the open air where the others will die. But they want suitable soil—a deep, moist loam—and they do best in the shade. I once saw a large patch of the double white growing in a market garden near London, planted out in the moist soil under some tall fruit trees; but it was found necessary to mulch and water the plants during the summer. There yet remains the blush, which is no doubt a sport from the double white; and, like many other sports, apt to revert to its original form. If I would have it true, I find it necessary to go to the north of Ireland.

Will not some of the readers of THE GARDEN give their experience of these pretty Primroses, and let us describe as many varieties as it is possible to do, so that as complete a list as possibly may be compiled? I have heard it stated that there are as many as sixteen distinct varieties. Who will help to trace them out? R. D.

PLANTS FOR CORRIDORS.

THOSE who have corridors, entrance-halls, and similar places to decorate during winter should bear in mind the merits of the *Laurustinus* for that purpose. Were this fine-flowering shrub not so hardy as it is, we should certainly use it more freely than we do for indoor decoration. But, although it is hardy and flowers well in the southern counties at least, it often does not come well into bloom before spring. Given the protection of a cool or cold house and the blossoms will expand during the winter months, coming just when flowers are scarce. They come, too, much purer in colour than in the open air. The best way to grow the *Laurustinus* for this purpose is in tubs, and if the plants are pinched in a little when young they will form very ornamental, shapely bushes when they reach a large size. *Chamaerops excelsa* is also excellent for such a purpose, as it only needs a little protection from cold, wintry winds and extremes of cold. Bamboos, too, are ornamental and distinct, the variegated kinds giving variety of colour. For this purpose the golden variegated *Eucynmuses* are also valuable. There are two kinds having yellow variegation, and when grown into good-sized bushes they produce an excellent effect. Even in the south of England these variegated kinds are apt to suffer; if they do not get killed outright, they become in hard winters so crippled as to lose much of their distinctive beauty. There are few more ornamental shrubs than the golden variegated *Eucynmuses*, and they are certainly worthy of more care than they usually get. In the summer they should be placed in positions freely exposed to the sun, as a certain amount of solar warmth is necessary to bring out

the golden tints. When they get the conditions they like, not only the foliage, but the stems become finely coloured. The finest plant of golden *Euonymus* I ever saw was on the front wall of a cottage, which it covered. The position seemed to suit it well, and all through the winter it had a most cheerful appearance. Just as it came, however, to its fullest development, an exceptionally severe winter destroyed the greater portion of it. The variegated New Zealand Flax is likewise very ornamental when placed in corridors; it only requires a little shelter to ensure its safety; the golden variegated *Periwinkle*, too, is very ornamental when protected against severe weather.

J. C. B.

SWEET-SCENTED FLOWERS.

THESE are not only highly prized indoors, but in the open garden they are equally appreciated. Some say the best time to enjoy the scent of flowers is in the early morning. Without denying this, it is exceedingly pleasant to walk round one's garden in the gloaming, when colour does not attract so much attention as in bright light. Everything looks different after the daylight has departed, and though the fragrance of the evening may be less charming than that of the early morning, yet the former, as I have said, is very pleasant. The one speaks of peace and rest, the other foretells activity. After nightfall it is easy to tell in summer or autumn when we are approaching a group of Roses, by the perfumed atmosphere which surrounds them. The beds of Pinks, the borders of Thyme, the Marvel of Peru, the common Musk, the *Syringas*, *Mignonette*, the Sweet Brier, the Portugal Laurel, and hundreds of other flowers indicate their presence, even though one cannot see them; each has a perfume peculiar to itself, and each stands as it were in a lake of its own incense. When the Hawthorn season comes round, when the country in the evening is lit up with white blossoms, what a glorious, not-to-be-forgotten time it is! But there is no season of the year when the garden is altogether scentless. I am thinking now only of the early open-air garden; of course, in the conservatory there are always sweet scents abounding, both of leaf and blossom, and the perfume of foliage, being different in degree and character, gives a piquancy to the heavier, denser perfumes of the flowers. At this season the perfume of the Myrtle and *Diosma*, for instance, is exceedingly refreshing and pleasant, and in the open air we have their counterparts in the Lavender, the Bay, the Rosemary, and Sweet Verbena. The latter is growing in a sheltered situation against a warm wall, and though its leaves are withered and falling from the effect of the late frosts, yet when touched they emit an agreeable fragrance. Then, besides the sweetness of flowers and foliage, there is, in the season, the perfume of agreeable fruits. In summer the aroma of the Strawberry floats on the atmosphere, and the Melon and Pine, each in its season, have a fragrance of their own. Trees and shrubs with scented blossoms or foliage are numerous. They include the Limes, Tulip Tree, Horse Chestnut, Thorns, Laburnums, flowering Almonds, Magnolias, double Cherries, Barberries, the Apple, Mock Orange, Lilacs, *Laurustinus*, Spiræas, Elder, Honeysuckle, Jasmine, Portugal Laurel, flowering Currants, Rhododendrons, Azaleas, Gorse, Broom, Kalmias, Sweet Briers, Bays, Daphnes, *Cistuses*, *Wistaria*, *Chimonanthus*, Willows, and last, but not least, the Scotch Fir. Who that has in spring or early summer inhaled the breath, if I may so term it, of a plantation of Scotch Fir, can forget its inspiring influence? Among sweet scented plants of a lowlier character may be named Lavender, and, to be effective, this should be planted in masses. Its appearance in winter as a group on the lawn is quite as effective as most of the plants employed in such positions. Rosemary, Hyssop, Southernwood, all possess a value for increasing the ozone of a garden; also Carnations, Pinks, Sweet Scabious, *Mignonette*, and Stocks. The night-scented Stock is one of the most delightful things imaginable to be sown under the windows. Sweet Peas should be planted in succession, Sweet Alyssum, Lily of the Valley, *Liliums* of many kinds, many kinds of *Hya-cinthus* (including the Musk Hyacinth), *Daffodils* of

many varieties, Water Lilies, *Dictamnus Fraxinella*, Winter Heliotrope, Snowdrops, Violets, Primroses, Mints, Thymes, *Aponogeton distachyon*, Water Flag, Alyssum, *Allium fragrans*, Clematis *Flammula*, Cyclamens, *Funkia grandiflora*, *Galium verum*, *Gypsophila viscosa*, *Hedysarum coronarium*, Candytufts, Irises many varieties, Phloxes, *Collinsia verna*, Lupines, *Malva moschata*, the red Monarda, Woodruff, Myrica Gale, *Pæonies* various, *Panacratium illyricum*, &c. In the grouping of these scented trees and flowers in order to make the garden as pleasant as possible, there is much scope for cultured thought and taste. The trees and shrubs should form picturesque groups. Roses, in all their variations, will be present, and such things as Clove Carnations, Pinks, Musk, Wallflowers, Lavender, Sweet Borage, Lily of the Valley, Violets, Primroses, may be planted in appropriate situations as special features. Climbing plants—Honeysuckles, Clematises, Jasmynes, and Roses—will be allowed free scope for development in the conservatory. All the sweetness culled from numerous exotics will mingle together; but I question if the temperate or tropical regions of the earth can send us anything sweeter or more lovely than the products of the open air gardens can furnish where well planted and cared for.

E. HOBDAY.

NOTES OF THE WEEK.

Euphorbia jacquiniæflora.—This is now in great beauty in Mr. Williams' nursery, at Upper Holloway; although a very old plant, it is still one of the best and most striking for winter-flowering; and, if care is exercised in its treatment, a second crop of flowers is produced from the growth which is made after the first cutting. It is by no means a strong-rooting plant, and, therefore, requires good drainage and care in watering; this refers to both plants in pots and those in borders in stoves.

Strawberry Blite.—This is the English name of *Blitum virgatum*, a name given it because of its resemblance to that fruit. It is a hardy annual, found abundantly in waste places in Southern Europe, and even said to occur in our own country as an escape from gardens. It flowers early in summer, and the calyx increases in size with wonderful rapidity. It becomes fleshy and pulpy, and in the form of a cluster may be found in the axils of all the upper leaves; when ripening it becomes bright red and very attractive. In a cut state it lasts for three or four weeks, and is quite unique in appearance. It does best in a dry, stony soil and in fully exposed places. It was, we believe, first cultivated by Miller in 1759.

The North American Cranberry (*Vaccinium macrocarpum*) is another plant of which too much cannot be said in its favour for winter decoration. In favourable situations, which we find to be peaty soil in full sunshine, and where it can get well drenched during summer, it flowers and fruits freely; the fruits are large, bright red, and very effective all through the winter months. It has a straggling, trailing habit of growth, and is an excellent plant for hiding unsightly banks, old sunk walls, &c. When hanging loosely over ledges or boulders in the rockery it has a handsome appearance. Its fruit is largely used in preserves, and when cooked is said to be very palatable.

Daffodil Ard-Righ.—After the close of the Chrysanthemum season there is generally a scarcity of flowers, and this Daffodil comes in about Christmas to assist to fill the gap. Having a great demand for flowers about that time, I was recommended to try bulbs of this Daffodil, and I am pleased to say that they have greatly exceeded my expectation, for we had them in flower at Christmas and since, and mixed with other forced flowers they cannot be too highly prized, for they keep in good condition for a long time. The secret in forcing these bulbs is, first, to see that you get them well ripened; put three or four bulbs in a 5-inch pot, using any fresh moderately rich soil, and pot firmly. After they are potted, plunge the pots in coal ashes in the open air; when the pots are partly full of roots they should be placed in a temperature of about 55° and in a rather dark

place; gradually inure them to the light and bring them near the glass. Before the flowers open remove them to a cooler house, as they dislike a high temperature, and in a few days a good supply of beautiful yellow flowers will be the result.—W. OSBORNE, *Fota*.

Costus igneus.—The several species of *Costus* in cultivation are not remarkable for fine flowers, though some of them have very handsome foliage, but this one is really a showy, flowering plant. It has blooms some 2 inches across, roundish, and of a brilliant orange colour, which, in combination with the bright green of the broad foliage, makes a particularly fine plant. In the Water Lily house at Kew it has been flowering throughout the winter at intervals, for its flowers, being produced from the tips of the shoots in dense clusters, open in succession. Some days several blooms are expanded; at other times there are none. It is a stove plant, requiring no special culture. Were it a new introduction distributed from a nursery, there would be a stir made about it.

Zechmea Weilbachi.—This is one of the showiest of the many Bromeliads that flower in the depth of winter. It now enlivens one of the stoves at Kew, where it has been in bloom for the past month. The flower-spike combines a great variety of colours, and these are contrasted in an unusual way. The flower-stem itself is a bright scarlet, and so are the long, showy bracts. The flowers are almost globular, and about the size of Peas, and represent almost every colour of a rainbow. The red runs into violet, then that into blue, with subtle gradations, and finally the blossoms die away to a very dark bronzy green. The spike is erect, overtopping the foliage, which is of the usual vasiform character. If anyone wishes to grow a few select Bromeliads, this should be one of them. Another handsome species is in bloom at Kew; it is *Billbergia pyramidalis*, but though bright in colour and quite as showy as *Z. Weilbachi*, it does not possess such interest.

Impatiens Hawkeri.—This new South Sea Island Balsam, which is in the way of *I. Sultani*, but a great improvement upon it in size, substance and colour, is recommended by its distributor for its decorative qualities from the month of March until October, when its large, flat, expanded flowers, which are deep carmine, shaded round a white eye with a lustrous bluish tinge, form a conspicuous attraction in the plant stove. We, however, saw it in the gardens of Canon Bridges, at Beddington, in great beauty at Christmas, and therefore in future it must rank as one of the very best and most showy of winter as well as summer flowering plants. In addition to its free-blooming qualities, too, it is a plant of the easiest culture, and one which all who desire to have bright flowers at this particular season should possess.

Chinese Primulas.—From Messrs. Cannell comes a boxful of *Primula* blooms—all good, both in form, colour, and substance. The dark kinds are very bright and rich and heavily fringed; amongst them, too, is a so-called blue, which we are glad to see is becoming year after year deeper, and doubtless ultimately it will reach the much-coveted shade. The other flowers are all large, measuring from 2 inches to 2½ inches across. *Primula* blooms, remarkable for their beauty, also come from Messrs. Carter, High Holborn. Amongst named kinds the best were Holborn Vermilion, rich deep red; Fern-leaf Pearl, the result of a cross between Holborn White and Holborn Blue; Fern-leaf Red, a soft shade of that colour; others varied from salmon, magenta, crimson, and scarlet to purplish blue. The display made by these *Primulas* at the Forest Hill Nursery of this firm is just now a grand feature.

Gaultheria procumbens.—Looking about for a little bit of something bright after the late snow-storm, we came across a small patch of this charming little Wintergreen or Checkerberry that had been sheltered by a large Pine branch. It was laden with berries of the brightest red, peeping out from amongst its pretty bronzed leaves, and more striking than ever I remembered to have seen it before. For the last month it has been conspicuous, and, with the exception of a few Christmas Roses, it is the only interesting plant which we have just now out of doors. I

should be in every garden, so amenable is it to positions of all kinds. On shady spots on the rockery we have seen it attain a large size, its procumbent branches rooting as they creep along, and forming an evergreen carpet studded with bright coral berries. As an edging, it has a very good effect; it may be easily kept in its place, and it stands any amount of cutting back, which also tends to make what is left thicker and more compact. Boxberry is a local American name for it.

Papaver Hookeri, so called, has developed into a really wonderful variety of forms since its introduction from gardens in Cashmere a few years ago; there can now be little doubt that it is a cultivated form of our native *P. Rheas*. It assumes the most brilliant as well as the most delicate of colours, and may be found in all stages from a single to a double flower; in the latter form it is not unlike a large Rose or Carollia. The French varieties, which are almost identical with the above, are also worth cultivating, and all mixed and sown together in the open border make a really charming display. They seldom exceed 3 feet or 4 feet in height, and when well thinned out branch freely, making well proportioned specimens. The seeds should be sown in strong, rich compost, in which they grow freely, and there need be no difficulty about seed, which they produce plentifully; when a good strain is obtained, it should be taken care of.

Lychnis chalconica.—Of late years this fine old fashioned plant has given way to the variously coloured Pentstemons, which are now so common and truly handsome. This *Lychnis*, nevertheless, need not be banished from our gardens. It may be used with striking effect on the margins of lakes, where it adds a brightness and robustness foreign to it under border culture. When planted in large clumps close to the water's edge, against a dark background, its large flower heads display themselves with striking effect. It was a great favourite with Parkinson, who calls it a glorious flower, and in a print of himself, prefixed to his "Paradisus Terrestris," he is represented with a double form of it in his hand. It continues to flower all through the summer months, and in shady positions continues till well on in autumn. There is also a pure white variety and a pale pink sort in cultivation, none of which are so effective as the old red.

Epacris at Gunnersbury Park.—These beautiful winter-flowering plants, Australian Heaths, as they are sometimes called, are admirably grown and bloomed here, and, as a matter of course, make a grand display. Amongst them are *alba odorata*, a dwarf-growing kind, producing dense racemes of sweet-scented flowers; *Eclipse*, bright crimson tipped with white; *carminata*, bright red; *Lady Penmore*, pure white suffused with soft rose; *hyacinthiflora*, furnished with long racemes of large pink flowers, and its white counterpart, *hyacinthiflora candidissima*. Others are *Sunset*, red, tipped with rosy pink; *Vesta*, a somewhat close and compact form, with fine white flowers; and *Lady Alice Peel*, with flowers large and salmon-coloured. These, with such kinds as *Her Majesty*, *Kinghorni*, *The Premier*, *sanguinea*, and *Impressa*, which is a late variety, make up a fairly representative collection of these lovely greenhouse plants.

Pæonia Whitleyi.—"D. W." (p. 16) asked a question which I expected would have been answered before this, but as I was once puzzled in the same way, I hope I may be able to help him. *Pæonia Whitleyi* was figured in Andrews' "Repository" (plate 612), where it is stated to have been raised in the nursery of Mr. Whitley, from seed brought from China by Mr. Livingstone in 1808, and was the first double variety of *albiflora* which Andrews had heard of. Edwards (*Bot. Rey.*) gives a plate (No. 630) from a plant in Messrs. Whitley's nursery, and refers to the earlier figure. "D. W.'s" plant is probably *Pæonia albiflora laciniata*, which, for some reason or other, has been going about the country as *Whitleyi*. One would have pardoned, or even encouraged, this mistake if it could have made itself a little more common, for it is most certainly a very

beautiful thing, and very little known. It does not increase very rapidly, but is a free bloomer, and has the commendable feature of opening the two side blooms before the centre ones faded, and the variety of form of the fully-opened blossom, with the buds burst or bursting on each side, is very charming. I am afraid that this is not the only instance of a wrong name for a *Pæonia*, and even that they are getting into a good big mess, *Montan* and herbaceous being called the same, and varieties already known as one thing being rechristened as something else. I hope that the Royal Horticultural Society may be able to have a *Pæonia* conference before long (we could scarcely have a more magnificent flower for the Jubilee Year), and appoint a committee to take the class in hand, as has been done with *Daffodils*, so that, with the help of Mr. Baker's work among this family, we may interest people in getting together rare or unknown species, and also put some check on the indiscriminate naming of seedling forms which is likely to overwhelm us, now that the flower is becoming so popular.—C. R. S. D., *Sussex*.

FLOWERS AND FOLIAGE ON WALLS.

As a fresh, bright-looking wall plant, pleasant to look upon all the year round, Ivy has no equal. It is vigorous in growth, and will thrive on all aspects, even on bleak north or eastern exposures almost as well as when facing the south or west, provided it has good rich ground to grow in. Though Ivy will live on scant fare, such as very few plants can exist at all upon, still, when subjected to semi-starvation, it makes little progress compared with what takes place when its roots have an unrestricted run in good soil. The common Virginian Creeper (*Ampelopsis hederacea*), as a strong, vigorous plant that will cover a large space in little time, is without a rival for elegance of habit, and the beautiful tints of the decaying leaves in autumn are not the least of its desirable properties. This plant will grow and look healthy under the disadvantages of little and indifferent soil, and also where the atmosphere is charged with smoke and dust that would be fatal to most things. Its only drawbacks are that it requires fastening to the wall, and that, being deciduous, it leaves the wall bare and cheerless in winter. *A. Veitchi*, like not a few other good plants, has been slow in making way, but it is now receiving the attention at the hands of those who require wall climbers that it deserves. It is amongst the freest of free growers, covering a large space in little time, and thriving on any aspect. It clings so tenaciously to anything on which the shoots can lay hold—bricks, stone or wood alike—that no attention is required in the way of fastening it. The vivid crimson colour which its leaves put on in autumn is unequalled, and the leaves remain on the plant in their brilliant condition much longer than those of the old Virginian Creeper. On a northern aspect the colour of the leaves is paler than in the south, but they remain longer on the plant when facing northwards than under the sun's direct influence. All through the summer its pale green foliage, covering the wall as evenly as if the leaves had been placed there by hand, has a beautiful appearance, but it is wanting in the elegant drooping character of its shoots which the old kind possesses; as a matter of course, the wall on which it is grown is bare in winter, save for the presence of the long wiry shoots.

There are several kinds of evergreen plants that, although seldom used for the purpose, make good-looking coverings for walls of moderate height, say up to 18 or 20 feet. The different sorts of Japanese *Euonymus*, green and variegated, and *Azara microphylla* look well on walls. The *Azara*, though it has been some time in this country, is yet comparatively little known; the spreading fan form of its branches adapt it for covering walls. Its character of growth is like that of *Cotoneaster microphylla*, but it is a much quicker grower, and will cover a deal larger space. The branches naturally assume such a spreading form, that they require few fastenings to the wall. There are few plants with leaves that possess a more pleasing shade of green than the *Euonymus*, whilst those who like variegated foliage have choice in the

different varieties of the yellow and the white variegated forms; but the green, self-coloured sorts look best. In good soil the plants soon make headway, covering a considerable space in little time. In the use of these and all other plants for clothing a wall, care should be taken at the beginning to train the strongest shoots out horizontally, so as to furnish the bottom space at first; otherwise unsightly bare places will remain for years uncovered. It is particularly necessary to avoid these when plants like these *Euonymuses*, with an erect habit of growth, are used. The small-leaved *E. radicans* variegatus, as it is usually seen in the form of a low-spreading dense little bush, or as an edging, looks an unlikely subject for clothing a wall; but, so used, with a little attention in training the shoots at first, it soon makes a dense covering up to a height of 8 feet or 10 feet. But there is one thing that must not be lost sight of in using the different varieties of *Euonymus*, as well as the *Azara*, that is, they are not sufficiently hardy in all parts of the kingdom to stand exceptionally severe winters, not even when they have the protection of a wall when the aspect is east or north.

So far these remarks have referred to the plants named when used singly, but to have wall climbers in the way that will produce the most elegant effect, several kinds require to be grown together in a manner that will admit of their branches intermingling amongst each other with no more interference than is necessary, to prevent the stronger growers encroaching too much on the weaker ones. Roses, Clematis, *Jasmines*, *Bignonias*, *Honeysuckles*, *Passifloras*, and the like are beautiful when seen singly or with each a space to itself on a wall; in this way they are usually grown, but so managed, they are wanting in the elegant effect produced where they can scramble about loosely with a covering of Ivy behind them. So treated, the flowering plants with the background of dense foliage present an effect such as is not obtainable when they alone are present. This may often be seen where an odd branch of a Rose or a *Honeysuckle* outstretches the space allotted to it, and rambles over something else. But that which thus occurs by accident can be done much more effectually when the necessary consideration is brought to bear on the planting. But in a mixed arrangement of this kind there is a difficulty that makes its appearance in a few years after the planting has been effected. Ivy is a gross-feeding plant, and pushes its hungry roots far and wide in all directions, soon exhasting the soil within its reach to an extent that reduces other plants associated with it to a state of starvation. When planting the first wall that I intended to clothe in this way I had some misgivings that this might occur, but supposed that the difficulty might be got over by subsequent applications of manure when the soil became poor. In this I was mistaken, for the more that was done in this way, the more persistently the roots of the Ivy laid hold of every particle of soil in the border, so that the *Roses*, *Clematis*, and *Honeysuckles* associated with it were not able to hold their own. The best means of avoiding this is to partition off stations for the blooming plants, so as to prevent the roots of the Ivy interfering with them. This is easily done by the use of thin concrete walls when the border is being prepared. This material is much more effectual than slates or stone slabs, between the divisions of which the roots of plants soon find their way. The concrete divisions need not be thicker than about 3 inches, as there is no pressure against them. In this way the flowering plants have the spaces allotted clear to themselves. Whatever plants are associated with Ivy in this manner should have the principal branches secured to the wall, but nothing more. The lateral shoots that spring from these ought to be no further interfered with than in keeping them thinly dispersed, allowing them to come as far away from the surface as they like.

In selecting the kinds of plants for growing in company with Ivy in the way indicated, it is obvious that they should be deciduous and of a somewhat thin, straggling habit. If close growers, unless the knife is freely used they get so dense that they darken and weaken the Ivy so far that it is apt to suffer in hard winters. *Roses*, *Clematis*, *Bignonia adicans*, *Jasminum nudiflorum*, *Glycine sinensis*

Aristolochia Siphocarpoides, *Passiflora carulea*, and its varieties are amongst the best things that can be used, in all cases having their shoots far enough apart on the wall to begin with, and keeping them so afterwards. Not only is an arrangement of this kind infinitely better, so far as regards the appearance of the flowering plants when they are in bloom than when grown by themselves, but there is the advantage of having the wall covered effectually in winter; whereas when it is occupied by deciduous plants alone, when they are leafless it looks anything but inviting.

B.

WET AND DRY BULB THERMOMETER.

The remarks of "Enquirer" (p. 28) open up a wide field, and really mean a more intimate knowledge of the native habitats of our many exotics and the different conditions of temperature under which they flourish, this last being a most important feature, as the announcement, for instance, that a plant came from Peru might mean the foot of the Andes or the table-land of Quito. It has always seemed to me a lamentable fact that this more close knowledge of temperatures, undoubtedly of so much interest to the gardener, is so little dwelt upon in books of travel; true, we often get remarks on the temperature at a certain time, but what we want to know particularly is a comparison of the day and night readings, and also of the relative positions of the wet and dry bulb. In a book published some years ago treating of a voyage up the Niger these facts were gone into very minutely, and I was much struck at the time with the remarkable evenness of temperature chronicled therein; thus, for days and weeks the day and night readings stood between 80° and 85°, and the difference between wet and dry bulb was between 3° and 5°, and under these conditions the voyagers were encountering a dense and luxuriant vegetation. I take it, a fairly equable temperature is most conducive to the well-being of stove plants with us, and, so far as my own experience is concerned, I have found the difference named above about 4° or 5° the proper humid temperature for the same, and also for growing Cucumbers, Melons, &c. A few degrees' difference either way will naturally be no detriment to plant life now and then, but if this becomes a regular thing, and the wet bulb indicates a state of saturation in equality with the dry, or some 9° or 10° difference, the health of the plants will speedily suffer. It is the latter condition out of doors in March that makes it at times an awkward month for forcing, especially if there are not plenty of appliances at hand to generate moisture, and the same remark holds good in the case of all fire-heated structures, the heat given out being so much drier.

It is not, however, necessary to go either to the Niger or inside our stoves to learn a lesson on the value of a true balance between the two bulbs; it can be illustrated after a warm shower in May or in the mild, genial Turnip weather that we sometimes get in the early August evenings, when, to use a common expression, one can almost see things grow. Naturally, the temperature of all structures devoted to flowering plants should be on the dry side, but it is a certain fact that all greenhouse stuff in a growing state is (no less than stove life), in its particular temperature, better where the balance is not more than 6° on the dry bulb side; and if the thermometer is maintained nearly at the figure often quoted in *THE GARDEN*, "Enquirer" will find little difficulty in keeping a genial growing temperature, as a lower reading of the thermometer with no outside wind is naturally conducive to a closer union with the wet bulb. One of the chief points to be taken into consideration in dealing with stove exotic life, requiring, say, a summer minimum of 70° and a winter of 60°, is a moderate heat from plenty of piping as against a strong heat from a limited surface, for under the latter conditions the moisture generated is not steadily maintained; there is at one time the temperature of a tropical forest after a storm and at another that of a sandy desert—a very bad state of things

where good growth and healthy plants are required. I think if "Enquirer" is anxious to study the question of temperature in all its aspects, a walk through any very large London nursery will be the very best thing he can undertake; he will find Orchids, stove plants, Ferns, aquatics and greenhouse plants all as well provided for as it is possible for them to be in this country.

Clarcmont.

E. BURELL.

PROPAGATING.

CALADIUMS.—Owing to the weather which we are now experiencing, propagating operations of most kinds are at a standstill, the principal work in this department being attending to cuttings of various sorts that are still in propagating cases, and keeping them clear of decaying leaves, as during this weather large quantities of delicate cuttings will damp off in a few days if in any way neglected. Where it is desired to increase the stock of Caladiums, the old corms that have been wintered either in sand or in pots must now be taken out, potted in light open compost, and plunged in a gentle bottom heat. After being kept moderately dry throughout the winter they will not require any water for a few days, as the moisture in the soil will at first be sufficient. Thus treated, they will soon commence to grow by pushing up leaves from various parts of the corm if a large one, but should it be small, probably only one crown will start into growth. As soon as the first leaves are fairly developed, the corms must be turned out of their pots and all the soil should be shaken from them, when it will be seen that at the base of each cluster of leaves there is a quantity of new roots. Then, as each shoot takes its start from a small protuberance on the corm, by using a sharp knife all the crowns can be easily removed, with their attendant roots. They must then be potted in small pots, using light sandy soil for the purpose. They will soon become established, and can then be shifted into larger pots as required. If the old corm whence all the young shoots have been removed be again potted and treated as before, another crop of young plants will in time be obtained. By this method large quantities can be propagated from but a few good healthy corms.

LILIES.—As many people pot the different kinds of Lilies just now, a good opportunity is afforded of increasing any that may be required by means of scales. If these are detached from the parent bulb and placed under favourable conditions they quickly form small bulbs, but from the readiness with which most Lilies are imported this operation is seldom resorted to, except in the case of the very floriferous form of *L. longiflorum*, known as *Harrisii*. This Lily has rapidly advanced in popular favour within the last few years, and is now extensively grown. Several of the outside scales can be removed from the bulb without injuring it in any way, and if broken in two they grow just as well. These scales must then be laid thickly, without touching each other, in well drained pans or boxes, filled to within an inch of the top with a compost consisting of loam, peat, and sand in about equal proportions. After this sprinkle over just enough sand to cover them and then about half an inch of soil, when they may be allowed to remain undisturbed till they begin to grow. If placed in a cold frame they will lie for a month or two, but where assisted with a little heat the young plants will soon make their appearance. To obtain the best and quickest results, when the young plants are well above the surface, and have consequently a few good roots, they must be potted off and sheltered by a frame till frosts are over, when, if they are then planted out in a prepared bed, under favourable conditions, a few will bloom the first year. Of course, the number of flowering bulbs will not be great, and each stem will bear but a single blossom; still such a rate of increase is very rapid, and is, as far as I am aware, unapproached by that of any other Lily. In the case of some kinds, notably the

Tiger Lilies, a ready mode of propagating them in quantity is afforded by the small bulbils borne on the stems, which grow wherever they may chance to drop.

SEEDS OF VARIOUS PLANTS may now be sown, including among their number a few subjects that may be required for outdoor decoration during summer, and which are needed to be of a good size by that time. To this class belong *Echeverias*, that is to say, where it is necessary to raise them from seed, as they make but slow progress during their earlier stages, and consequently need a considerable time before they are large enough to be effective. As the seed is very minute it is best sown in shallow pans, well drained, and filled with very sandy soil finely sifted. The seed having been sown on the surface, a very slight sprinkling of sand may be given by way of covering. A good place for the pans then is on a shelf in the stove, where they are free from drip, as an excess of moisture is fatal to the young plants. Such being the case, the soil in the pans must be kept just slightly moist, and when the plants are large enough they can be pricked off. In the case of some very hard seeds, such as those of *Cannas* and similar subjects, various suggestions have been made with the view of hastening germination, one proposal made, and, indeed, it is frequently followed, being to file partly through the hard exterior, in order to liberate the young plant. A better plan, however, than this is to soak the seeds in water for a few hours and then sow them, when they germinate readily enough. One thing to bear in mind in this case is, that as the seeds are so very moist they must not be allowed to get at all dry, otherwise the germ is liable to be injured. Palm seeds should be sown as soon as possible after they are obtained, as some kinds soon lose their vitality, and those that do not, lie in the ground much longer than new seed. Palm seeds of all kinds are fairly well amenable to one course of treatment. Boxes or pans of about 3 inches in depth are suitable for most kinds, and they must be prepared for the reception of the seeds in the following manner: A thin layer of broken crocks should be placed on the bottom; over that let the soil be put and pressed down moderately firm, to about 1 inch below the surface. Then, on this the seeds should be sown, and covered with a depth of soil equal to their respective sizes. A compost well suited for such a purpose consists of about three parts good open loam, to one of sand, the whole being sifted through a sieve with a half-inch mesh. Should the loam be too adhesive, a little decayed leaf-mould or peat may be added. These pans or boxes may then be set on a stage in the stove, or in some similar position (for even greenhouse kinds are benefited by a little additional heat during their earlier stages), till the young plants make their appearance, and are sufficiently advanced to be potted off. The best time for that operation is just as the first leaf that makes its appearance is fully developed, for if delayed later the roots become entangled with each other.

T.

Impatiens Lucie.—This Balsam has no pretensions to rival the now popular *I. Sultani*, or its later relative *I. Hawkeri*, but it is, nevertheless, a very pretty plant, and a most desirable one for winter bloom. It resembles the two mentioned Balsams in habit of growth, and the flowers are larger than those of *I. Sultani*, but as there is more purple in the flowers of *I. Lucie*, they are not at first sight so pleasing. It continues to produce an abundance of bloom throughout the winter without any particular attention. We saw it lately in the St. Albans Orchid Nursery growing like weeds upon one of the rockeries among the Orchids planted out. It was, we believe, distributed from one of the Belgian nurseries, but does not appear to be much known in this country.

At a committee meeting of the National Auricula (southern section), Primula, and Carnation and Picotee Societies, held the other day, the prizes offered by the trustees of the Turner Memorial fund were accepted. The balance in favour of the Auricula Society was stated to be £27 ls. 4d., and that against the Carnation and Picotee Society £6 lbs. 1d.

ORCHIDS.

W. H. GOWER.

SACCOLABIUM BLUMEI MAJUS.

THIS belongs to the so-called East Indian Orchids, a section which includes the genera *Aerides*, *Vanda*, *Saccolabium*, *Renanthera*, *Angraecum* (although this is exclusively African), *Sarcanthus*, and various others, all of which are destitute of pseudo-bulbs, but have erect stems with leaves arranged in a two-ranked (distichous) manner. The meaning, however, usually intended to be conveyed by the term East Indian is, that these plants require a greater amount of atmospheric heat than other Orchids; but numbers from the hills of India thrive admirably in our plant houses, side by side with those from the mountains of the western hemisphere. It is, however, true that the majority of these distichous Orchids do require a good deal of heat, but, nevertheless, not greater than the majority of other stove plants. The mountain regions of South America have during the past few years been diligently searched for orchidaceous plants, and immense quantities of new and beautiful kinds have been sent home from there, and the fact that these mountain plants require but little heat has made them fashionable, to the detriment of the eastern *Saccolabiums*, *Vandas*, &c. Recently, however, some fine new varieties of these plants have reached us, and on that account a reaction has set in in favour of this section, a circumstance not surprising when we take into consideration their extremely ornamental appearance at any season, even when destitute of bloom. *Saccolabiums*, when in flower, are especially elegant, a statement which a glance at the annexed illustration will amply verify. They are, however, somewhat slow-growing plants, and their beauty when not in a flowering state is not so apparent as that of a fine *Aerides* or *Vanda*. The *Saccolabium Blumei majus* here portrayed was grown in the gardens of Mr. C. Mitchell, Jesmond Towers, Newcastle-on-Tyne, and the beautiful raceme and the ramification of its roots conclusively prove how well its requirements have been supplied. This species is a native of Moulmein, Java, Luzon, and other islands of the Philippine group. Its leaves, which are some 12 inches or 18 inches long, are blunt at the ends, as if bitten off, thick and fleshy in texture, and light green in colour. On the underside they have a few parallel dark green stripes, which traverse their entire length. As will be seen, the flowers are in pendulous racemes, long and handsome. In the typical form they seldom exceed a foot, but in the variety *majus*, which is more robust in habit, they are frequently 2 feet in length; the sepals and petals are white, faintly flushed with soft rose and dotted with magenta; the lip is recurved and bright rosy magenta. The variety *Russellianum* is a rather fine, robust-growing form, with massive densely-flowered racemes of richly spotted blooms, fully 2 feet or more in length. All the forms of this *Saccolabium* produce their flowers from about midsummer onwards through the autumn months, and some-

times even into winter. *Saccolabium Blumei* luxuriates in heat, light, and moisture; it therefore thrives best when suspended in either pots or teak-wood baskets. Thus placed, the plant obtains all the light possible, but it should never be forgotten that it is under glass, and not in the open air with the summer breezes blowing upon it, and that too much exposure to the direct rays of the sun will burn the leaves and permanently disfigure them; therefore, air must be freely admitted and a light shade should be used during the hottest and brightest part of the day; the atmosphere, too, should be kept well charged with moisture. In winter *Saccolabiums* require rest, but this should be brought about by lowering the

so that its size does not prohibit it from being grown even in a Wardian case. Its large flowers are produced from the summit of the growth; they are thick and fleshy in substance and rich rose in colour, except the disc, which is yellow. They remain several weeks in beauty if the air is kept dry and they are not sprinkled with water.

DOES ORCHID CULTURE PAY?

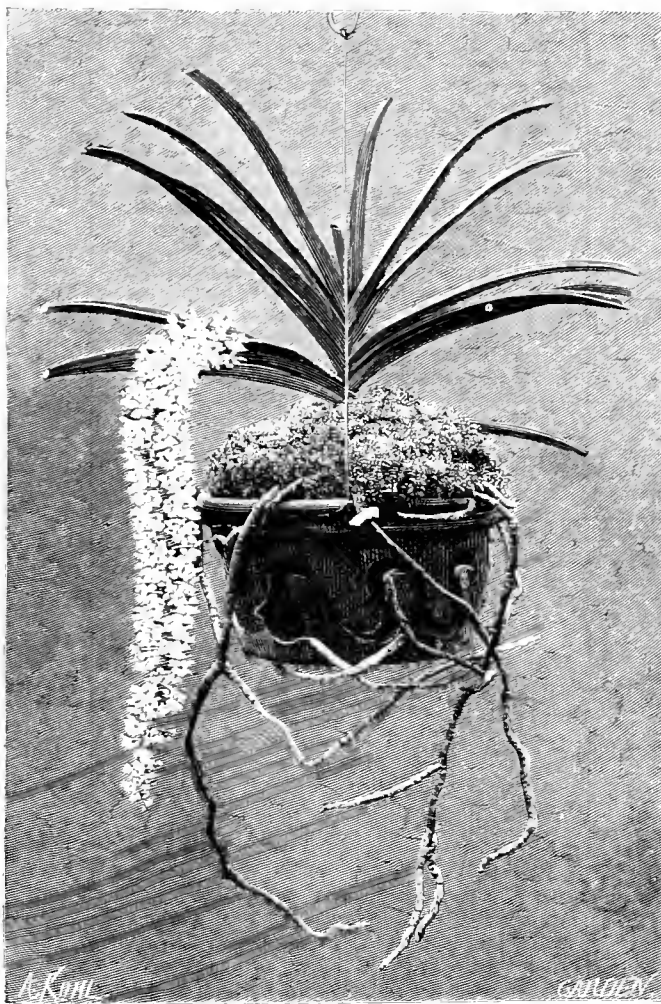
YES, it does, must be the reply that "W." (p. 41) will get from many growers if they allow the real state of affairs to be published. I know one private garden in which a collection of Orchids has been worked on a good system for some years, and by judicious management it has returned almost the whole amount expended in its purchase, and there is a fine collection left, which may be said to have cost nothing. This has not been done with a few species or specialities, but has been achieved by growing all sections of Orchids (and hardly excluding some botanical curiosities) from the hottest and dearest to the coolest and cheapest. Now, a word as to "catches" in small Orchid collections that almost pay for the whole collection. *Odontoglossum Pescatorei*, Knox's variety, bought at 2s. 6d., was sold in two years for £165. Surely this has paid my friend Mr. Knox; at least he can say his Orchids do not lose him much money. Look at the scores of plants that are bought at a few shillings, and which sell for as many guineas a year or two afterwards. Go into collectors' houses; see some of their greatest rarities, and they will frequently tell you that "that plant cost me a few shillings." I do not aver that no Orchids are a loss, but I maintain that Orchids bought, grown, and sold judiciously do pay, and handsomely too. I speak from experience, and if "W." cares to come and see my collection, which is close to London, I can show him many a plant bought at a trifle comparatively with its present value.

"W." seems to fall foul of the "out-of-bloom" garb of an Orchid. He surely will allow that a fine *Vanda* tricolor is not an unornamental object in a collection of fine-foliaged plants in any stove house. Again, a houseful of *Cattleyas* and *Laelias*, especially *L. purpurata*, even when out of bloom is handsome if in good condition. "A shelf of mixed Orchids" seems hardly a criterion by which to say they are unornamental. "W." asserts that blooms in an Orchid collection are, as a rule, few and far between, and that the normal condition of the plants is scraggy; but allow me to tell him that in a well-managed collection the houses are hardly ever bloomless. Orchids when grown as a secondary object to other plants are

not always a failure, as many who do so can say if they will; but here I cannot speak, as they are my primary object. "W." also speaks of Orchid culture in private gardens being evidently on the wane. How can this be when every year their culture is being taken up by new votaries to this "increasing mania," as I hear it called sometimes? True, "W." says that the reduced labour entails sacrifices in gardens, but he may rest assured that if one gives Orchids up, there will ere long be another and another to take his place. Compare the number of Orchid fanciers now and ten years ago, and the result will show whether or not Orchid culture is on the wane.—DE B. CRAWSHAY.

temperature and reducing the atmospheric moisture rather than by drying the plants in heat at that season. The temperature during the night may be about 60°, raising it with fire-heat some few degrees during the day. No water should be allowed to remain on the leaves at this season, but the roots should be kept sufficiently moist to prevent the foliage from shrivelling.

Cattleya dolosa.—This elegant dwarf *Cattleya* is now in bloom in various collections round London, and is a welcome addition to the numerous Orchids which help to make plant houses gay at this season. Its pseudo-bulbs seldom exceed 6 inches in length, and the leaves, which are in pairs, are not so long even as the pseudo-bulbs,



Saccolabium Blumei majus Engraved for THE GARDEN from a photograph.

truisms, I must say that its whole tenor is to place the culture of Orchids in an unfavourable light. Orchids have been and are still very popular, and their culture is easy enough to one who knows anything about plants. I believe, in fact, that an amateur practically unacquainted with gardening would be less likely to succeed with the culture of Cape Heath or New Holland plants than with that of Orchids. There is, however, no royal road to success in plant culture, and, therefore, even Orchids cannot be grown without failures and many retracings of steps taken in the wrong direction. The chief difficulty lies in "letting well alone." In the culture of Orchids it is a golden rule when a plant is doing well to let it be undisturbed. One good amateur grower with whom I was acquainted used to state that Cattleyas should be potted only once in seven years. I have seen his Cattleyas, many of the roots of which were interlaced round the pots, and all the young roots which issued from the base of the recently formed bulbs sought nourishment outside the potting soil. I bought some of these Cattleyas about fifteen years ago, and have them now, although I do not grow them on the system just adverted to. One grower, indeed, succeeds in one way, another in another: but this I may affirm, that no one will be entirely successful who does not personally minister to the wants of his plants, or has some one to do this for him. I have often heard with impatience the remark made that some one "has a fine collection of Orchids, and what is most surprising is that they grow without any care or attention being bestowed upon them."

Orchid culture, I feel certain, will pay if the plants are kept in good health; when sold they must also be quite free from all insect pests. Some discretion must also be used in purchasing plants; sometimes grave mistakes are made by injudicious purchases, especially at sales. I attended a sale of Orchids recently, at which very high prices were paid for imported Cattleyas; they looked in perfect condition, but sufficient account was not taken of the probability that the plants, well furnished though they were with fresh green leaves, had been exposed to cold, which had greatly impaired their vitality. After a week of exposure to the genial temperature of an Orchid house many of them were not worth a third of what they cost. In the profit and loss account a depreciation of 75 per cent. is a serious matter; it is a loss, however, that some of the best cultivators had to face after the sale in question. This does not often occur; as a rule, the Orchids sold at auction rooms in London give very satisfactory results, but purchasing plants from equatorial regions at mid-winter in an open sale room is very hazardous. From my own experience, I may say that I have purchased Orchids both at sales and at nurseries, and have in a few years grown the plants into specimens worth ten times the original cost; by this I mean the price that they would realise in a sale room. I have never been in a position to purchase Orchids of any kind at fancy prices, although with good cultivation and care in making purchases, I have no doubt whatever that they would pay even better than such as are more common. I have attended all the principal sales in London during a period of twenty-three years. During that time I have witnessed the dispersion of some celebrated collections, such as that of the late Mr. Sigismund Rucker, the Meadowbank Orchids, and others, and whenever the plants have been in good condition they have realised good prices. In fact, well-grown plants of any kind are always required; whereas inferior material is not wanted at any price.

The decorative value of Orchids is another matter. Everyone must know that there is no comparison between Orchids and Roses during the months of December, January, February, and March. Although good Roses may be obtained in those months, that is no reason why we should not also have Orchids many of which when in bloom are handsome, graceful, and beautiful. There is a charm even about the drooping spikes

of a well-grown plant of *Dendrochilum filiforme*, or *D. glumaceum* with its sweetly scented flowers. People, too, who see for the first time the large, waxy flowers of *Angraecum sesquipedale* are amazed at their singularity. *Odontoglossum Roezli* is graceful, whether in flower or not. In the cool Orchid house may be found *Odontoglossum* of wondrous beauty, and every good grower who has a fairly good collection of plants can always have plenty of bloom; what, too, is handsomer than that of *O. crispum* or *Pescatorei*? We have in our small house a good display in the way of flowers all the year round. Many Orchids will also last in bloom three months or more at a time. Will a Rose bush do this? A house may be kept well supplied with flowers all the year round from one set of Orchids, but this cannot be done with one set of Roses. In fact, I would go a long distance to see either a house well furnished with Roses in bloom, or the man who could show me one at the present time. "W." is wrong in saying that the culture of Orchids is now practically discontinued in the gardens of the wealthy, or at least is at a standstill. In short, he seems to be altogether on the wrong track.—J. D.

Greenhouse Orchids.—"Enquirer" asks what Orchids he can grow in his conservatory in summer, which has no shade except that which Vines afford. In winter the Vines rods, he says, are taken outside and the house is kept fairly warm. Under these conditions some of the Mexican *Laelias* would thrive if kept up near to the glass, and if air was freely admitted; such kinds as *autumnalis*, *anceps* and its varieties, *furfuracea*, *albida*, and *Epidendrum vitellinum* would succeed. In the same house, but not against the glass, *Odontoglossum grande* and *O. leopardinum*, *Lycaste Skinneri* and *L. Harrisonia*, *Cypripedium insigne*, *Cattleya Trianae*, and *Celoglyne cristata* would give satisfaction; these are all winter and spring-flowering kinds, and as the house in question is warm in winter, it would conduce to the opening of their flowers.

STOVE AND GREENHOUSE.

T. BAINES.

HOW TO GROW JASMINUM SAMBAC.

WHERE sweet-scented flowers are required in a cut state, no better plant can be found for supplying them than this Jasmine; they have, however, one fault, and that is they quickly drop after being gathered if great care be not used in handling them. If, however, they are cut with care and put at once into the positions which they are to occupy, their perfume and appearance are all that could be desired; no greenery beyond this Jasmine's own foliage is necessary to set off its pure white blossoms to advantage. When the plant gets sickly in appearance, which it does sometimes, the leaves turn yellow. In such a condition it does not grow freely, nor are its leaves then fit to mix with the flowers; this sickly character is often cured by allowing the plants to become dry at the root during summer, as being a vigorous grower it is a voracious feeder, and requires a large amount of water and stimulants to keep it in good condition when grown wholly in pots, particularly if of large size. It is not at all particular as to position, i.e., if it can have heat and moisture both at the root and overhead. It requires the heat of a stove to grow it well, and if planted out it should have its roots confined, as without this it would be likely to run too much to wood and leaves. We have it growing in a 12 inch pot, which stands on a slate stage over the top of the hot-water pipes; the stage is covered with gravel, and from this arises a moist warmth which no doubt assists growth considerably. The shoots are trained across the end of the house, whence they are allowed to cover a small part of the roof.

During winter it is kept drier at the roots than when active, and towards the end of January or early in February the branches are freely pruned into the older wood. It is then turned out of the pot, the old soil is partly shaken off—a difficult operation, owing to the mass of roots which it makes during the year. These are reduced, and it is then placed in the same pot out of which it was turned. For potting materials we use good turfy loam, a small portion of rotted leaves, and a free use of finely ground bones. The plant is then vigorously syringed twice a day, which keeps it quite clean; as soon as growth fairly commences it is freely watered, and when the pot is well filled with roots weak liquid manure is given each time it requires water, and an occasional sprinkle of bones is laid on the top of the soil, which greatly assists growth. Thus treated, it does not fail to produce flowers in abundance at the point of each shoot. It strikes freely from cuttings inserted in small pots and plunged in a moist bottom-heat; under such circumstances it quickly makes a sturdy plant if kept near the glass in the stove or in any other warm structure, and soon produces flowers in quantity. E. M.

Frost-bitten plants.—It is surprising how much frost it takes to kill plants if carefully thawed; if the heating apparatus is set to work and the house is made warm, a great many of the occupants that are frost-bitten will perish. But if even what are termed tender plants are thawed gently, they will revive. Our plan is, if any plant gets frost-bitten, to set it down on the floor or under the stage in the coldest part of the house, and to water it overhead with cold water; if the sun comes out, we shade the house at once. By adopting this plan in the case of *Pelargoniums* in pots in which the soil was frozen hard they revived, and did not show any ill-effects from being frozen. I would advise anyone into whose house frost has entered not to expel it hastily, for plant-life in many instances may be saved by means of careful thawing, even when the plants are given up as lost.—J. G., *Gosport*.

Two late-blooming Chrysanthemums.—Any *Chrysanthemum* calculated to lengthen the display made by these useful flowers should be prized and carefully attended to, for such kinds are not too numerous. Two sorts not generally well known to produce a late supply of flowers are *Zephyr* and *Golden Gem*. The first is a Japanese variety of medium size, having long, thread-like petals of the palest sulphur, a colour quite distinct from that of any other variety with which I am acquainted. The plant grows tall and in a natural manner; it blooms freely, but, like many other good kinds, does not produce cuttings plentifully. In fact, it is very shy in this respect. *Golden Gem*, lately exhibited by Mr. Owen, of Maidenhead, at South Kensington, and also at the National *Chrysanthemum Society's* mid-winter exhibition, and awarded a first-class certificate at each place, is a grand variety, raised between the Japanese and reflexed sections. It is branching in habit and flowers profusely. Its colour is a rich yellow, which deepens towards the centre. It blooms freely in small pots under good cultivation.—E. MOLYNEUX.

Marguerites in winter.—The large-flowered *Marguerites* are perpetual flowerers, and with but little attention may be had in bloom at any time. Having some fine plants of them covered with flowers and buds, we lifted them from the open ground and potted them before frost had affected them. They were treated exactly the same as ordinary *Chrysanthemums*, and they overcame the ordeal of lifting and root-breaking quite as well; in fact, but few plants overcome root-disturbance so soon as these do. Some very large plants were put in 12-inch pots, and although the leaves drooped for a few days, they soon resumed their usual healthy look. The flowers expanded freely, and have been most useful in a cut state ever since. They are, indeed, so useful in this respect, that anyone who has much cut-flower decoration to do can hardly be overdone with *Marguerites*.

The foliage, too, is excellent with which to dress small flower baskets or dishes. Marguerites are moderately hardy. We had fine bushes in this locality that survived several winters; but the last three have cleared all such plants in the open off.—J. G., *Gospport*.

WINTER HEATHS.

THE range of varieties of Heaths which flower during the autumn and winter is not wide, but what there are cannot be dispensed with where there is a great demand for flowers. The best autumn-flowering sorts are *hyemalis* and *gracilis*. The first-named is one of those which are known as soft-wooded Heaths, and it requires to be pruned rather severely after the flowering season is over—treatment quite the opposite to that required by the hard-wooded section, which flowers during summer. I may remark that *hyemalis* and *Willmoreana*, to which I shall refer presently, require more warmth than the other section. For this reason they should have less air than is given to the majority of Heaths, and if large healthy plants are required they must be kept under glass all the year round. I am aware that trade growers turn their stock into the open air during summer, and obtain satisfactory results; but for the most part they deal with young stock only, which is quite different from plants which have been exhausted by flowering, and whose growth has been cut back. Old plants I find it necessary to deal with liberally, and then I can ensure getting the season's shoots from 18 inches to 2 feet long, with a proportionate length of flowering wood upon them. As soon as these two sorts—*hyemalis* and *Willmoreana*—go out of flower, all the last year's growth should be cut back to within 1 inch of the old wood. The plants should then be placed in the warmest corner of the greenhouse, and should only receive just enough water to keep the soil moist. After they have rested a few weeks, they must be shifted into pots one size larger, until they reach pots 10 inches in diameter, in which they may be allowed to remain two years. Good peat and a fair sprinkle of silver sand are all that they want as regards soil; but it is necessary to pay particular attention to the drainage, for all Heaths are very impatient of water stagnating about their roots; indeed, I may say at once that careful watering and air-giving constitute the whole secret as regards managing these Heaths in a satisfactory manner. It is especially necessary to give water to the roots with care, from the time when the growth is cut down until active growth again commences, as during this period they cannot use up much moisture, and if they get an excess of it, mildew will attack the young growth as it appears. They should be allowed to remain in a close corner of the greenhouse until the young growth is 3 inches long. They may then be brought out to a lighter and more airy position, and during the summer months a thin shade should be put on the glass. During very hot weather they will require air both night and day, and plenty of it, and at the same time the root moisture will have to be increased. As a matter of fact, they will well repay for the most careful attention at all times; for until one has thoroughly tested the capability of the sort named *Willmoreana* to form large and handsome specimens, an idea cannot be formed of its value for that purpose. I have had this variety of Heath so large that it required two strong men to lift it. Such examples are valuable to cut from, and they make striking subjects during the months of January and February for the conservatory. Mildew sometimes attacks them; but if taken in time, it may be destroyed by dusting the affected part with sulphur. Other two varieties which I have grown for winter-flowering are *gracilis* and *melanthera*. The individual flowers of these are small, but they are produced in such numbers that a large plant is quite effective, when other flowers are less plentiful than they generally are in spring. For that reason, two or three large plants of each should be grown where winter flowers are required. Although these plants will

submit to pruning, and to be kept down to a small size, they do not take kindly to restrictive measures. In fact, if small plants are required, it is better to depend on young ones. Being more hardy than the other two I have mentioned, they may be grown with the hard-wooded section and treated in the same way, and after they have made their growth (which will be about the end of July) they may be set out of doors. Where one has to grow this class of Heaths along with a mixed collection of plants, they should have the coolest end of the house, as they only require sufficient fire-heat to keep them safe from frost.

J. C. C.

THE BEST BORONIAS.

THESE, as most of us know, are very ornamental greenhouse plants, furnished with good foliage and red, pink, or white flowers, which are produced during spring and early summer. They are easily grown, and well deserve more attention than they now-a-days receive. After flowering they should be cut back tolerably close; otherwise they are apt to become lanky and destitute of leaves at the base. *B. crenulata* and *B. serrulata* must, however, be made exceptions to this rule; they will simply require stopping, as they do not grow so vigorously, and are altogether more delicate, and, at the same time, more difficult to cultivate than other members of the genus. In potting, make the soil very firm, using good fibrous peat, broken up rather roughly, to which a good portion of sharp sand should be added; drain well, and water freely during the growing season. When growth is nearly finished, let them be well exposed to sun and air in order to thoroughly ripen the shoots, as it is upon the mature wood the flowers are produced in the following spring. Of the different kinds, *B. Drummondii* is a compact-growing and free-flowering species, the flowers of which are solitary and axillary, and produced in the greatest profusion. They are deep rosy pink, or red, and very fragrant. Of this there is a white variety the exact counterpart of the type. *B. elatior* is one of the largest flowered and best of the Boronias. It is a plant, too, very easily managed; it bears cutting well; indeed, it must be subjected to hard pruning after the flowering season if handsome plants of it are desired. The flowers, which are axillary and produced in profusion towards the upper part of the branches, are rosy purple and very showy. *B. megastigma* is a distinct and desirable Heath-like plant, not showy or ornamental, but indispensable on account of its delicate fragrance, which resembles that of Violets tinged with something aromatic. Its flowers, which are bell-shaped, are solitary, pendulous, and produced in abundance towards the points of all the branchlets; outside they are chocolate-coloured and yellow within. This plant should be grown in quantity, in order that sprays of it may be cut whenever sweet-scented flowers are required for bouquet-making or for apartments. With *B. pinnata* most of us are acquainted, and the same remark applies to *B. serrulata*. *B. crenulata* is somewhat similar to the last-named species, but is smaller growing. Its flowers are axillary and bright red.

W. H. G.

Chrysanthemum Sœur Melanie.—Those who have not grown this variety will do well to give it a trial during the coming season; either in the form of large or small plants it is almost unequalled for freedom of flowering. It is pure white, and an advantage it possesses over other kinds consists in the manner in which its flowers all open simultaneously, a grand property where cut flowers are wanted, as in many instances side buds must be sacrificed, the centre one generally opening some little time before the others. Capital plants about 2 feet high of this variety can be grown in 7 inch pots, with from six to ten spikes, each being furnished over a foot in length with blooms. Such plants are preferable to others more bushy in character. Bushy plants take up more room, and are not nearly so useful. Nothing can be better for filling jardinières at the foot of large mirrors than plants

grown like those just described. Any time during February is suitable for taking cuttings. Strike them in the usual way, either singly in small pots or three or four in larger ones. As soon as rooted, pinch out the point of each plant and place it at once in a cold frame, giving as much air as possible to keep all sturdy. If large plants are wanted, top the shoots once or twice more, pot on as required into the sized pots named, carefully and freely watering during the hot days in summer, as a loss of foliage disfigures the plants. No disbudding should be done; on the contrary, allow all on each stem to develop, as on that the peculiar beauty of this variety depends.—E. MOLYNEUX.

THE BRUGMANSIAS.

I HAVE long taken a special interest in these, partly from seeing some of them, notably *Knights*, bedded out many years since by my brother at Putteridgebury, and also from seeing some fine specimens in various conservatories, and having two fine plants under my care for many years. One of these is a fine plant of *B. suaveolens*, which was photographed some years since with three thousand blossoms expanded on it. The effect of the photograph was rather disappointing, the picture being spoiled by the sheer prodigality of bloom. The other is a plant of *B. sanguinea*, also of large size. I have also grown *B. Knights* well in pots and tubs, *B. arborea*, and the yellow variety of *suaveolens*, or *arborea*, as it was represented. It is impossible to exaggerate the grandeur and magnificence of these Brugmansias where lofty houses and sufficient area can be provided for them. The orange-scarlet variety differs widely from the others in not being fragrant, and in colour as well as form of the flower, which is more of an open-mouthed tube than a funnel-shaped bloom. Treated alike, and subjected to the same temperature, *B. sanguinea* is more of an autumnal and winter-blooming species; while *suaveolens* flowers three or more times throughout the summer and autumn, and then goes naturally to rest in a temperature of 40° or 45°. The *B. sanguinea*, on the contrary, flowers throughout the winter in this low temperature, though the colour is brighter and the flowers more numerous in 5° or 10° more heat. It is, however, considerably hardier than *suaveolens*, though both thrive well in the coolest greenhouse from which frost is merely excluded in winter—the red one flowering, the white one resting, during the cold season. Both also submit to severe pruning work, which is fortunate, as otherwise there are few glass-houses in private gardens that one or a couple of Brugmansias would not fill to severe overcrowding.

I very much doubt if *B. flava* is a sport from *sanguinea*, as the flower is nearer that of *arborea*, and unless I am much mistaken (I do not grow it now) also fragrant; *B. Knights*, the only double or hose-in-hose Brugmansia I have grown, judged by its fragrance, is also a distinct species, as the scent is totally different from (and with a spicy addition to) either *arborea* or *suaveolens*. The latter is also different, and has a much fuller fragrance than *arborea*. They are both so far alike in this that neither has much scent at noon, and both reach their maximum fragrance at midnight. About 6 p.m. and 6 a.m. the scent of Brugmansia *suaveolens* reaches to about half its intensity; from 6 p.m. to midnight it waxes to its maximum force, and from 6 a.m. it wanes to nil at mid-day.

These curious facts add to the interest of growing these magnificent trumpet flowers. At various times our lofty orangery here has been lighted up to bring out these interesting features, and enable evening parties to test and enjoy them. On several occasions also, when *B. suaveolens* has been in full flower and robust growth, the odour has been distinctly tasted, and more rarely seen in the form of a thin phosphorescent light passing like a vapour from the throats and mouths of the open tubes. On these occasions the whole house, a long corridor, and the mansion attached have been filled and permeated with the perfume,

which only the few who can revel amid the most powerful, though exquisitely sweet, odours can enjoy. Those who have been partially overpowered or become drowsy under the fragrance, have had the consolation of a long respite of any excess from six in the morning to six at night. Thus the intermittent quality of the fragrance of *Brugmansia suaveolens* enables many to enjoy the beauty of these plants who could not do so were they always and at all times equally fragrant.

Brugmansia blooms of the *suaveolens* type grown in Scotland must have greatly extended their staying properties over those grown in England if the following statement may be relied on. No flower can equal this white *Brugmansia* for purity and fragrance, and for room or church decoration it is unequalled, as if gathered before the blooms are quite expanded they last a long time in perfection. The words I have italicised are the reverse of true in England, unless with the single exception of *B. sanguinea*, the flowers of which will last a week or more without fading. The so-called double, that is, the *Hose in-hose B. Knighti*, has also considerable staying power, but it suddenly loses its whiteness often, though it may not fade. But *suaveolens*, if cut too soon, looks wrinkled before it opens, often refuses to open afterwards, and when it does open, or when cut fully opened, it seldom lasts more than six hours at the longest, even when the end of the flower-tube and not the stalk only is thrust into water.

Possibly the less exciting climate of Scotland may add somewhat to the longevity of these evanescent flowers. I have often observed that the late flowers last longer than the first or second ones in June or August. But so fragile are the individual blooms of *Brugmansia suaveolens*, that large vases and baskets have often had to be filled with them in the drawing-room just as the guests were leaving the dining-room, in order that they might keep fresh for the two or three hours remaining of the evening. And as for church decoration, they would all be down in the south before the parson got to the sermon, and would form an apt illustrated text of the fragility of life.

HORTIC.

SEASONABLE WORK IN PLANT HOUSES.

STOVE.—In determining the time of starting some of the most important spring and summer-flowering plants there are several things that require to be considered, not the least of which is the character of the houses in which the plants are to be grown. In modern, well-constructed, span-roofed houses that admit a maximum amount of light, and that stand in a position where there are no external influences calculated to obstruct this all-important element, it is obvious that a start may be safely made considerably earlier in the season than where the plants are located in old-fashioned, heavy, lean-to structures, where little light reaches them until the sun has gained more force, and in the case of plants that are wanting in vigour, or that have not had their last season's growth well matured, it is not advisable to excite them early, as they are wanting in the first essential to enable them to flower early. The advantages attendant on getting such of the spring and summer-flowering kinds as *Allamandas*, *Bougainvilleas*, shrubby *Clerodendrons*, *Dipladenias*, *Tabernaemontanas*, *Gardenias*, and the like to move early are that they afford a proportionately longer succession of flower or bloom oftener before the dormant season again comes round. Where the conditions above indicated are favourable, the temperature may shortly be raised a few degrees above what it has been kept at whilst the plants were at rest. This will be found better than sudden excitement by a greater rise all at once.

GARDENIAS.—The flowers of these plants are held in such estimation by some, that a supply is required during as much of the year as it can be had. Yet even where a large stock is grown, with means of giving it plenty of heat, it is difficult to get the flowers to open during the

depth of winter, as the buds, however forward they may have been in the autumn, move slowly in the absence of sun-heat. The plants that have their buds the most prominent should be placed at the warmest end of the stove and well up to the glass. Keep the soil moderately moist—not too wet—as comparatively little root action will now be going on, and if too much water is given, the buds will be likely to drop rather than come to maturity. It is not advisable to syringe the plants overhead at this time of the year, as it not unusually happens that the buds fall if much moisture hangs about them. One of the worst evils to contend with in the cultivation of these plants is that where mealy bug exists, so partial is this insect to them, that it gives much trouble.

BOUARDIAS.—The difficulty that exists in getting cuttings of *Bouvardias* to root when made from shoots that have been grown in the way that most things succeed under induced growers of these plants to resort to propagating them from root cuttings, a process that will generally answer for any plant which there is a difficulty in increasing. But it is found that if the old plants that are to produce cuttings are dried off for a few weeks, so as to stop growth and cause the leaves to fall, the young shoots produced in a genial temperature after the branches have been cut back and the roots well moistened will root as readily as those of a *Fuchsia* if taken off with a heel. Stock plants that during the latter part of autumn have been treated in this way will shortly furnish an abundance of cuttings, as almost all the eyes start immediately the plants are subjected to heat and moisture. When the shoots are about 2 inches long they are in a condition to strike; they will root readily in ordinary stove heat, kept moist and close. No time should be lost in getting the requisite quantity going, as, unless the young plants are well established early in the year, they do not attain the necessary size and strength before autumn to enable them to produce a full crop of flowers. It is well to bear in mind that strong, vigorous examples yield finer heads of bloom, and many more of them, than the ordinary-sized plants usually met with. Independent of the value of *Bouvardias* for stove and warm conservatory decoration during autumn and winter, few things equal them for giving a continuous succession of flowers for cutting. Their profuse habit of blooming, purity of colour in the flowers, and agreeable fragrance of some are such as to make them worthy of a place in the most select company.

SOLANUMS.—*S. capsicastrum* and *S. pseudo-capsicum* are not surpassed by any of the small-growing berry-bearing plants for general usefulness in the various ways in which they can be made to do duty, being alike adapted for room or hall decoration, or for associating with flowering plants in greenhouses and conservatories during the autumn and winter. Cuttings need to be struck early where the plants are wanted to be in condition for use in the autumn. If the stock has not already been propagated, no time must be lost in putting in the cuttings; these should consist of the points of the shoots such as are generally to be had from plants that have ripened their crop of berries during the later months of the past year. They will root in two or three weeks if placed in genial heat and kept moist and close, after which put them singly into small pots, pinch out the points of the shoots as soon as growth commences with a view to make them branch out at the base, without which they have a straggling, unsightly appearance. Cuttings should only be taken from those plants that show a disposition to produce their berries freely, as there is much difference amongst seedlings in this respect. The young stock must be kept on growing in a genial temperature until spring, after which the sun will afford enough warmth.

FITONIAS.—These plants are so accommodating that they will thrive when overhung by other things to an extent that would cause many to fail. In no way are they seen to better advantage than when used as an edging to the side stages, or for a

covering to the stages of a stove as a setting wherein to stand other plants. They will grow in almost any material that water will pass readily through; if shell gravel or ordinary fine sandy gravel is used on the stages they will grow freely in this, provided they are not allowed to get dry at the roots. Cuttings put in now will strike in little time by keeping them warm and moist; when rooted they can be planted in the way indicated, or grown in shallow pans and set about amongst the pots containing larger growing things; in this way less bare surface of the stages is seen.

PANTUM VARIEGATUM.—This pretty free-growing plant can be used similarly to the preceding. It makes one of the best of all edgings in a stove, and is alike adapted for draping hanging-baskets containing flowering plants. Young stock, such as that struck from cuttings put in now, is the most suitable for use in the manner just mentioned, and in various other ways this useful drooping plant can be employed. Heat, moisture, and a confined atmosphere are the conditions under which this plant strikes quickest.

CISSUS DISCOLOR and *C. PORPHYROPHYLLUS* are amongst the best plants that can be used for occupying bare places on back walls, or for use where free, quick-growing subjects of drooping habit are required. Cuttings of the young half-ripened shoots will root with ordinary treatment in two or three weeks, when they can be potted on preparatory to their being placed where they are to be grown. It is well to push on the propagation of these and other things that are alike easily struck before the busy time for general cutting-striking comes on, when attention and room will be wanted for a host of other subjects.

INSECTS.—Those who have to deal with a general collection of stove plants need to be ever on the look-out for the various insects, that are more persistent in their attacks consequent on their increase being quicker in the genial atmosphere of a warm stove than in structures where a lower temperature is maintained; if there is one thing more than another that it is well to impress upon those whose experience in plant-growing is limited, it is that those who keep their plants the freest from insects—other details of cultivation being fairly well carried out—are certain to be the most successful, as, where insects are allowed to get numerous, it is impossible for the plants they affect to thrive as they should do. As soon as the sun gets more power, so as to run up the temperature of the stove, insects of all kinds that are present begin to increase apace. To limit this as far as possible all the stock should be closely looked over, and any that are affected ought to be carefully gone over, and dipped, syringed, or sponged according to the nature of the plants and the kinds of insects that affect them. Whatever time is occupied in this work at the present season will be well spent, and will save much labour later on.

GREENHOUSE.—The early-blooming varieties of the large-flowered section of *Pelargoniums* are much the best to grow for those whose object is to have a good display early in the season, as they come in at a time when indoor flowers almost alone have to be depended on. If the stock was got on with early in the autumn by having the plants well established in the pots in which they were intended to flower before the growing season was too far advanced, and they have up to this time been kept in a warm greenhouse temperature, they will now be showing their flower-heads. The varieties in question are naturally dwarf, compact growers, the wood being remarkably short-jointed, so that when kept well up to the glass the shoots do not get at all drawn, even when subjected to more heat than is usually looked upon as sufficient for *Pelargoniums*. As soon as the flower-heads have made a little progress, manure water may be given once a fortnight or so, applying it oftener later on when more progress has been made.

CINERARIAS.—The earliest portion of the stock will now be blooming. Where the successional plants have been well cared for the balls will be a

complete mass of roots, and they will require regular applications of manure water, which will increase the size and substance of the flowers. The whole of the stock should be frequently examined to see that it is quite free from aphides, to which Cinerarias are more than most things subject, and if not kept quite clear from them, they become a fertile source from which all other plants associated with them, on which the insects will live, get affected.

ROSE GARDEN.

CLIMBING AND OTHER ROSES.

How to have Roses in bloom for as long a portion of the year as possible, and in all sorts of positions, is a matter worth serious consideration. There are two classes of Rose growers, besides those who grow for sale; the one has for its principal object the production of blooms for exhibition, while the other grows them for

are not at all particular in the matter of soil, being able to thrive and grow in that of almost any description, although, of course, they thrive best where the soil is good. Where the best kinds of continuous-blooming Roses are required to thrive and repay the cultivator, there the soil must either be naturally good, or adapted to the purpose by artificial means.

For poles, pillars, arches, arbours, walls, sides of houses, and high buildings, &c., only those Roses are suitable which have more or less of what is called a climbing habit of growth. Roses which make long rambling growths, whose shoots are unable to stand up without support of some kind, these are the kinds which do duty as climbers; before determining on the kind of climber to plant, however, the height the plants are required to attain must be considered. Most of the vigorous Hybrid Perpetuals and Teas may be relied on from 8 feet to 15 feet if the soil be good, and on warm sheltered walls 4 feet or 5 feet higher. The extra strong growers of the same

in good and deep soils they would climb in a very few seasons, if well tended, any ordinary church steeple. They completely cover themselves with blooms during the blooming period if rightly treated, and all the treatment they require, if in good soil, consists in tying them to their supports, pruning out weak and exhausted wood, and encouraging to the utmost such vigorous young shoots as may be required. No growths need be shortened except to keep them within the bounds allotted to the plant, and to take off unripened ends. Climbing Roses away from walls should not be planted in very exposed positions, or, as a rule, they will fail to gratify the cultivator.

Climbing Roses may be used to screen unsightly buildings and other objects, by training them to galvanised wire or other fences or supports, and, except when the leaves are off, answer this purpose most admirably, by the interposition of their loveliness. All the above methods of growing Roses not only yield good decorative effects, but give supplies of flowers for cutting. Heretofore, however, I have not mentioned Moss Roses, because, from a decorative point of view, in the outdoor garden, as growing plants, their value is comparatively small. As cut flowers, however, they are among the most exquisite of Flora's productions. J. E.

SNOW AMONG THE ROSES.

So far the snow has probably done good, and not harm, to the Roses. Here and there it has rent off a bough from tall standard bushes or pyramids, and in a few instances has broken down some dense dwarf. But, as a rule, Roses have either carried their snow burdens in safety, or bent down beneath their load without breaking. The very tenacity with which the successive falls of snow cling to the Roses also afforded them very substantial protection against the severe frosts that have succeeded them; while dwarf Roses under the snow have been safe from all harm from any amount of cold. This has been a decided gain, with the thermometer getting within close reach of zero on several occasions. A good many old-fashioned cultivators hold that snow is not only a protection, but a manure. And no doubt it does collect from the air and deposit on the surface a sensible amount of ammonia and other manurial matters or gases. But it is often somewhat difficult to distinguish in practice between the effects of protection and food. It is held correctly that in the feeding of animals a certain amount of warmth is equivalent to a given amount of food, and it seems also certain that the same law of equivalents holds good among such plants as Roses. The direct result of starvation from cold does not vary greatly from that arising from lack of food. Weakness, partial paralysis of function, sluggishness of movement, ending in a stoppage of circulation of fluids and death, follow in both cases alike—whether from identical causes or not is hardly material to our argument. What is very material to us, as rosarians, is the fact that the snow is favourable to our Roses. It conserves their heat, and, maybe, augments their food supplies; while, in so far as it does the former, it enables them also to dispose of more food to better purpose. The growth, vigour, and beauty of Roses are very much as the heat that they are subjected to or have at their disposal. It is therefore a clear gain for our Roses when, instead of being exposed to 20° or 30° of frost, the snow keeps them in a snug, warm atmosphere of from 2° to 4° of frost only, or even less.

Possibly not a few answer, that if the growing season proves genial, it matters little or nothing to the Roses how much cold they are exposed to in the dormant season. But every day's additional experience convinces us that this is a great mistake. For, first of all, there is no dormant season among Roses. The phrase never meant as much as many put into it. There is no such thing as entire cessation of root-growth among



Rose arches in Achareidh Gardens, Naim. Engraved for THE GARDEN from a photograph.

decoration and the production of flowers for cutting. Now there are so many families of the Rose, and so many varieties belonging to each family, that suitable Roses may be found for almost all kinds of uses and positions in a garden where flowers of any kind can be used. The following are some of the uses to and positions in which Rose plants may be put in a garden, viz., beds, borders, shrubberies, poles and pillars, arches, arbours, walls (north, south, east, or west), hedges, screens, &c. Before entering into any particulars, however, as to the different kinds of Roses adapted to the various purposes just mentioned, I should like to make a few remarks on the more or less important subject of soil. I say "more or less" here, because if only the commoner kinds of Roses be grown, the kind of soil is a matter of small importance. The old summer-blooming climbing Roses belonging to the Boursault, Ayrshire, and sempervirens classes, as well as most of the varieties belonging to the Gallica, Hybrid China, Hybrid Bourbon, Austrian Brier, and many other summer-blooming families

classes, with the Noisettes and Hybrid Noisettes, will cover well up to 15 ft. or 20 ft. or more. The Banksian Roses are excellent as climbers, but should only be planted against walls in rather sheltered positions; they are only summer bloomers. The white and yellow may be both relied on up to 30 ft. in good soil, but the large white will run much higher. This kind is evergreen, except in very sharp winters, which is a great recommendation, but it is not so prolific in its blooming qualities as the two first-named varieties. The old Blush and Crimson China Roses will also run up the face of a wall freely to a height of 30 feet, and, as before stated, for continuous-blooming qualities they are unsurpassed by the varieties of any other family of Roses; indeed, they are frequently out at their best when inexorable frost sternly interposes and checks them; in spite of this however, it is not unusual to find a few buds still unfolding at Christmas time. The old-fashioned summer-blooming Roses before alluded to are capable of almost anything in the way of height; probably

Roses, unless their fluids are converted into solid ice. Complete dormancy, stagnation, rest never did exist among Roses. But there is less of it among them to-day than ever there was before. More ever-growing, ever-blooming blood has been poured into them from the Noisettes, Chinas, Teas, till the great class of Hybrid Perpetuals and others have become less restful than ever at any season. Though all too few of our Roses are ever-blooming in our climate, the majority of them are ever-growing, and the more active their growth, the more serious is the danger to which they are exposed.

Now, experience proves that our Roses in the main are quite safe when buried in snow. The snow temperature, say a few degrees either side of 30° Fahrenheit, is one of the very best for the safe keeping of Roses during the winter season. The snow temperature is not only safe, but equable. In fact, it is the latter quality that constitutes the main element of its safety. It is less the absolute severity of the cold that mars and maims our Roses than the sudden changes, often amounting to 15°, 20°, or more in a few hours. The mere mechanical effects of such sudden freezings and thawings prove most trying and destructive. The ratio of destruction also rises with the suddenness of the changes. Now, the snow lies between our Roses and violent and sudden changes, and this forms a compound barrier between them and harm.

It will, therefore, probably be found that, in contrast to the violent injury inflicted on trees and shrubs, the snow has been of real service to our Roses. With or without other protection it has saved our dwarf Teas or others from the risks and dangers of 20° and 25° of frost, and done much to carry standards safely through the same ordeal, by wrapping every twig and bough round with a snowy covering, almost sufficiently thick to keep their temperature at the snow average. Seldom have successive snowflakes elung to vegetation as they have this winter, and in their close sticking to our Roses they have doubtless saved the majority of them. Of course, the snow has adhered with many times multiplied volume and mass where our early advice to thrust a handful of Braeken fronds into the heads of standards was adopted. In all such examples the Braeken was thatched with about a foot of snow, the whole being impenetrable to any amount of cold possible to our climate. D. T. F.

FRUIT GARDEN.

W. COLEMAN.

BLenheim ORANGE APPLE.

WHEN a few weeks ago I forwarded to you half-a-dozen good fruit of this useful variety I stated that they were not the finest or best coloured examples grown by Mr. Phelps, of Tibberton, near Gloucester, last year. Quite recently I have received from that grower one of his very best fruits, unquestionably the finest I have yet met with, and in response to an application from Mr. Van Deman, pomologist to the American Government, I have forwarded it to Washington for examination and comparison. The Apples in question, from standard trees nearly forty years old, did not create any great degree of surprise when shown by Mr. Phelps at Gloucester in November last, as other exhibitors with wonderful fruit have been in the habit of competing with him for years. Indeed, the classes which these exhibitors—farmers, it must be understood—are capable of filling up prove beyond cavil or question that private enterprise without the aid of Government or Royal Horticultural Societies can and will restore our much-abused orchards to the position which our climate fits them to occupy. What one, nay a dozen, men residing in the vale of Severn can do, others living in warmer districts may also do equally well, and possibly better, if they will only put their brains to work and their

shoulders to the wheel. It is all very well for one section of our leaders to call upon Jupiter, and for another to cry over spilt milk, but neither of these will put us in the way of growing large, rosy, luscious fruit infinitely superior to the handsome specimens imported from Canada and other parts of the globe. What we require is perseverance and common sense on the part of occupiers and encouragement from the owners of the soil. The latter, no doubt, are willing, but hitherto, with few exceptions, the matter has not been placed before them, and a great number are still ignorant of the fact that first-class Apple orchards will enable the farmer to live where corn does not pay for the tillage of the ground.

We cannot expect all landowners to go into the matter as Lord Sudeley has done, but the majority might follow the Madresfield Court system of devoting a piece of suitable ground to the working and raising of the best sorts of Apples, Pears, and Plums for distribution amongst the tenants. In several places I have seen this work managed, or mismanaged, by the woodman or forester; and in nine cases out of ten, hard, wretched, crooked stocks, with stunted heads, have shown that the attempt has turned out to be a failure. Clever men, like Mr. Webster, and a host of professional foresters, who have been thoroughly trained in nursery work, can, of course raise, select, and work stocks quite as well as operators in the trade, but a great number of hard-working honest men, who live and die on one small estate, cannot be expected to turn out trees that will be of use to the rising generation. Nay, more; many of them consider this branch quite extraneous to their legitimate calling. Aware of this, Lord Beauchamp very wisely placed a piece of land, close to the kitchen garden, under the management of the late Mr. Cox, shortly before he died, and Mr. Crump, his successor, has carried on the work ever since. In this nursery all the leading sorts of vintage and pot Apples which do well on his lordship's estate are grown, and grown well, and it is needless to say that the farmers who can have them for planting out are not the only individuals who derive benefit from the arrangement. The farmers on this estate are treated in a similar way; and, although modest individuals shrink from boasting of their home work, I may say that one occupier sometimes makes 400 hogs-heads of cider in a good season, and more than clears his half-year's rent by it. Horticulturists generally, and people who read the horticultural journals, know that a long pull, a strong pull, and a pull altogether is now needed, otherwise the ball recently set moving will not carry us to the front, but this position must be attained before we can compete with our colonial relations. The orchards in America only a few years ago were in a plight similar to our own, but the owners and occupiers have gone ahead, and we must be content to follow in their footsteps.

I commenced this paper with Blenheims—on the brain, some may say. Possibly so. I do not wish them removed, for this Woodstock, Northwick, or Kempster's Pippin is a noble Apple, and I will close my remarks by informing a correspondent that I see no reason why the wish he expressed a few weeks ago should not be fulfilled. In THE GARDEN, I forget the date, he said he should dearly like to see a good orchard composed entirely of Blenheims in full bearing at least once in his lifetime. If he has not passed the jubilee of his birth, and can command a few acres of upland rolling ground on the old red sandstone or marl, he should lose no time in trenching 2 feet to 3 feet deep, and planting clean, healthy standards 30 feet apart and 30 feet from row to row. Blenheims are impatient of

the knife and do not bear well when young, but when allowed an abundance of room for the full development of the strong branches and exposure of the fruit to sun and air, healthy trees after a few years' growth produce regular and abundant crops annually. Although this variety is not considered suitable for restrictive training in small gardens, I have seen it bearing well as a horizontal espalier on the Paradise stock, but it is short-lived and soon shows a disposition to canker. For this kind of work fortunately the names of suitable sorts are numerous enough, and as the Blenheim delights in a deep, but well-drained soil and plenty of head room, the orchard unquestionably is the proper place for it. When planted singly or a good distance apart, the branches often assume a horizontal or drooping habit, but planted thickly they attain a great height, and then fruit from the centres and lower branches is spotted and deficient in colour. We have at this place a double row of some twenty trees planted in this way. They are now little short of 50 feet in height, and, judging from their size and general appearance, one may readily suppose that they were planted before the Blenheim Pippin found a place in nurserymen's catalogues.

OUTDOOR GRAPES.

IN THE GARDEN for January 1, p. 3, "W. R." says he has seen "many little Kent and Surrey gardens during the past few years, and never saw a really good Grape; but it is extremely rare to find that any attention is given to the Vines." Exactly so; negligence or inattention generally results in failure, and deservedly so. Even at Thomery, where the sun-heat in spring and summer is far in excess of that which we obtain in England, the greatest care and precautions must be taken to make Grape culture a success. From Mr. W. Robinson's book, "The Parks and Gardens of Paris," I take the following extracts. On p. 378 he begins the chapter on "the culture of the Vine at Thomery," with this remarkable and enthusiastic view of outdoor Grape culture in England—

As it is certain that the culture of the Grape grown against walls in the open air may be attempted with profit over a large part of the southern and midland counties of England, an account is given of the successful and highly interesting culture of the Chasselas Grape near Paris, where it must be growing against walls as well as with us.

Again, on p. 380, he tells us that—

Grape culture is often successful against houses with us (i.e., in England) when it receives more chance attention from so-farthers and others. By selecting the soil and position, and really paying some attention to protecting and cultivating the Vine, we may grow good Grapes against walls, even in many places where ground vinerias are now resorted to. Should any person doubt the possibility of cultivating the Chasselas and others of our best hardy Grapes in the open air, I merely refer him to the horticultural papers for the autumn of 1868. They contain abundant evidence that even with the rough treatment Grapes now receive in the open air it is quite possible to grow them of good quality on walls. Grapes are already grown well in the open air in a few places—by Mr. Durkin at Bury St. Edmunds, for example, and by Mr. Fenn in the Rectory Garden at Woodstock—so that there can be no doubt about the possibility of ripening good Grapes over a considerable portion of England and Ireland. It is necessary to observe that the plan is only recommended for warm soils and positions, for gardens not having much glass and yet some wall space, for covering cottages, out-offices, &c., and not in any way as a substitute for Vine culture indoors.

Comment on the above is needless.

VERONICA.

* The question is, what are the chances of outdoor Grape culture in England, and not what anyone said of it years ago. Having written these words, and looked in vain since in some of our warmest counties for eatable Grapes in the open air, is surely no reason for keeping to them. And when men like Mr. Marnock tell one of having passed through the same hopeful stage, and then tried experiments and failed, there is surely good reason for doubt. Mr. Cornhill sends me a long article explaining the conditions under which outdoor Grape culture was carried on successfully in his youth. Few of us who have

thought of the matter, could not do the same thing, but there is no doubt that the youthful taste about fruit is not over-particular, and the ease with which the finest Grapes may be grown in many kinds of cheap glass structures makes the comparison for the outdoor Grape much more severe than it was twenty years ago. The price, too, at which fine Grapes are now sold in the market is very low. As to the question of profit, the case is hopeless, because good Grapes have frequently been sold in Covent Garden this year at a much lower rate per pound than good hardy fruit fetches. Then, again, a great area of country with a fine climate for Grape-growing, such as Madeira, is sending us a supply of outdoor Grapes—a supply which we may look to increase every year, as the many sunny hills in Spain, Portugal, and Italy, and other countries begin to be devoted to Grape-growing. Assuming that, for other reasons, the thing is worth attempting, if anybody can suggest how, by the offering of prizes or otherwise, Grape culture can be practically tested, I shall be happy to carry it out, or support a reasonable scheme; but I will print no more articles on the subject, except suggestions how to test the matter fairly, should such come.

W. R.

LANCASHIRE GOOSEBERRIES.

A FRUIT-TREE grower informed me the other day that the large sorts of Lancashire Gooseberries are getting into demand in other parts of the country, and probably for dessert purposes. He made particular mention of Careless, white, very fine; Eskender Bey, red, large and fine; King of Trumps, white, very large; Melbourne Red, large; Snowball, white; Alma, white, very large; Crown Bob, red; Plunder, white, large; Major Dibbert, red; Monarch, red, large; Weasel, white, very fine; Roaring Lion, red; Wilmot's Early Red; Troubler, green; Superior, green; Rough Red; and Lancashire Lass, white. It would probably not be difficult to make up fully 150 varieties at least of exhibition Gooseberries.

An old and successful grower was once asked what is the best compost to grow these fine Gooseberries in, and he said the best was the top spit of an old pasture, mellowed by lying by for twelve or eighteen months; further, he recommended that they should be planted to the depth of 4 inches to 5 inches, but opinions differ on this point, some planting rather shallower. The best time to plant is in the middle of October, or as soon after as it can be done. An old grower in Lancashire once told me that he had grown Gooseberries in his garden for nearly fifty years, and that when he planted a new tree he dug out the old soil to the depth of half a yard and about 4 feet square, and filled in the space with clods he had had by him for a year, turning them over once a month or so before using them. And he further stated that he prepared his plant for planting in this way: he pruned his plant, leaving the shoots 6 inches long, and carefully removed all the bottom buds by means of a sharp knife, taking care not to damage the stem; then he placed his plant in the centre of the prepared space and covered the roots to the depth of about 2 inches. The tree is then left until the beginning of February, when a good mulching of decayed cow manure laid by for a year or more is laid on the surface to the depth of 3 inches, a little road sand being added. The manure is allowed to lie in pieces about the size of a large egg until the middle of April, when it is beaten fine, and a little new soil added to the surface, doing this generally after a shower of rain.

Now as the object of this method of culture is to get large Gooseberries for show purposes, so about the middle of May, when the plants are in blossom, only one is allowed to remain where two or more are found in a cluster; and if they are so close together that when developed one is likely to injure the other, one is removed in June, that is, if the fruit promises to attain a good size, but not without. This, at least, is what some do. If during June and July the sun shines out very warm, the trees are shaded from the sun,

a light material being placed over them, about 2 feet above the branches, so that the air can circulate freely underneath, which is considered to be a matter of great importance in the fine development of the fruit. As a matter of course no weeds are allowed to grow on the surface, and caterpillars receive a very short shrift if they put in an appearance. About the beginning of August the fruit is ripe and fit for exhibition.

Pruning the trees is a matter of considerable importance in the matter of exhibition Gooseberries. Of necessity a material difference has to be observed in the pruning of those trees on which it is intended to grow show fruit, and those from which fruits for the dessert or culinary purposes only are required. Not nearly so much wood is left upon the former as upon the latter. Indeed, where large fruit is required no weak shoots whatever are allowed to remain upon the tree, and the strongest are shortened back to within 5 inches or 6 inches of the wood of the previous year's growth. The superabundant shoots should be taken off in such a manner as that the strong ones are left at regular distances from each other. And if of these many are suffered to remain, the tree becomes overcrowded with foliage and new wood, and the fruit is deprived of the needful amount of light and air.

Show Gooseberry trees are generally trained and pruned horizontally, and this form is advantageous, inasmuch as the fruit hangs clear of the branches, and is consequently not liable to be bruised, which would be the case if it were grown upon upright branches. On the other hand, Gooseberry trees bearing fruit required only for ordinary culinary and dessert purposes merely require thinning and to be trimmed into a suitable shape—say hemispherical. But the pruner should never forget that light and air are primary agents in the production of good fruit, and that unless the branches be kept at such distances from each other as will allow, when the branches are fully formed, of the complete exposure of the berries to their influence, the crop will be inferior in quality and insignificant in quantity. And while thinning, the operator should in all cases prune to an outside bud, and should not cut all the shoots clean off, but leave about half an inch at the bottom to form what are called "fruiting spurs," by which means considerably more fruit will be produced. In Cheshire, I have seen vessels of water placed just under the hanging berries of large exhibition Gooseberries, it being supposed they absorbed moisture in this way, and so increased in size.

R. D.

SEASONABLE WORK AMONG FRUITS.

CUCUMBERS.

THE past month has been the reverse of favourable to winter plants holding their own, but we may hope the most trying storm experienced for some years is now nearly spent, and brighter as well as longer days will speedily dawn. The great drawback to progress is dry fire-heat, of which we have had more than enough, as it not only paralyses the plants, but invariably leaves a legacy of spider and thrips to prey upon them when, through want of light and invigorating air, they are least able to withstand their enervating attacks. Good covering, to which I have often directed attention, this winter has been a great help in protecting the glass from the chilling effect of repeated falls of snow; as well as in keeping in a great deal of warmth and moisture. But covering alone will not suffice; we must have materials for producing a steady supply of moist heat, and I question if there is anything equal to sound fermenting Oak leaves. These we use extensively all the year round, and renovate the beds whenever we find the bottom-heat falling below 80°. By adopting this means of charging the atmosphere, and by giving the roots plenty of water, our plants have grown freely down to the present time, and although the syringe has been banished since November they are quite free from insects, and will give a good return now fruit is becoming valuable. The old foliage has not been removed,

as an indifferent leaf hitherto has been of use, but the time is now at hand for taking them out gradually to make room for the young growths, which, by the way, will not be pinched until the middle of February. When pinching is resumed, the syringe will be used for damping the walls and other surfaces, but avoiding the pipes when heated, and for dewing over the foliage about 1 p.m. on bright sunny days. The top heat at the present time ranges from 65 at night to 75 by day, or perhaps a few degrees lower when days are dark and nights unusually cold. These temporary depressions do not, however, seriously affect the plants so long as the roots are kept in a satisfactory condition; indeed, it is better to start in the autumn with heats that can be maintained throughout the winter than to dash into the tropics at the outset and allow the roots to canker and perish in a low bottom-heat at Christmas.

Top-dressing, as I have often advised, should be kept in a dry, warm place ready for use at all times, little and often, as the roots show upon the surface. As days increase in length and external conditions become more favourable to growth, both of roots and Vines, the material used may be somewhat heavier and richer than that applied before the turn of the year, but solid manure in any shape, even as a mulch, if possible should be avoided. Some Cucumber growers recommend the use of large percentages of manures, not only as mulches, but also for mixing with the compost, and, to the best of my belief, lure many an unfortunate follower to grief, as there exists but little doubt that gross food, in winter especially, is one of the principal causes of sudden collapse. I could name a noted place where, forty years ago, nothing but pure mountain turf chopped into small cubes and packed on the surface like paving stones was introduced all the year round. Liquid manure well diluted was freely used, and the plants, Lord Kenyon's Favourite, remained healthy and prodigiously fruitful from year's end to year's end. This practical proof satisfied me that manure in the solid should have a wide berth, but all growers cannot obtain mountain turf, consequently they must manufacture a substitute, and this they can readily secure by taking very thin sods from an old sheep pasture—if on the red sandstone so much the better—and adding one-third of rough charcoal, a like quantity of old plaster or lime rubble, and a little root to destroy wireworm. When these materials, stacked in layers, have lain a few weeks they may be chopped down, well warmed, and used for potting or top-dressing. Heavy loams may be improved by the addition of a little turfy peat, and poor soils by a dash of bone-dust.

Detailed management.—If the plants were not put out too early, growth has been steady, and the Vines are well furnished with clean, healthy foliage, more than half the battle is already won; but a vigilant eye must still be kept on them, or rather their enemies, whose name is legion. Thrips can be destroyed by Tobacco smoke, but its introduction is rather dangerous, and for this reason the foliage should be quite dry when the fumigator is set in motion. Spider may be checked, if not annihilated, by repeated syringings with soap water, or a very mild solution of Gishurst compound; but next to good culture, if taken in time, there is nothing more effectual than careful band-sponging. Mildew disappears under the influence of sulphur, which can be applied as a wash, or in a dry state dusted over the parts affected; and canker may be checked by the application of quicklime, rubbed into the sores, combined with improved ventilation. When the plants show signs of free growth, the young shoots should be regularly trained over the wires, and allowed to carry a moderate crop of fruit, all imperfect "shows" and male blossoms being rubbed off in their infancy. I never fertilise in the depth of winter and find the fruit on healthy plants set and swell well without the aid of male flowers, which, left in abundance, naturally weaken the plants. If the latter are growing in pots, it is a good plan to pack large pieces of light turf round

the rims, and fill in the centres with the roughest of the top-dressing, to draw out stem roots, and to repeat this operation as often as they find their way to the surface. In this way a new set of roots can soon be formed, and being free from confinement, the plants push vigorously, showing fruit at every joint.

Spring plants.—After putting out the best autumn plants I generally make a point of reserving a few of the latest which many would throw away. These in 9 inch pots are plunged overhead in warm leaves in an intermediate pit, and allowed to rough it through the dead months; if they survive, the addition of fresh fermenting material induces a start in February, and we find them useful stop-gaps later on, as they enable us to cut over a house long before spring-sown plants come into bearing. Where this link does not exist, young plants from seeds sown in December should be worked on as rapidly as possible, especially if winter fruiters are not looking quite satisfactory. I have often pointed out that the earliest Cucumbers and Melons may be raised side by side in a light, snug nursing pit, where they can have plenty of heat without becoming drawn. If potting on can be avoided, the fruiting pots or hills should be ready for their reception as soon as they have made a rough leaf and before the roots become cramped. Plants intended for trellis training do not require pinching, but are trained to sticks, thence over two-thirds of the wires, the which, top and bottom-heats being right, they speedily fill. The points are then taken out, lateral growths are laid in horizontally, and fruit being urgently required, they, in their turn, are stopped at the first or second leaf, when every succeeding break will show. The plants, however, being very young and only sparsely rooted, not more than one or two fruits should be allowed to swell at the outset.

Plants intended for the old-fashioned pit or frame should be shifted out of 3 inch into 5-inch pots as soon as they have made the first rough leaf, and when the roots touch the sides the points must be pinched to induce back breaks. Meantime a good body of fermenting material having been well worked and prepared, the beds must be made and the hills or long narrow ridges formed. If the plants are in advance of the bed, a few sods of turf, Grass side downwards, must be laid on the manure or leaves, and upon these large drain pipes, open at either end to let out fierce heat and prevent the compost and roots from burning. The greatest danger the very early frame cultivator has to contend with is rank steam from the beds and linings, and notwithstanding the fact that old hands managed without the aid of fire-heat, as I have seen Cucumbers cut from a manure frame on the 9th of March, the best way out of this difficulty is a flow and return pipe from a neighbouring boiler.

CHERRIES.

With a foot of snow and ice on the ground, and the external temperature hovering about 20°, the start with these impatient trees has been trying in the extreme. Still, those who would succeed must not forget that the most enchanting sight met with in English gardens—a house of Cherries in flower—will yet be theirs if through this storm they only exercise that grand virtue, patience. Dry fire-heat being highly objectionable, the usual reserve of fermenting leaves must be freely drawn upon, as a body placed upon the borders of floors throws up a continuous stream of mild vapour, which softens the atmosphere and keeps out frost in the severest weather. Not that frost even does any harm before the buds burst into flower: still no one wishes to find the mercury ranging below 32° on a sharp morning, neither should he expect to find it above 40°. Below rather than above, I think, would be preferable, and the slow, but sure, progress made should be due to light and gleams of sunshine. The temperature by day may range from 45° to 50° when black fog is doing its worst, and 5° to 10° higher when the atmosphere is clear—always, it must be borne in mind, with a liberal chink of air. If the

borders were well watered up to the time of starting, it is hardly likely they will yet be dry, especially where those containing old trees were heavily mulched in the autumn. Water, however, being such an important element in the culture of all stone fruits, there should exist no possibility of the soil becoming dry at any season of the year. Daily syringing, it is true, helps a little, but with fermenting leaves in the house the small quantity used simply moistens the surface, and for all other purposes becomes misleading. When the buds begin to show signs of opening, gentle fumigating to insure immunity from green and black fly during the time the trees are in flower will be necessary, for if these pests once gain a footing the chance of securing a crop will be very small indeed.

PLUMS.

Where these and Cherries are grown in pots, the two may be brought on together. Choice early dessert varieties are best adapted for forcing, and these should be thoroughly established or slightly pot-bound before they are taken in for forcing. Being subject to the same enemies, too much care cannot be devoted to the cleansing of trees and houses, and then even a constant watch must be kept for the advent of aphid. Although highly excitable, Plums positively refuse to be hurried; therefore, early fruit can only be secured by making an early start and giving the trees ample time through all the stages of their growth. When stoned, the fruit can be coaxed to full size in a moist temperate house, but no amount of confined heat will induce them to lay on colour and ripen. I once tried some very promising trees of Jefferson and Kirke's in a warminery, their fellows being left in a late orchard house. The latter coloured and ripened well; the former never changed in the hothouse, but finished off when placed in the open air. In this respect Plums in their mulish obstinacy often remind one of the Camellia which can be pushed to the colouring of its buds in the autumn, but casts its load under high pressure in the early spring. Other fruits no doubt often suffer under a much higher temperature than is good for them; in other words, a great deal of heat is wasted in the production of a second-rate article. Peaches, it is true, can be forced into ripeness in a Pine stove, but they are pale, rapid, and flavourless. Give them more time with plenty of air, and in every respect they become models of good culture. The old "saw" says, "it is the pace, not the miles travelled, that kills." The forcer against time says we must have fruit early. How, then, are we to get over the difficulty? Why, simply by treating all trees which will ripen their fruit in the open air in England as we now treat early forced Vines. With these we do not fritter away the whole of the summer in ripening up the wood, but push them on to thorough maturity; then give them a long and decided rest, and, knowing the exact number of weeks it will take to produce the next crop of fruit, we start early enough to allow plenty of time for the performance of each stage of their growth.

Late Plums.—After so much inclement weather it is hardly likely any of the winter work indoors will now remain in arrear. If it does, no time should be lost in getting this, generally the last, and the latest Cherry house put in order. February is now close upon us, and, judging from the prominent state of buds generally in the open air, a rapid move may shortly take place, when the liberal use of insecticides will be attended with danger. Although the fruit from these trees will not ripen until late in the autumn and fire-heat may not be needed, the fact that glass excludes the cleansing influence of the elements renders a thorough putting in order absolutely necessary. When this work is finished, the roots, if inside, will require a thorough soaking, and all the air

practicable must be admitted night and day. As solar heat increases and the buds become prominent and tempting to feathered friends, nets must be cast over the ventilators to prevent them from taking more than their share, but not until the blossoms begin to open will it be necessary to regulate the temperature. If the potting of furnished pyramids has been delayed by the weather, the trees must be allowed to remain laid in until it becomes milder. Then they may be lifted and placed in their fruiting pots, but, bearing in mind that much valuable time has been lost, they must not be expected to do much this year. Such being the case, unless a cold late house is at command, the best place for the summer will be found in the plunging ground out-of-doors.

GARDEN FLORA.

PLATE 580.

THE TREE PÆONY.

(WITH A COLOURED FIGURE OF PÆONIA MOUTAN REINE ELIZABETH.*)

A HUNDRED years have elapsed since the first living plant of the Tree Pæony was brought to this country from the gardens at Canton, and the honour of introducing it is due to Sir Joseph Banks. He had heard of its existence in Chinese gardens, and engaged a Mr. Duncan, who was attached to the East India Company's service, to obtain plants of it and send them home. Through Mr. Duncan's exertions the first live Moutan was received at Kew in 1787. For 1400 years the Tree Pæony is said to have been cultivated by the Chinese, who would have us believe that it originated from *Pæonia albiflora*, also a native of China. But such is not a fact, for it is proved beyond doubt that the Moutan is a true wild shrub, indigenous not to the southern parts of China, but to the northern provinces of Ho-Nan and Nan-Kin, where it inhabits mountainous regions and whence it was brought to Canton. For countless generations Chinese gardeners have occupied themselves in raising new varieties of Hoa-Ouang (the king of flowers), as they call this Pæony, and fifty years ago Anderson asserted that they possessed no fewer than 250 distinct



Poppy-flowered Tree Pæony (*Pæonia Moutan papaveracea*.)

sorts representing all the colours which Pæonies are capable of producing. They have crimson of every shade to nearly black, whites, yellows, purples, roses, and even blues. These are said to be all self-coloured, for, singularly enough, the Chinese reject variegated flowers, regarding them as unnatural. Some varieties they call *Pé-Leang-Kin* (a hundred ounces of gold), in allusion to their great value. In 1794 a second variety was introduced by a Mr. Greville; this was named *rosea*, the flowers being of a deep rose-pink colour, while those of Sir Joseph Bank's plant were blush-pink and double. In 1806 a third

* Drawn for THE GARDEN in the Hale Farm Nursery, Tottenham, in June last.



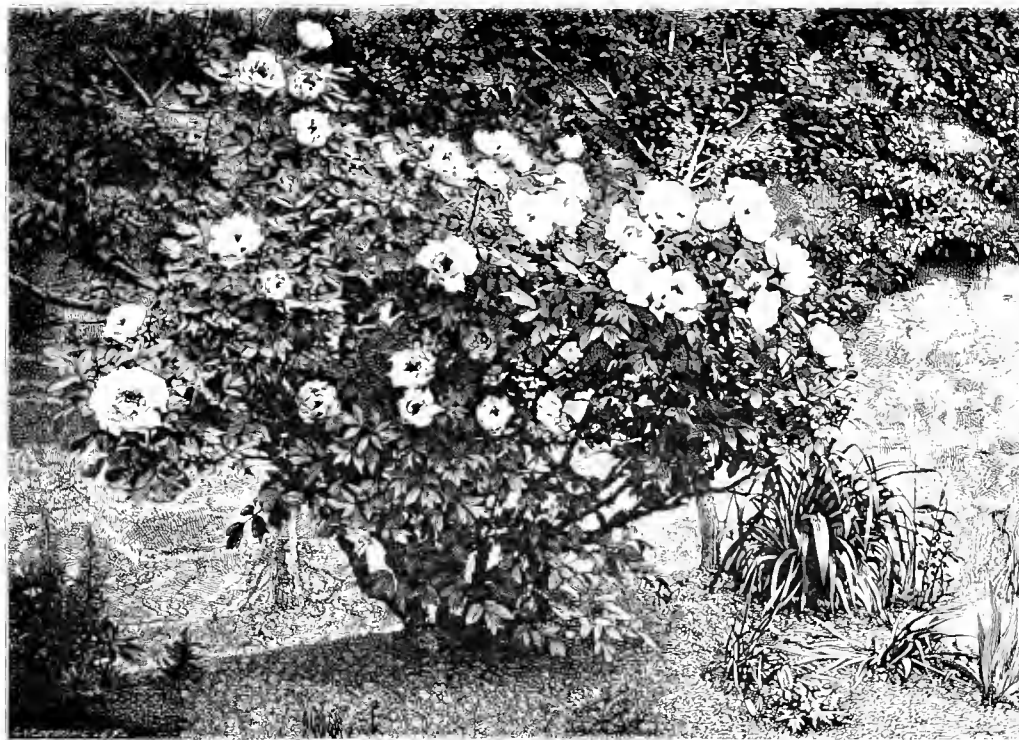
PEONIA MOUTAN VAR. REINE ELIZABETH

variety was introduced, and this, because its flowers were single, and still is considered to be the type or wild plant. It was named papaveracea, the Poppy-flowered Peony, on account of the capsule being like that of a Poppy by reason of the seed vessels being enclosed in a membranous disc. The accompanying woodcut well illustrates this variety, which is white with heavy crimson blotches at the bases of the petals. The above varieties, viz., Banksi, rosea, and papaveracea, are all that are described in Anderson's "Monograph of the Genus Paeonia," given in vol. vi. of the Horticultural Society's Transactions (1838), but in Loudon's "Arboretum Britannicum" (1854) a dozen are described, all bearing Latin names. There are, besides the three just named, Humel, double blush; variegata, white streaked with violet and purple; rosea semi-plena, rosea plena, Rawesi, single pale pink; carnea plena, double flesh coloured; albida plena, double white, flushed with mauve;

- LIST OF SELECT VARIETIES.
- | | |
|---|---|
| Argueil de Hong Kong, crimson purple | Madame Stuart Low, salmon-red |
| Athlete, deep rose pink | Marie Ruyter, rose-pink, large |
| Blanche de Noisette, white bluish tinted | Osiris, very dark crimson |
| Bijou de Chiusim, pure paper white | Oberon Maria, pale pink |
| Carolina, pale salmon | Prince Trombetsky, deep lilac or violet |
| Cobnet M de dm, deep violet-purple | Rezia, bright aurantia |
| Comte de Flaudre, rose-pink | Reine Elizabeth, deep crimson-pink; one of the best |
| Confusions, deep pink | Robert Fortune, bright crimson, semi-double |
| Farezza, pale lilac striped | Rossini, semi-double, bright rose |
| Fragrans maxima fl. pl. | Saint ring, deep blood red |
| Imperatrice Josephine, rich rose, splashed with red | Sauveur de Madame Knerr, blush-pink |
| Lambertine, blush pink and violet | Triomphe de Madines, violet and crimson, large |
| Lactea, one of the best whites | Triomphe de Vanterfanden, rich violet |
| Louise Moncharlet, flesh pink | Vandermaech, pale blush |
| Lord Macartney, cherry crimson | Van Houtter, carmine |
| Madame de Vetry, bright rose | Zenobia, purple-crimson |
| Madame Laffay, deep rose | |

POSITION AND CULTURE.—The selection of the best spot in the open garden for a Tree Peony is

tion, then the best thing to do is to screen it at once from the morning sun, so that the plant may thaw gradually. In some districts no protection is necessary, and this is the case principally in upland gardens, which are colder than those in the valleys, and, therefore, vegetation does not start so early. In old days when Tree Peonies were as much thought of as Cattleys are now, all manner of devices were resorted to in order to tide the plants safely over our treacherous springs, for it was found that scarcely any amount of cold during the dead of winter harmed them. In many parts of the country, indeed, they came unscathed through the terrible winter of 1837 and 1838. Some bygone Peony fanciers used to plant on the north side of hills, so as to retard growth, but such situations had a counteracting effect, inasmuch as the young wood did not ripen, through want of sufficient sunshine. As to position, it is generally admitted that Peonies look best when isolated on a lawn, not far away from a shrubbery or a group of some sort, but so situated that they appear to have some connection with one or the other, as the case may be. Being deciduous, a spot should be chosen for them where they would be backed up by Evergreens for the sake of the winter effect.



A Tree Peony in a Scotch garden, Kevoek Bank, Lasswade.

The Tree Peony may be forced into bloom in early spring with very little trouble, but in order to get good bloom the forcing must be gentle. The plants set aside for forcing should be strong and well rooted, and the shoots should be well ripened. They will, of course, be in pots and in cold frames. About the latter part of January or the beginning of February a few plants should be taken into a house slightly heated; for a week or so they will require no attention, as the buds will be dormant, but as soon as the latter begin to show signs of swelling care must be taken that the plants do not suffer from drought. At this stage they may be taken to a house where the mean temperature ranges from 50° to 55°, and in this atmosphere the buds will swell quickly and the shoots lengthen, until about the end of February or early in March they will be showing bloom. During this slight forcing period the plants should be syringed daily if the atmosphere feels dry, but when in bloom a dry atmosphere is best in order to preserve the flowering period as long as possible, which, in a cool conservatory, will extend over several weeks when well flowered. They make noble

vase ornaments for rooms; a fair-sized plant will carry from six to a dozen blooms and buds. All the sorts may be forced equally well, but those which have the brightest or the most delicate colours are the best. Such sorts as Reine Elizabeth, Madame de Vetry, Madame Laffay, Lactea, Louise Moncharlet, and Lord Macartney are particularly suitable for forcing.

The best soil for Tree Peonies is a deep loam enriched by manure. It is most important to plant at the outset well, for no plant resents root interference when once established so much as the Tree Peony, and that is why it is so difficult to transplant it without ill effects. After fixing on a spot for planting it out permanently, a hole should be dug quite 4 feet wide and a yard in depth, removing all the soil if not a good loam. Put a good layer of rubble at the bottom for drainage, and then, with a layer of turfy sods on the top of this, put in the soil; after a week's

a matter of more importance than any subsequent attention which it requires. It must have an open spot away from the shade or shelter of trees; but, if possible, it should be sheltered from north and east winds, which, as a rule, prevail in spring, about the time when the plant is pushing out its new growths. It should be the aim of the cultivator to retard the growth as much as he can, and if the locality is naturally warm, the Tree Peony will require particular attention, otherwise a sharp frost in April will destroy both growth and bloom. It is the practice in many places, and a very good one, to protect the plants by a movable glass light, or by fitting up around them a temporary framework on which is placed muslin, canvas, or other thin protecting material during the most critical time, that is, from the time when the young shoots begin to lengthen till all fear of frosts is over. If a plant is overtaken by frost, without protec-

tion, then the best thing to do is to screen it at once from the morning sun, so that the plant may thaw gradually. In some districts no protection is necessary, and this is the case principally in upland gardens, which are colder than those in the valleys, and, therefore, vegetation does not start so early. In old days when Tree Peonies were as much thought of as Cattleys are now, all manner of devices were resorted to in order to tide the plants safely over our treacherous springs, for it was found that scarcely any amount of cold during the dead of winter harmed them. In many parts of the country, indeed, they came unscathed through the terrible winter of 1837 and 1838. Some bygone Peony fanciers used to plant on the north side of hills, so as to retard growth, but such situations had a counteracting effect, inasmuch as the young wood did not ripen, through want of sufficient sunshine. As to position, it is generally admitted that Peonies look best when isolated on a lawn, not far away from a shrubbery or a group of some sort, but so situated that they appear to have some connection with one or the other, as the case may be. Being deciduous, a spot should be chosen for them where they would be backed up by Evergreens for the sake of the winter effect.

interval, so as to allow the latter to settle, plant your Peony. The best, and in fact, the only time for planting is autumn, during September or October. Nursery plants are always kept in pots, and at planting time the roots should be disentangled and spread out. Being of slow growth, Tree Peonies require no pruning, except removing dead shoots. The finest specimens in this country at the present time are from 6 feet to 8 feet high and as much in diameter, but these plants are very old, some of them having been planted thirty or forty years ago. Specimens such as these have been known to bear as many as 300 flowers in one season—a floral display such as one seldom witnesses. The accompanying illustration represents a large Tree Peony in a Scotch garden. Mr. Bashford, who sent us the photograph from which the engraving was made, writes concerning it as follows:—

In Midlothian there are some magnificent old-established specimens of Tree Peony. They seem to flourish in any fairly good soil—that usually found in well-kept gardens. In several localities the largest and handsomest trees grow on sloping banks of light and deep soil, well exposed to the sun, and protected from fierce winds. During the time they are in bloom their wealth of colour carries all before them. The illustration is that of a plant in the garden of Mr. W. M. Wardrop, of Kevoek Bank, Lasswade. The above plant had more than a hundred blooms out at one time, none less than 6 inches in diameter, of a lovely satiny flesh colour, beautifully relieved by foliage of exquisite harmony.

PROPAGATION.—The usual and best mode of increasing Tree Peonies is by grafting them on the fleshy roots of the herbaceous kinds, but they may be also raised from seed or multiplied by division of the root, by layers, by cuttings, and by budding. In grafting scions on roots, *P. albiflora* and hybrids from it are preferred, because they do not throw up suckers in the way in which the common *P. officinalis* and others do. The grafting should be done any time between August and the middle of March, but French propagators prefer to do it between the second week of July and the second week of August, in order that the union may take place before winter sets in. An expert propagator thus describes the operation: Select, he says, some good tubers of some herbaceous Peony, then slit each tuber from the crown downwards about 2 inches. Cut the scion in the shape of a wedge and insert it in the slit made in the tuber, taking care that the bark of both the tuber and scion fits exactly; then bind with bast and wax in the usual way. Put the grafted tubers in deep pots, cover with soil to the top of each tuber, and place the pots in a frame, which must be kept close and rather dry. If the operation is done in July or August, the scion will be united by September; by October the stock will have developed roots, so that in this way the plants are able to withstand the winter well in a cold frame. After they have made one season's growth under frame treatment they should be planted out and treated as established plants. This is the mode followed by the best growers in France, and is found to be the most satisfactory. Layering is another simple way of propagating Montans. If the previous year's shoots are tongued and pegged down firmly in autumn they will throw out roots the first year from each bud, and during the second year after layering may be safely removed from the stool. Propagation by budding and cuttings is also carried out, but it is found that plants raised from cuttings remain in a weak state for several years. Dividing the roots for increase of stock may be done any time during autumn, care being taken that each division carries a few fibrous roots. Seedling raising is not much practised in this country, because it

is seldom that seeds are thoroughly ripened, but in France where the climate is more suitable for seed-ripening, seedlings are raised with the view of obtaining new varieties. It is an interesting, though slow, process; the seeds take a year or eighteen months to germinate, and the seedlings flower when from five to seven years of age.

W. G.

KITCHEN GARDEN.

W. WILDSMITH.

CULTURE OF EARLY VEGETABLES.

ASPARAGUS ROOTS FOR FORCING.—It is necessary, where a succession of forced Asparagus has to be kept up from the end of November till it can be obtained in the open ground, to provide a large number of plants for the purpose. It is, I think, generally admitted that Conover's Colossal has more vigour early in the season than the common variety, and where the principle is adopted of raising a special stock of plants for forcing without interfering with established beds, a variety that displays early vigour is valuable for that purpose. Where there is space under glass, it is an advantage to sow the seeds in boxes early in February, and bring them gently on in heat, pricking the young plants off either into single pots or other boxes when large enough, and planting out finally when hardened off early in May. It would not cost more to raise Asparagus plants in this way than it does the same number of bedding plants, and it would shorten their probationary period considerably. Another matter in connection with Asparagus culture may be usefully noted at this season, and that is, to place any spare frames and lights on one or more of the strongest beds, to encourage the crowns to start early, simply by utilising the sun's warmth in connection with the shelter afforded. This will fill up the blank which usually occurs between the last of the forced produce and the first from the open ground.

CAULIFLOWERS IN HEAT.—It is always a good plan to sow a few Cauliflower seeds now in heat, and if pricked singly into small pots and grown on in a light, warm house near the glass, hardened off and planted out in a warm, sheltered situation in April, they will not be much (if any) behind the plants raised in autumn, and in a general way they are more reliable, being less likely to bolt. The best forcing Cauliflower is Veitch's Forcing. It is not large, but it is very close and white, and turns in quickly. It forces very well in pots plunged in a bed of leaves in a low pit. Veitch's Autumn Giant Cauliflower is even more valuable early in August than it is later in autumn. Very often in a hot, dry time the other Cauliflowers are bolted and useless, but the Giant never runs; but to come in so early as the beginning of August the seeds should be sown now in heat, the young plants pricked off, and kept under glass till strong enough to go out in April.

SPRING LETTUCCES.—The long spell of cold weather will check, if it does not injure, open-air Lettuces, and those who have the means might with advantage sow a box of Early Paris Market Cabbage Lettuce and place the box in a temperature of 55° to 60°, and whilst the seeds are germinating, or at least as soon as they are up, a bed of leaves may be made up, using just enough stable manure to bind the leaves together. On this bed 4 inches or 5 inches of soil may be placed, and the Lettuces pricked out 4 inches apart when large enough. Any temporary arrangements as regards covering will suffice to bring them on, though good frames and lights are best.

EARLY POTATOES IN POTS.—These succeed very well in 10 inch or 12-inch pots, two sets in each pot, or larger pots may be used, increasing the number of sets. In planting the Potatoes space should be left for earthing up when the tops are 6 inches high. It is better to do the moulding up at two or more times, giving the fresh compost

in the shape of top-dressings, and, in that case, the earthing-up will begin before the plants have made much growth, and will be completed when they have attained the height named. The pots as soon as the Potato tops emerge from the soil should occupy a light position in a house or pit where the night temperature does not fall below 50°. The nearer the glass they are, provided contact is avoided, the stronger the growth will be and the better the crop. Uncut sets are best, but only the best central crown eye should be permitted to start and form a stem. The pots should be drained by placing some large crocks over the hole in the bottom, and 2 inches of rough siftings from the potting bench over the crock to form a dry base, as anything like stagnation will check the growth of the young Potatoes and cause them to be close and waxy.

CELERY FOR SOUP IN SPRING.—It is not everyone who has the means of forcing Celery for flavouring purposes after the blanched crop has either been used or has bolted or decayed, but if a few seeds of a good hardy red kind are sown about the middle of April, and the plants pricked out on a west border without any special manuring 8 inches apart, very useful Celery for flavouring purposes will be obtained that will last the greater part of the summer, or at least until plants from the earliest beds are available. Celery is a native plant, and the late-sown unblanched plants are hardy enough, but to make sure, a few dry Oak leaves may be scattered among them when severe frosts sets in.

EARLY GREEN LONG-POD BEANS.—I should think scarcely anyone now plants the Early Mazagan, the Early Long-pod being so much superior to it in quality, and besides it is a better cropper. The Early Long-pod may be planted rather thickly in boxes, and placed in heat till 2 inches high, and then hardened off to be planted out in rows when the weather is suitable, sheltering them at first with branches till the end of February or beginning of March. Long-pod Beans transplant even better than Peas, and those who like Beans especially appreciate an early crop. E. HOBDDAY.

NOTES ON TOMATOES.

SEVENTY-SIX so-called varieties of Tomatoes were grown in the Michigan college gardens last year. There were several reasons for undertaking this experiment. There has been very little attention given to Tomato culture in scientific or experimental establishments, although the importance of the crop is very great. The varieties of Tomatoes, too, are now so numerous, and their individual merits so evenly praised, that the inexperienced cultivator is confused. The Tomato rot is also becoming a serious difficulty, and methods of training and culture need to be discussed.

THREE METHODS OF TRAINING were employed this year, and another method last year. All the experimental Tomatoes were tied to one, two, or three stakes about 4 feet high. This method has many disadvantages. It requires much labour to tie the plants, a labour which must be repeated at short intervals throughout the growing season. The Tomatoes do not ripen evenly and early, and it requires extraordinary time and labour to pick them from the dense mass of stems and foliage. Last year we laid old boards lengthwise along the rows and close to the plants, supporting them upon pieces of scantling or blocks laid upon the ground, and placed straw upon the boards. This method kept the Tomatoes clean, but it certainly caused the lower ripe Tomatoes to rot prematurely. In our market patch this year we adopted two sorts of racks. The first was a separate rack for each plant. A stake was driven on either side of the plant, about 15 inches from it, and leaning so as to make an angle of about twenty degrees with the perpendicular. Upon these stakes three cross-slats were nailed, in the manner of a ladder. The plant was allowed to lie upon the racks. It was found necessary to tie it, however, and even then branches slipped off or broke themselves

over the slats. The second of these racks was continuous throughout the row. About every 6 feet or 8 feet a stout stake was driven on either side of the row and 15 inches from the plant, the stakes when firmly driven standing some over a foot high. A strip of old board was nailed near the tops of the posts along either side of the row. Then edgings were tacked across from one side to the other, four about each plant and a foot apart. The plant now found itself growing up between the horizontal edgings, and as it began to lop the rack held it above the ground. Upon this simple rack the Tomatoes needed no tying nor training, and they spread themselves freely to the sunlight. The circulation of the air under the racks was so free, that there was no unusual danger from rot. This is decidedly the best rack which we have tried. We noticed, also, that the fruit ripened more uniformly here than on the plants which were tied to stakes.

TOMATO ROT.—Green Tomatoes have rotted to an unusual extent this year. The rot first appears as a slight spotty discoloration about the apex of the Tomato, gradually extending and becoming darker until the whole top of the fruit sinks in. The disease attacks the fruits at any time after they are a third or quarter grown. It threatens to become a serious obstacle to Tomato growing. Tomato rot is, of course, of fungus origin. The microscope reveals abundance of bacteria and the mycelium of some higher fungus, as well as occasional isolated septate spores. As yet we know of no remedy. The first preventive which suggests itself is to plant varieties which are least liable to attack. Some are of opinion that the fruits on the most vigorous plants are most liable to rot. Such has not been our observation. We occasionally observe plants in no way distinguishable from others which are nearly exempt while all the contiguous plants are much affected. The per cent. of disease is ninety or above in Emery, Paragon, Rochester, Livingston's Acme, Market Champion, Golden Queen, Perfection, and Livingston's Favourite, while among the market varieties the per cent. is nothing or unimportant in Prize Belle, Advance, Mikado, Yellow Vietor, Red Valencia Cluster, Precursor, Fulton Market, Golden Trophy, Island Beauty, Boston Market, Golden Queen, Conqueror, Gen. Grant, Cardinal, Trophy, Criterion, Canada Vietor, The Cook's Favourite, Hundred Days, and Alpha. The affected varieties were scattered among others, causing them to appear as if especially liable to attack, but further observations must be made before definite conclusions can be arrived at. It is singular that the angular varieties, the Cherry and Pear-shaped varieties and those immediately derived from them have been almost exempt from attack. The disease ceased to do much damage late in the season. It appears probable that rotation in cropping will prevent the disease to some extent.

PRODUCTIVENESS.—An average plant of each variety was pulled up when the first picking was well matured and the plant and its fruit were separately weighed. While this method of determining productiveness does not give the absolute weight of produce of each plant—many of the fruits being but partially grown—it nevertheless gives an accurate relative knowledge of the productiveness of varieties. The most prolific variety—the one which shows the greatest ratio of fruit to weight of plant—is not always the most profitable, even when earliness and quality are not to be considered; that is, the plant itself must not be too large, else the cost of training it will be too great. Other things being equal, the dwarfest plant is usually the most profitable. I expect that the same variety will vary much in productiveness in different years and under different treatment. In fact the same variety from different sources varied widely this year. The best ratios occurred in Mikado, Trophy, Canada Vietor, Hundred Days, Precursor, Livingston's Beauty, and Large Red Smooth Round.

VARIETIES.—The earliest varieties were Advance, Precursor, Boston Market, Tom Thumb, Conqueror, and The Cook's Favourite. These all

began to ripen about August 6. The early season was so very dry, that none of the varieties produced fruit so early as they should have done. The seeds were all sown in a forcing house March 18, and transplanted, ten of a kind, to the open ground June 7 and 8. It is probable, however, that small differences in earliness are not to be relied upon in estimating varietal characters. Careful experiments upon this point, running through three or four years, conducted at the New York experiment station, show great variations in the comparative earliness of varieties. Although the list of varieties as reduced contains some forty sorts, all the desirable kinds for general cultivation are not more than six. From our experience, I should select the following, viz.: Boston Market, Conqueror, Red Valencia Cluster or Queen, Trophy, Livingston's Beauty, Paragon. If the rot should continue to attack the Livingston's Beauty and Paragon to the same extent as this year, they will need to be discarded. The Trophy is apt to grow too irregular.

In order to determine if all seedsmen send out the same Tomato under the same name, we grew Paragons from nineteen sources. Although all these plants bore fruits which had most of the essential features of the Paragon, it was nevertheless an easy task to select from the patch whole plants which might have been taken to represent several different varieties. This fact proves the unfixity of varieties and the necessity there is for exercising caution in sending out new ones.

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EARLY CARROTS.

In most establishments a constant supply of old Carrots is needed, more especially for flavouring soups; but if these are supplemented by unbroken supplies of very young or small roots fresh from the ground, much more satisfaction will be given. From the late autumn to the early summer months the variety of choice vegetables is somewhat limited, and it is during that time when an occasional dish of small, deliciously tender Carrots is most appreciated. A little extra trouble must be taken in their production, but the expense entailed is comparatively trifling. One or two frames and slight hotbeds are needed in the production of early spring crops, though these can be soon dispensed with, and the later supplies may be drawn from the open ground. As early in January as possible a quantity of leaves and stable manure should be mixed, and thrown together into a large heap, and turned once or twice at intervals of about a fortnight, or when found to be heating strongly, thus getting rid of noxious gases, generated principally by the stable manure. If more leaves than manure are used, there is less need for such careful preparation, but if stable manure preponderates, or is wholly used, the beds must not be too quickly made up. We form our beds about 3 feet high at the back, and somewhat lower in the front, and rather wider than the frames to be placed upon them. The shallowest frames are most suitable, and these after being set on the bed may be partially filled with the shortest of the heating material, or if there is any danger of the bed heating too strongly, rotten manure would be best for the purpose. On this about 6 inches of fine sandy soil should be placed, nothing being more suitable than that obtained by sifting over a heap of old potting soil. When completed, the soil should be very near the glass, and in most instances the seed may be sown at once, though some prefer to wait till the soil is warmed. The seed may either be sown broadcast and covered with a little fine soil, or shallow drills can be quickly formed with the aid of a short measuring-rod pressed into the soil, or firmly worked backwards and forwards. In any case the seed ought to be sown thinly, or much thinning out will be needed subsequently. The drills should be drawn about 4 inches apart, and the Carrots may alternate with Radishes. The latter growing much the most quickly can be drawn long before the Carrots will require all the space. Radishes may also be grown with those sown broadcast. Although the early French Horn is the quickest grown Carrot, I yet prefer the Nantes Horn; this,

being available when nearly the size of Radishes, is usually of a better colour than the French variety, and yields a longer succession. In fact, we neither grow nor recommend any other variety for frames, warm borders, or late sowings. Wood's Frame is yet the most profitable early Radish, and by way of variety we also grow the Forcing Red and White Turnip and French Breakfast. After the seed is sown the frame is covered with litter for a few days or till the Radishes are coming through the soil, when they are covered at night only, and when the weather permits a little air is admitted during the warmest part of the day. This is necessary to keep the Radishes sturdy and thereby insure early bulbing. The Carrots are much later in germinating, and will not be materially checked in growth by the air given. In both cases the more thinly the seedlings are left in the rows the more quickly do they bulb. We leave each about 2 inches apart, and thin out according as they are fit for use, the last of the Carrots being usually large and handsome. While the Carrots are growing strongly plenty of air should be given in the daytime, the lights being drawn off on warm days and also when warm showers are falling. The Carrots require occasional gentle waterings with tepid water, and after pulling has commenced the frames may be wholly removed and the sides of the beds supported with stakes and boards. One two-light or three-light frame is sufficient to meet the requirements of most moderate-sized establishments, but where a town house has to be kept well supplied, a second and perhaps a third frame has of necessity to be sown at monthly intervals. In this case very little bottom heat is needed, or it may be dispensed with altogether. In very many gardens frames cannot be spared for vegetable forcing, but in spite of this it is yet possible to have a good supply of

EARLY CARROTS WITHOUT GLASS.—Some time in February or early in March, a good-sized heap of heating material, or, say, a mixture of fresh stable manure and leaves, with an equal quantity of partially spent linings or early hotbed material, may be collected. If a small quantity of hotbed material only is available, then a small bed should be formed, this being from 2 feet to 3 feet high at the back, with a gentle slope to the front. On this a rough board frame may be placed, and kept in position by tall upright stakes driven into the hotbed, and these stakes also serve for supporting any protecting material that may be used in the form of mats, and perhaps some fish netting to preserve the Radish seed from birds. From 6 inches to 9 inches of good light sandy soil should be levelled over the surface of the bed, and the seed can then be sown as advised for the frames. The young plants may be considerably forwarded by protecting them from cold winds and late frosts, but even without any protection and with very little attention, they will be considerably ahead and much superior to any raised on sunny borders. It is really surprising what a number of dishes a bed about 6 feet by 4 feet will produce, giving more pleasure perhaps than any other vegetable-growing corner in the garden. It is from such beds as these that some of the prettiest dishes are drawn for the July and early August shows. If fewer Radishes are grown, these outside beds are also available for raising early Lettuce and Celery plants, and perhaps a few Brussels Sprouts and Autumn Giant Cauliflower. In such cases the seed must be sown thinly, thinning out be well attended to, and the plants be pricked out on a warm border before they smother the Carrots among which they are raised. Failing a hotbed of any kind, one of the warmest corners in the garden may well be devoted to early Carrots. This should be dug early in the winter, and as soon as workable, or, say, any time during March, a liberal dressing of leaf soil, common peat, or old potting soil be forked in and well mixed with the garden soil. A light sandy soil invariably produces the earliest and cleanest Carrots, and if a corner is specially prepared, this may annually be given up to them. In large gardens a good-sized border ought to be devoted to early Carrots, the seed being sown in shallow drills 9 inches apart as early in March as the state of the ground permits. From such a border we last season commenced drawing in close succession to a second frame, and, incredible as it may appear, we have continued to pull two or three times a week

ever since, plenty being still available. Only Nantes Horn was sown, and this valuable sort, if very lightly thinned at the outset, seems capable of renewing growth according as the larger roots are removed. The cook prefers it to any other. It is also the best for sowing in June and July in the open or in frames for the purpose of affording a winter supply of young tender roots, these being protected from severe frosts and drawn as required.

THE GENERAL CARROT CROP is frequently too large as regards size of roots for the kitchen, and is better fitted for the stables. On some soils it is a difficult matter to prevent coarseness, and we found it so for a time. Latterly we have not sown so early as heretofore, and have not thinned out so freely. We grow two or three where one was obtained before, and these are smaller and of a better colour and quality accordingly. Neither a heavy nor a very rich soil is suitable for the production of good Carrots. If it has been well manured for a previous crop, this will usually suffice for the Carrots also. Heavy land will be greatly improved by being roughly dug early in the winter, and again forked over or turned early in March, in which month the drying winds and sunshine will thoroughly bake it, the April showers completing the disintegration. On light soils we would sow the seed late in March or early in April, but on strong lands the middle, or even the end, of April will be found quite early enough for sowing. If the ground cannot be got into good working condition to the depth of at least 6 inches, it is frequently advisable to wait till it can, as clean, straight roots ought not to be expected from ground broken fine on the surface only. The drills to be drawn 12 inches apart, and after the seed is sown thinly it should be covered with the soil if this is in a fine condition, otherwise it is most advisable to cover it with fine sifted soil, which can usually be obtained from most frame grounds or back yards. Where the Carrot maggot is troublesome, a liberal sprinkling of wood ashes should be sown with the seed, and, failing this, soot may be substituted, plenty of this being also stirred into the surface in showery weather while yet the Carrots are small. If sand is well mixed with the seed it can be sown thinly, and the process of thinning out much simplified. The thinning should be done before the plants spoil each other, the Intermediate, Long Surrey, and Altrincham being finally left about 6 inches apart, and the Nantes Horn still more thickly, the rows of this variety being not more than 10 inches apart. All may be drawn in October or early in November, have their tops cut to near the roots, and be stored in a cool shed, biggest end outwards, and among either sand or dry, light soil. Veitch's Matchless, or the New Intermediate, is a decided improvement on James's Intermediate, more especially as regards the colour, and this novelty ought to quite supersede the older form. Both Altrincham and Long Surrey are good keepers, and valuable accordingly. It is my belief that Nantes Horn can be had as late as any, and I strongly recommend it for late as well as early crops.

W. I.

KITCHEN GARDEN NOTES.

TRENCHING.—As showing the severity of the weather as far south as Northants, we have this week, in order to find employment for our regular staff of men, had to shovel the snow off the ground in order that we might continue the trenching that was started before the storm commenced; and fortunately, owing to there having been but little frost before the snow fell, the ground was found to be soft and easily worked. Our plan is, as each trench is completed, to throw the snow from the untrenched ground over that which is finished, but only clearing so far as the next trench is to extend. Thus, however hard the frost may be, the snow prevents it from taking hold of the soil, and by taking the precaution to cover up the open trench at night with mats, we are able to keep on with the work continuously. The plot now being trenched is intended for a main crop of Peas, and we are therefore breaking it as deeply as the character of the subsoil will

allow. The latter consists of a sandy gravel; hence we do not bring this to the top, but break it up, and over it place a layer of long litter, on to which the top spit, or surface soil, is turned, and over this again is placed a layer of shorter manure; then comes the topmost layer of soil, which has reversed positions with that laid immediately over the long litter, and the process is complete. We invariably have a longer or shorter spell of dry, hot weather, but Peas planted in ground thus treated, and surface-mulched when they get into flower, rarely fail to give us satisfactory returns, and we have never occasion to resort to artificial watering; nor, in fact, do we water any other kitchen garden crop, except Celery and sometimes Cauliflower, and occasionally, too, a tit-bit of a crop that we require for a special purpose, and then we give manure water.

BRUSSELS SPROUTS.—This is the winter vegetable *par excellence* in all seasons, but during the present severity peculiarly so. It is about the hardiest of all the Cabbage tribe; in fact, with the exception of Curled Borecole or Kale, it is the only green vegetable that we can at present supply in quantity. Perhaps no vegetable crop better repays the labour of high cultivation than this does, and none is a greater failure if painstaking culture be not taken with it. In deep, rather stiff and rich soil, the plants if put out any time during March will attain a length of from 3 feet to 4 feet, thus giving abundant space for the free production of Sprouts. Short-stemmed Brussels Sprouts I look upon as capable of producing at most but half a crop, and on this account I would neither grow nor advise others to grow short-stemmed kinds. Why have but a gallon of Sprouts from a stem when from the same ground and the same amount of labour it is possible to have a peck? By constant selection of the longest-stemmed, combined with the hardiest buttons or sprouts for seeding purposes, we are in possession of a strain, that even in but moderately good ground attains a yard in height with sprouts from the ground-line to the top. We shall sow in a day or two, in boxes filled with light loam, which will be placed in a cool Peach house to germinate. The seedlings will be kept well up to the light, and as plenty of air will be given to the Peach trees, this will ensure sturdy growth. As soon as they can be handled and before the roots get entangled together they will be pricked out, either in a cold frame or in shallow boxes filled with leaf soil and loam; about the end of March they will be ready for planting in the open ground in deep drills, which at first form a shelter from cutting winds, and as the plants grow and the soil is levelled down there is a good foundation of soil to keep them firm till such time as the usual ridging up is needed. I ought to add that the plants are a yard apart in the row, and that the rows are 4 feet asunder. Small hard sprouts are generally preferred to large ones, but as regards quality or flavour I have not yet discerned any difference between the two. As appearances, however, always count for something, the smallest we reserve for the dining-room and the largest for the servants' hall, in which they are just as highly appreciated. Some few years since we used to sow the seed thinly in drills where they were intended to remain, and had excellent success, but slugs and grubs at last got too many for us, and therefore the practice was given up in favour of the plan just named. For the benefit of anyone who may be desirous of trying this method, I may say that the drills were drawn rather deeply, the distance apart the same as above stated, and then 2 inches of sifted soil—loam, leaf soil, and a little soot—were put along the entire length of the drills; the seed was then sown thinly and covered with more of the same fine soil. Thinning out was not done till we felt pretty sure that slugs would not injure them, and when finally thinned, more fine soil was placed round the stems of any that seemed weakly or that bent out of the perpendicular, and eventually the drills were filled into the ground-line, and till this was done our anxiety as to the depredation of slugs and grubs did not end.

CAULIFLOWERS.—Having some fear that this harsh winter will prove fatal to a large portion of the autumn-sown plants, we have made a sowing in pans and placed them in warmth to be pricked out in frames as soon as they are 2 inches high. Broccoli are being hardly hit, and the more tender sorts will be killed outright; therefore, early Cauliflowers will be doubly valuable. If frame room can be spared to admit of their being pricked out 4 inches apart, so that they can be transferred with good balls of earth to a warm border, the probability is that they will turn in quite as early as autumn-sown plants. The earliest varieties are, Extra Early Forcing, First Crop, and Snowball, and as a succession to these varieties there are none better than Early London and Dwarf Erfurt. The first named varieties are so small and dwarf, that they need not be planted more than a foot apart each way; but the last named kinds require double that space.

SEAKALE is also likely to be in great demand; the suddenness of the storm found us unprepared with roots to succeed those already in forcing quarters, but, thanks to the snow for keeping the frost out of the ground, we have managed to dig up a sufficiency for present requirements. The warmth and darkness of a Mushroom house make it the best of all places in which to force Seakale; but in the absence of such a place, plant the roots thickly together in large pots, cover them over with Seakale pots, and place them in warm corners in the houses. If a sack or mat be laid over the pots to exclude light, the Kale will be as well blanched as that which is grown in the darkest room. We reserve the small clean roots of all that have been forced for making fresh plantations at the end of the forcing season, and the roots meanwhile are heeled in under the shelter of a wall.

SPINACH.—Our winter plot of this is a complete failure. The plants grew away most satisfactorily, and we had gathered some half-dozen dishes when they began to die off most mysteriously; a sort of canker attacked the roots, and on examination with a microscope there were to be seen myriads of insects, so small as to be undiscernible without the use of a powerful magnifying lens. A good dressing of soot and fresh slaked lime was given, but all to no purpose, as nearly every plant dwindled away. We hear from several quarters that this crop is a failure; therefore our experience is not singular. Precautionary measures will be taken another season to ward off the disease, by applying a free dressing of soot, fresh lime, or a smaller proportion of gas-lime when preparing the ground for the crop. We shall make a sowing of the round-seeded variety on the first favourable opportunity, our usual position for Spinach throughout the summer being in single lines between rows of Peas.

FLOWER GARDEN.

WHITE DAFFODIL TRIAL.

MR. BURBIDGE still holds a brief for Chiswick, but rather ignores my argument, which still seems to me only reasonable, that the proposers of Chiswick should demonstrate its suitability. Let me repeat that what is required is not a place where white Daffodils will live, but one where they will flourish so happily as to show all their delicate shades of difference. It will much surprise me if our friend Mr. Walker decides that they are likely to display their characters to this perfection at Chiswick or elsewhere in the near neighbourhood of London. I was not aware that the trial was to be for the sake of "affording satisfaction to the Narcissus-loving public generally." Surely to that public one white Daffodil is the same as another, only rather more so! The trial, I took it, was for the satisfaction of a comparatively small number of the more attentive students of these plants. Mr. Burbidge misunderstands me in his remarks about the necessity of self-denial. If, after imparting to friends, I have only some half-dozen bulbs of a little known variety left, I do not think

I am indulging myself, but furthering knowledge, if I keep them where they grow so well until I have looked at them long enough and carefully enough, at all events, until I hear of some place where they will do as well or better. Mr. Burbidge knows that we can form a judgment from six plants where we cannot from one or two. I had not dreamed that there were so many kinds of white Daffodil in existence as Mr. Burbidge's, which require twenty-two years for their arrangement. And, he says, Mr. Hartland has still more. Let us hope we may have descriptions and figures of them from time to time. Two springs, I think, will about suffice for sorting mine, although I had fancied Mr. Hartland had only one, a very pretty white minor, not possessed by me.—G. H. ENGLEHEART.

The Royal Horticultural Society's garden at Chiswick has for more than half a century been a place for experimental trials of garden plants, and there much useful work has been accomplished. As regards white Daffodils, the conditions requisite for their successful culture can certainly be found at Chiswick, but a sub-committee, including Miss White and Mr. Engleheart, should be appointed to select a spot, with power to instruct as to the depth of Banstead loam to be used and other details of culture that may appear to be necessary, and one or more of the committee should attend to the planting. The quantity of bulbs will not be great; a small space will therefore suffice, and if thought desirable a movable frame might be used, or boards nailed to posts close to the ground, so that the soil might be raised above the general level, if considered an advantage. Instead of three bulbs of a sort I would suggest that one good bulb of each kind should be sent, as many amateurs, &c., might not be able conveniently to spare three bulbs, but could send one bulb each of many sorts. From what Mr. Burbidge and others write, if Ireland puts her forces in the field, England will be nowhere numerically; still we must do our best not to be too far behind. Mr. Wolley Dod will, no doubt, send his albino pseudo-Narcissus. I may be able to contribute in this line also; to these I will add the white Daffodils raised by Mr. Edward Leeds and Mr. Backhouse, and the four sorts which I suppose to be those recorded by Haworth, with any others I may possess. If the proposed trial does not fall through, I should suggest to the planting committee to provide for annual additions, and if we find white Daffodils a success, we may follow up with two-coloured and self yellows, incomparabilis, &c. Mr. Buxton, who first collected the white Daffodil of the Val d'Arras, and who has been many times over the ground, could, no doubt, give valuable information as to whether it grows in hollows, on the side of the hill, or amongst brushwood, while Mr. Maw, who followed Mr. Buxton, and, no doubt, took a more scientific view of the plant and its surroundings, might add a great deal of valuable information, not only as regards the requirements of this Narcissus, but others he has found at various times and studied them in their native habitat.—P. BARR.

Early history of Chrysanthemums.—One of the earliest papers on the Chinese Chrysanthemum of which I have any record is that in Paxton's "Magazine of Botany," vol. 1, p. 187 (1834). The history there reprinted is from a paper read in June, 1828, before the Vale of Evesham Horticultural Society by the president, Mr. E. Rudge, and, apart from the early history as given below, there are cultural details of the time, which are now obsolete. To a digest of Mr. Rudge's paper a list of fifty-three varieties is appended. Haworth's classification of the varieties then known appears in another place in THE GARDEN of Jan. 17, 1866, in 1753, first published this plant as a species, with two of its varieties, under the name of *Chrysanthemum indicum*, in his first edition of the "Species Plantarum"; the same plant, under the name of *Matricaria*, having been given by Kämpfer, in 1712, in his account of the plants of Japan, where it is cultivated by the natives in their gardens, and he describes eight double varieties of the genus of various colours. It is also mentioned by Breynius, Plukenet, Klode, and Petiver. Thunberg mentions in his "Flora Japonica," published in 1784 that it grows spontaneously near Nagasaki and other places in Japan; and Loureiro, in his "Flora of Cochinchina," mentions it as one of the plants of that country. Rumphius, in his very elaborate work on the "Plants of Aumoyna," published in 1750, is more particular

in his information respecting this plant than any preceding author. The Chinese, by whom it is held in high estimation, pay much attention to its culture; they keep it in pots and jars, placing it before the windows of their apartments, and decorate their tables with it at their entertainments; on which occasions he who produces the largest flower is considered as conferring the greatest honour on his guests. The varieties of this plant were introduced to Britain from France in 1790, having been brought from China to Marseilles in 1789. Before 1808, eight new varieties were introduced from China by Sir Abraham Hume and Mr. Evans. Between the years 1810 and 1823 seventeen new varieties were added to the list.—F. W. GERRIDGE.

IXIAS AND OTHER CAPE BULBS.

IXIAS in early summer are welcome, even though there is at that season no lack of beautiful flowers. They are so graceful, bright, and varied, that they are different from everything else, and anyone who has a spare frame could not put it to a better use than fitting it in autumn with Ixias or other Cape bulbs, such as those of Sparaxis and Babianas. Speaking generally, Ixias require frame culture, but there are many localities in the southern counties where even this protection is unnecessary. We have seen very fine crops of Ixia flowers at the foot of a warm south wall in a Sussex garden, the only attention bestowed on them being a few Spruce boughs placed over their tender growths in spring, when biting east winds prevailed. Both unprotected and in frames, the Ixias and their allies must have a light sandy soil in which to grow, and it must be well



Flowers of Ixias; colours various.

drained, so as not to retain moisture to make it cold in winter. They must also have an open spot where they can catch every ray of the winter's sun, for it is in winter and early spring when these Cape bulbs are in their most active growth, and that is why they are rarely seen so finely grown as they ought to be. A mistake too often made is planting them too late, as is also frequently done in the case of Dutch bulbs. But Dutch bulbs may be planted after Christmas with good results, though a wise grower knows that very much better results may be expected if they are planted during October or November. In the case of Ixias, Sparaxis, Babianas, they must be planted in September, because, naturally, they have then ended their resting period, and have begun to start again into active growth. The bulbs of these plants may be bought in August and September, and as soon as received they should be planted either in frames, warm borders, or potted, for with a little attention they can be grown to perfection in pots, and they are then valuable for conservatory decoration, as they can be forced into bloom as early as March. Not too much heat and all the light possible are what forced Ixias require. In open borders they need great care in spring when their tender foliage is above ground, or cold winds will soon injure it. Many varieties of Ixias may now be bought, but these have all sprung from comparatively few

species, and some of the original species introduced 150 years ago are still as beautiful as the hybrids. Among these crateroides, columellaris, fucata, flexuosa, and the singular sea-green viridiflora are notable instances. A dozen of the best sorts of Ixia would include the following: Aurantiaca major, yellow; Aurora, bright pink; Diana, white and purple; Garibaldi, rose and purple; Golden Drop, yellow; Hector, rose, black centre; Vulcan, crimson; Wonder, rose-pink; Ida, orange and crimson; crateroides, cherry-rose; Brutus, maroon-crimson; columellaris, bright red. This selection would represent all the colours to be found among the Ixias, and when in bloom would produce quite a glow of bright colours, lasting in perfection for several weeks, and invaluable for embellishing vases in a cut state. W. G.

Double Peach-leaved Campanula.—I do not know whether this hardy flower will bear forcing or not, but it certainly is much improved by being grown under glass during the flowering period. In the open air the blooms are apt to get soiled, and sometimes quite ruined by inclement weather. They are so double, that they soon suffer from excess of atmospheric humidity, but in a cool house they come as pure and well formed as those of the double white Camellia. When this Campanula is flowered in pots, the plants should be liberally grown in the open ground during the summer, and good sized clumps of it are more satisfactory than small plants. In some soils there seems to be a difficulty in keeping this Campanula in a robust condition. It is apt to dwindle and ultimately die out. This will happen in light, porous soils, the plants appearing not to be able to recover after having bloomed freely. There is evidently an element of tenderness in this Peach-leaved Campanula which only liberal culture can drive out; consequently, when the plants seem to have come into a more or less feeble condition they should get a top-dressing of rotten manure. Where this does not effect the desired change, replant in two or three spadefuls of good loam. This will soon work a great change in the condition of the plants.—J. C. B.

Christmas Roses in 1887.—The long expected hey-day of the Christmas Roses has come, and for once, I am sorry to say, they do not come up to our expectation, or quite do away with the "winter of our discontent." I do not remember to have seen all three varieties of the niger section, of which alone I write, so unsatisfactory. Niger maximus commenced to flower in October, as usual, but the blooms were few, misshapen, and unattractive all through the season. The ordinary *n. niger* is almost a blank as regards blooms, and what there are appear unable to expand. The gem of the family, *n. n. angustifolius*, has a sufficiency of flowers, and they are fair in size and purity; but the stems are so short that the plant is ineffective, and quite out of character, and the blooms greatly lessened in value for cutting, as they are so difficult to arrange. The only form of Christmas Rose which approaches tolerably the excellence of other years is Mr. Poe's superlative variety of maximus. What a noble presence it has! How it lifts up on high its broadly expanded saucer-shaped bloom, without trace of the rusty pink that disfigures the type! And how bravely does its broad disc of exquisite green challenge comparison with the lordly Eucharis itself! I have not yet seen a flower this season on some other varieties of the niger section, such as Madame Foucard and some choice strains from Germany, but I can see enough to enable me to judge that they cannot come up to the mark. As Hellebores succeed very well here, and as they had not been lifted or had had any change of treatment, I can only account for their comparative failure by the drought from which we suffered in this district last summer. The caulescent section of Hellebores is late in starting into growth. I am not sorry for that, as there is more chance of their escaping severe frost. It is possible that other persons' experience of Christmas Roses this season is more happy than mine. But I fancy it is not so in the case of any who

suffered equally with me from drought last summer. — FREDERICK TYMONS, *Cloghran, Co. Dublin.*

EARLY FLOWERING AND HARDY PLANTS.

THE LACED POLYANTHUS is one of the earliest of old-fashioned flowers to show growth above ground, and therefore the soil in the pots must be kept moderately moist, even in January. It also likes plenty of air, and does not thrive well with the lights of the frame in which it is grown kept too close. Except during cold east winds, I remove the lights altogether; this keeps the flower-stems stiff and erect. The leaves, too, are also thus kept brittle and short-stemmed. Greenfly is very troublesome sometimes, and if it appears it is best at once to fumigate. I cannot, in our dry, exposed garden, do much with these Polyanthus out of doors; whereas in gardens of a different character they do well. Plants in the open air are apt to be thrown out of the ground by frosts; it is well whenever a thaw comes to see that the stems are not exposed; if they are, place some dry loam around them up to the leaves, or press them into the ground with the fingers. In mild weather they make considerable growth even in January.

THE AURICULA does not show much signs of growth before February; indeed, it will not start while it continues to freeze as it does at present. Those who grow their plants in frames should place a mat over them at night whenever sharp frost is likely to occur. We have had our plants this year frozen through, root and top, and have some hope that the woolly aphid will not stand the low temperature to which it has been exposed. In the early months of the year we place a set of plants in a heated house, and others are left out in a frame behind a north wall for late flowering. Auricula seeds may be sown about the end of January, or at least not later than the first days of February. A good compost for them is equal parts loam and leaf-mould, with a little white sand. Sow in 5-inch pots or small pans, of course well drained. Let the surface be quite level, and cover very lightly with finely-sifted soil. Place the pans under hand-lights or in frames, and trust to the seeds vegetating slowly without any artificial heat. We have raised thousands of seedlings in that way, and also by placing the pots in a house where only sufficient heat was applied to keep out frost. Nothing is gained by putting them in a heated house, and a hotbed is sometimes more of a hindrance than a help, as a strong bottom heat will oft-times destroy the seeds. Alpine Auriculas in the rock garden must not be interfered with during frost, but when the frost is gone, if time can be spared, remove all dead leaves, and treat them as has just been advised for outdoor Polyanthus.

CARNATIONS AND PICOTEES.—We are just mixing our compost for potting these. I have found them to succeed best when this is done two or even three months before it is used, as by that time the manure will have become more perfectly incorporated with the soil. I prefer keeping the latter out of doors to housing it in a dry potting shed. The plants are now in cold frames, and we do not trouble to cover them with mats, however severe the frost may be. It is a mistake to allow the soil in the pots to become too dry even at mid-winter, but it is a graver error to water when the weather is frosty. We pull the lights quite off the frames, unless we have rain or snow or sharp east winds prevail. The plants do not suffer from a low temperature, but frosty winds certainly do harm; the lights may be tilted a little at the side opposite that from which the wind is blowing. Outdoor plants look well; a foot in depth of snow has thawed over them and has made the leaves clean and bright. I wish our plants had been covered with snow during the prevalence of cold east winds in February last year; hundreds of tender plants were then destroyed. So far, this winter has been exactly suitable for seedlings and named hardy varieties out of doors, at least where they have been well covered with snow, which is by far their best protection.

PINKS, when in bloom, are very lovely, and though not so popular as Carnations and Picotees, they are more hardy, easier to propagate, and, all things considered, are to be preferred by those who dislike garden frames, or perhaps cannot afford them. Pinks do not, as a rule, suffer much in winter, but they are sometimes injured by east winds. Branches of common Braeken or of Spruce Fir stuck amongst them shelter them greatly from north and east winds. Foreign Pinks, such as Lord Lyons and the pure white varieties, of which Lady Blanche is the best, will succeed out of doors as well as the laced section, and make excellent border plants. We have single plants of them in borders as much as 3 feet in diameter. They have been allowed to grow four or five years in good soil. It would take some time to count the flowers which such clumps produce. They were turned out in borders after they had been forced. Plants intended for forcing are plunged in frames, from which a few are placed in forcing houses at intervals. They should be placed close to the glass, and the temperature ought not to be very high to begin with.

RANUNCULUSES.—These should be planted out next month; but I find from experience that they are apt to degenerate unless the ground for them is well prepared. It is best to do this in autumn before it has become too wet. By preparation is meant trenching it up about 18 inches deep, or two spits, and mixing with it some decayed manure. Good medium clayey loam does well for a subsoil, if anyone should be so enthusiastic as to obtain old turf with which to form the beds. I always obtain some dry refuse potting soil, siftings from the Orchid houses or the potting bench, and place 3 inches of it over the bed. In this the tubers are planted 2 inches deep, and it forms an excellent medium for them, even if the soil underneath is quite wet. Tubers of the Scotch type do not produce very vigorous plants, and need not be planted more than 3 inches apart. French tubers are much more vigorous, and between each of these 4 inches may be allowed, and the rows may be the same distance asunder.

TULIPS show no signs as yet of making growth above ground, owing to the continued cold weather since they were planted. For many years our Tulips have taken their chance out of doors without any protection whatever. The system practised in the north of placing bent hoops over the beds and covering them over with mats may be necessary to protect the more tender varieties both from wet and frost; but, so far during seven or eight years, though unprotected, we have not lost a bulb. A layer of straw or Fern litter placed over the beds is a good protector. It ought to be removed when the plants have grown an inch or so out of the ground. Tulips look rather yellow when the covering is removed, but they speedily assume their usual green appearance. The raising of seedlings is a most interesting occupation. No flowers are easier to fertilise than those of Tulips, and there is no difficulty in obtaining plenty of good seeds. The latter, if sown in April, sometimes produce good plants the same season. An old grower who had a quantity of good seeds saved from one variety sowed some in October, and no plants was the result. A few from the January sowing came up. Better success attended the February sowing, and April-sown seeds produced bulbs weighing 4 grains, while the heaviest bulbs from the February sowing weighed but 2 grains. As a rule, all the seedlings produce self-coloured flowers, though the seeds be saved from the best flamed or feathered flowers. They break into flame or feather subsequently at uncertain intervals. J. DOUGLAS.

Christmas Roses.—I am glad that Mr. Wilks can amplify my notice of the N. Italian Hellebore. Clearly we both saw the same kind. I can well remember that the plants in question were tall and had very large leaves of a fine deep green. As to the season it will probably help Mr. Archer-Hind to know that most of the flowers appeared to be past, and that almost all spring flowers were unusually late in Italy last year, owing to the exceptionally cold winter.—G. H. ENGLEHEART.

FERNS.

W. H. GOWER.

HARE'S-FOOT FERNS.

AN interesting and beautiful family of Ferns are the Davallias, or Hare's-foot Ferns, as they are popularly called, all of which are natives of the eastern hemisphere. The species of Ferns belonging to *Humata* and *Leneostegia* are frequently included in the genus *Davallia*, but these possess good and distinct generic differences and ought to be kept separate. The Hare's-foot Ferns form grand subjects for the decoration of both stove and greenhouse, i.e., when grown into good sized specimens, while not a few of them, owing to the persistent character of their fronds, are admirably adapted for backing to button-hole bouquets and for grouping with bunches of flowers in vases. *Davallias* have long creeping rhizomes, more or less densely clothed with chaffy scales and hairs; these rhizomes or root-stalks vary considerably both in size and colour. In the European species (*D. canariensis*), the typical plant, the scaly creeping stem has a striking resemblance to a hare's foot; hence its name. The different species belonging to this genus are all surface-rooting plants, and their stems creep over the soil in which they are placed or rockwork in quite a picturesque manner when allowed to extend uncontrolled; they also form fine masses in baskets. As to kinds, the following are some of the best:—

D. CANARIENSIS.—This, the typical species, is the only European representative of the genus. It is said to be common in the south of Spain, where it is found growing on tree stems and rocks near the seashore. It is also found in Madeira and Tenerife, and in the neighbourhood of Gibraltar. The root-stock or rhizome is very stout, clothed with large rusty-brown hairs, from which spring its broadly triangular fronds. These latter often measure some 18 inches or 2 feet in height and about a foot in breadth: they are many times divided into numerous narrow segments of a deep green hue; when fertile the spores form a conspicuous feature, being pale yellow. This species succeeds well either in stove or greenhouse.

D. FENICULACEA is a Fiji Island Fern, of a bold, yet refined appearance. The fronds are some 2 feet long, lanceolate in outline, and gracefully arched; they are four times divided, the segments being narrow and forked, leathery in texture, and very deep green in colour.

D. BULLATA.—This is known as the Squirrel's-foot Fern, from the rhizomes being slender and thickly covered with chestnut-brown scales and hairs. The fronds are from 1 foot to 18 inches high and bright green. The species is deciduous, losing the whole of its fronds in winter; it must not, therefore, be depended upon for decorative purposes at that season, but during summer it will thrive in a greenhouse. It comes from Java and Japan.

D. DIVARICATA.—This is a bold and handsome stove plant, producing from its stout, rusty-red root-stalks large arching fronds, some 3 feet or 4 feet long. They are broadly triangular in outline and three times divided, the segments being large, coriaceous in texture, and deep green. It comes from Northern India and various islands in the Malay Archipelago.

D. DISSECTA.—This is a Javanese plant. It has a stout root stock, densely clothed with reddish brown scales. The fronds are somewhat triangular in outline, four times divided into oblong, cuneate segments, which are stout in texture and bright green.

D. PLUMOSA.—This plant, which is abundant in the Fiji Islands, is one of the most elegant Ferns yet introduced. The root-stocks are creeping, and the fronds, which are between 2 feet and 3 feet in height, are broadly triangular in outline and some four times divided, the ultimate segments being small, linear, and bifid. The fronds are firm in texture and deep bright green. In the variety *plumosa* the fronds are

less triangular and the segments are set more closely together, giving the frond the appearance of a huge plume.

D. PENTAPHYLLO.—This is a dwarfier plant than the preceding. It bears fronds about a foot long, and they are usually divided into two or three pairs of side pinnae and a terminal one; the pinnae are from 3 inches to 6 inches in length, and about half an inch in breadth, leathery in texture, and of a deep glossy green. The breadth of the segments and the deep hue of the whole frond contrast strikingly with the more finely-cut leaves of other kinds. It comes from the Polynesian Islands.

D. SOLIDA.—The root-stock of this is very stout, and it has a thick covering of rusty red scales, from amongst which are produced large, bold, triangular fronds from 2 feet to 3 feet long, and about a foot or more wide; the segments are large and massive, leathery and deep green. A stove Fern of noble mien from various islands in the Indian Seas.

D. PYNDATA.—This is a greenhouse Fern; it bears fronds from 1 foot to 2 feet in length, and upwards of 6 inches broad; they are three or four times divided, coriaceous in texture, and deep green. It comes from Australia.

D. PALLIDA, better known in gardens under the name of *D. Mooreana*, is a plant which no stove should be without. Its arching fronds are evergreen, from 2 feet to 4 feet in length, deltoid in outline, and about four times divided; the first divisions are large and densely clothed with obtusely triangular segments, which, when young, are suffused with pink, changing with age into a pale straw-green colour. It comes from the South Sea Islands.

TREES AND SHRUBS.

W. GOLDRING.

THE DWARF OR SCRUB PINES.

THERE is a certain group of Pines that are generally regarded as the outcasts of the tribe. They are considered to be neither ornamental nor useful, or, as some books have it, "they are quite unfit for arboricultural purposes in this country." It is on behalf of these Scrub Pines that I would write, as I consider that they have a value, and that not unimportant in ornamental planting. There are, roughly calculating, about a dozen of these pigmy Pines, most of them being mountain trees, rarely growing to the height of an Apple tree. The chief of these Pines are *P. Banksiana*, *Bolanderi*, *montana*, *inops*, *muricata*, *tuberculata*, *Cembra*, *pumila*, and *contorta*, but some of these are only dwarfs when growing in alpine regions, while in a temperate climate they grow to middle-sized trees. But it is these alpine dwarfs that I think are worth the attention of the planter, for they serve a purpose for which few other trees or shrubs are adapted. For instance, there can be no better object for a bold knoll than the common mountain Pine (*P. montana*). It is of dense growth, and makes a huge spreading mass seldom more than 6 feet or 8 feet high, is never affected by our hardest winters, and is especially effective during winter. Even the driest or the stoniest bank may be clothed with the mountain Pine, for it seems to thrive on the poorest soils. It is the same as *P. Mughus*, and *P. Pumilio* is similar. The Labrador Pine (*P. Banksiana*), which grows among barren rocks in Labrador and other northern regions, is another that may be planted in company with *P. montana*, and the foliage being of a different colour will serve to give variety to a mass. Of larger growth, but still suitable for knoll or bank planting, is *P. tuberculata*, a Californian tree, which is, moreover, interesting on account of its bearing its cones in crowded clusters, which remain on the tree throughout its existence. It is not such a hardy mountaineer as the two previously mentioned. *P. Bolanderi* is also

Californian, and rarely grows above 15 feet high. It is most desirable because its foliage is of a peculiar bluish grey colour, which renders it very telling in a group. Like *tuberculata*, it should be indulged a little in respect to situation, though if placed high and dry on a knoll or bank there is little to fear on the point of tenderness. *P. contorta*, which Douglas sent home from Oregon about fifty years ago, has its value on account of its peculiar habit of growth, which is more conical than that of most others, but it only reaches a small tree size. The Jersey Pine, *P. inops*, is a particular favourite with me, the green of its leafage is so different from that of others, and there is such a picturesque twist about its branches which, though it would offend the eyes of lovers of the formal among trees, would to many be the chief object of beauty. *P. inops* grows wild on the barren hills of New Jersey, where it is called the Scrub Pine. It is hardy enough for planting south of London, but in the midlands and northward it would perhaps be too tender. There are others which I should term artificial dwarfs, such, for example, as the dwarf Weymouth Pine (*P. Strobus*), a pigmy that has no character about it, being dense, tufty, and too squatly to be of much value; still, it may be appropriately planted with the mountain Pines. The dwarf variety of the Swiss Stone Pine (*P. Cembra*) is a true wildling, but, like the last, too stunted to be good for much; but as it has a tendency to assume a creeping growth, it may be useful for bold planting among bold rocks. There are various other dwarf Pines, but those I have mentioned illustrate the use to which I would like to see them put. A pleasing group could be made of these dwarf Pines alone which would be different from any group composed of other material. One of the best illustrations of this grouping may be seen in the Kew arboretum, where all the Pines I have mentioned may be seen in characteristic growth. In making a group of them, the taller kinds, such as *tuberculata*, *contorta*, *inops*, should be so placed that a pleasing and varied sky-line is formed from the tallest to the dwarfest. Another value the Scrub Pines have is the aid they give a planter in composing a group of tall Pines. In nine cases out of ten these are not successfully grouped, being generally planted all of a size, the result being a lumpy appearance; but by planting them on the outside of the group the abrupt outline of the tall trees is broken, and the group looks more like Nature's planting. I may be singular in my attachment to these Scrub Pines, but I am convinced that many lovers of trees would admire them also did they know them. All the Pines I have mentioned may be obtained from English nurseries, except the Labrador Pine, and this would be forthcoming if a demand for it sprung up.

Malus Halleana.—Will the writer of the note respecting this tree (p. 597, last vol.) kindly give further information about it? I, for one, am anxious to know where it is to be bought, and where it originates. "A. P." describes it as similar to *Malus (Pyrus) floribunda*; can he tell us if it is a variety of that species, or distinct? He says it is so much deeper in colour than *floribunda*, and if such be the case, it must, indeed, be a valuable shrub.—G.

The Red Dogwood is one of the few shrubs beyond Evergreens that attract one at this season. Its branches and twigs glow like sticks of red sealing-wax, and a mass of plants of it may be seen three hundred yards off. It is, without doubt, one of the most valuable of winter shrubs, and if associated with shrubs of a similar character, such, for example, as the golden barked Willow (*Salix vitellina*) its effect is heightened. It is the annual shoots that assume the brightest colour; therefore it should be the object to encourage these by cutting away the old. It will

grow anywhere, in any soil, and any position, but it is partial to a damp spot, where it grows rapidly. The true Red Dogwood is not *C. sanguinea*, as many suppose, but *C. stolonifera*, a native of the United States and Canada. It is spreading in growth on account of the numerous suckers it produces, and from which it may be propagated. The flowers and berries being inconspicuous are not worth considering, its sole value being the winter colour of its bark.

WALL SHRUBS.

JASMINUM NUBILOSUM is making an attempt to flower even during this bitter weather, and the advent of a few mild days would find it covered with golden blossoms. It is one of the most reliable of really winter-flowering shrubs, and on sunny walls in sheltered nooks it is seldom without some bloom. Much of its beauty, however, depends on the way in which it is pruned and trained. We like it best cut in a little in spring after it ceases flowering; the main shoots are then securely fastened to the trellis or wall, and the young growth is allowed to go on unchecked. Thus managed the shoots hang down furnished their entire length with blooms. *Garrya elliptica*, with its long bunches of tassel-like flowers, is a beautiful wall shrub. It is of stiff habit and rather slow growth; a sheltered nook near the house front, where the winter sun can get at it, is the proper place for it; there let it grow entirely unchecked. The buds of *Pyrus*, or *Ydonia japonica* are already showing colour. This shrub has a stiff thorny growth, and needs no pruning. *Ivies* of the variegated kinds are now in full beauty, and never show to such good effect as in mid-winter. The small-leaved kinds are the best for walls, as they may be grown so as to mingle with other things without smothering them, as the common Irish Ivy does; the golden blotched variety is especially conspicuous in winter. *Chimonanthus fragrans* is one of the few really winter-flowering wall plants that have scented flowers; the latter are not showy, but they make their presence known directly you approach the wall where they are to be found. They should have a full south aspect. *Coronilla glauca* is trained on walls in this locality, and flowers freely early in the season. It is generally planted in sunny aspects under the friendly shelter of overhanging climbers, and when covered with golden blossoms is very effective. *Euonymus japonicus variegatus* makes a very beautiful wall shrub, the variegation being strikingly effective in winter. *Escallonia macrantha* is one of the most popular of wall plants, owing to its bright rosy blossoms and shining foliage. It is seldom without some bloom on it even in winter, and is neat and compact in habit of growth. *Myrtilles* are capital wall shrubs, their scented foliage rendering them favourites. They succeed well on the south coast, and look bright after the rough gales which we frequently get here. The *Laurustinus* is used in all sorts of ways; on walls it flowers freely in winter during even the roughest weather, and when flowers of any kind are welcome. J. G.

Hants.

Darwin's Barberry.—Peaty soil is not generally recommended as being suitable for the growth of this beautiful shrub, but such, I am pleased to say, is the case, for seldom have I seen it in finer form, with more glossy ample foliage, and so well covered with flowers, as but a short time ago in a deep well-prepared peat bed. A hedge 50 yards long of the same plant backed the peat bed, and oh! what a sight this presented, the 3-foot-long shoots of a season's growth being literally crowded with flowers, while the shining deep green foliage told but too plainly that the plant was quite at home in its mossy bed. It is perhaps wrong of me to say that the bed was entirely composed of peat bog, for it was not, the mixture being about three-fourths peaty soil and one-fourth of road-scrappings, just such soil as American plants revel in. Some of the individual specimens were 7 feet in height, with heads 4 feet in diameter, the stems being from 3 inches to 5 inches across at the ground level. What surprised me most was how freely in such a soil

this Barberry reproduced itself from seed, for beneath and around these large specimens seedlings of varying sizes might be counted by the dozen, and we were shown several breaks containing hundreds of plants that had been lifted from beneath these gigantic shrubs and lined out in the nursery for planting in other situations. Let no one, therefore, who admires this pretty free-flowering Barberry, and can provide it with nothing but peaty soil in their garden, despair of cultivating it successfully under such conditions, for, take my word for it, if they will do but half as well as those I have just described you will be delighted, and recommend every friend to substitute a barrow-load of bog for his ordinary garden soil and plant a specimen of Darwin's Barberry. No doubt warmth is in favour of good cultivation, so if a sheltered corner can be provided all the better.—W.

Layering shrubs.—This is a simple and efficient method of getting up a stock of certain plants, or extending underwood generally. Most of our commonly grown shrubs come away freely from layers; notably the Laurel, Rhododendron, Privet, Mahonia, Honeysuckle, Bay Laurel, and hosts of others. Nursery layering consists in pegging down the outer and stronger branches in a circle around the stem of the parent plant, and, when these have taken root, cutting them away from their support and planting singly in any free soil, so as to produce a quantity of fibrous roots previous to planting out permanently. Layering for extending game coverts and underwood is but little different, only that the layers are not removed from the parent stool, but allowed to grow at will. In layering, it is best to disturb the ground with a spade around the parent plant, bend over the strongest shoots, and attach them to the soil by means of hooked pegs driven firmly down. A spadeful of soil, placed atop of that portion of the branch where it comes in contact with the ground, will materially assist in the formation of roots. Where the plants to be layered have attained to a large size, with thick, unyielding stems, such as frequently occur in neglected Laurels, Rhododendrons, &c., it may be found necessary, so as to assist in bending and pegging down, to saw the stem nearly through at a couple of feet from the ground. By so doing no injury whatever will result, plenty and to spare of sap ascending through the small portion left intact when sawing the stem. We have treated 30 feet high Laurels in this way, and the results were everything that could be desired, plenty of underwood now taking the place of what, previous to layering being engaged in, were tall, branchless stems, with only a tuft of foliage at the top. The hooked pegs should be made from Beech or Ash branches, and of sizes suitable for the various stems to be held down.—D.

Magnolia grandiflora.—Often enough perhaps are we accustomed to see abundance of plump flower-buds on this Magnolia, yet how seldom—here, at least, owing in a great measure no doubt to our unfavourable climate—do the flowers fully expand. This fact was never brought more forcibly under my notice than during the past summer when an unusually large specimen, that from year to year bore heavy crops of flowers which never became perfectly developed, opened fully numbers of its large, sweetly-scented flowers, the thick fleshy petals being thrown well back and revealing to full view the saffron-yellow stamens, which are so conspicuous a part of the flower. The individual flowers measured as much as 11 inches in diameter when fully expanded, were almost pure white with yellowish stamens, and deliciously odiferous. As a wall plant, this Magnolia perhaps does best, and shows off to greatest perfection on the Laurel-like leaves. It bears pruning well, and if planted in good, rich soil, soon covers a considerable surface, the branches being produced freely and ripening well off where the situation is at all sunny. The Japanese *M. Halleana* or *stellata* is, according to Mr. Ellwanger, of Rochester, and to whom I am indebted for the plant, a real gem, of dwarf growth, and remarkable for producing its flowers in early spring and

long before any other species. I have not seen it under cultivation; indeed, it is as yet extremely rare, but from Mr. Ellwanger's description of plants that have flowered in the Mount Hope Nurseries it must be the finest of its tribe, and that is saying a good deal. It forms a symmetrical bush of only a few feet in height, and as it is perfectly hardy and well adapted for the front of shrubbery borders, will soon rise in public estimation once it is distributed. Being difficult to transplant with safety, a little extra care is necessary in the case of *M. Halleana*.—W.

DECIDUOUS TREES.

Our ornamental plantations are deficient as regards deciduous trees. The lack of variety in them may perhaps be traced to the craze that existed some years back for Conifers; wherever an ornamental tree was required, a Conifer was selected, with the result that, whilst we are rich in evergreen trees, rare specimens of deciduous trees that thrive well in this country are comparatively scarce. Allow me, therefore, to furnish a short list of some deciduous trees that do well here. *Pterocarya caucasica* is one of our best. It is quick as to growth, handsome in foliage, and forms a fine shapely head. The rapidity of its growth may be imagined when I say that it was planted thirty-six years ago, and is now 45 feet high, nearly 12 feet in girth, and has a spread of branches 72 yards in circumference. I am afraid that it is hardly likely to last long in its present perfect state, as the growth is in many cases nearly horizontal and the wood brittle. It is also a fast traveller under the surface; its fibres have been found 25 yards from the main stem; it is, therefore, only adapted for large lawns, and should have a central position well away from all flower borders or beds. Quite a different tree is *Laurus Sassafras*; unlike the *Pterocarya*, it may be employed either on large or small lawns. It is pyramidal in shape, close in habit, and is a decidedly handsome tree. The foliage is dense and slightly scented. *Ginkgo biloba* is better known, perhaps, than either of the preceding trees, but it does not seem quite so much at home in our soil, the growth being erratic and irregular, and the general appearance of the tree rather unsightly; its unique foliage should, however, always find for it a place in good collections. The *Magnolias* are well known; it is, therefore, unnecessary to refer to them, except in the case of *acuminata*. This is with us by far the largest tree of the family, and makes a very handsome specimen; it grows nearly 50 feet high, and has a girth of 5 inches or 6 inches. *Gymnocladus canadensis* grows into a large tree, but its leaf season is, unfortunately, but very short—not more, under a cold, late spring, than four months out of the twelve; during the remaining eight it is naked and bare; still, it is quite at home, and may, therefore, be safely included in our list. Another Canadian introduction, viz., *Acer saccharinum* (the Sugar Maple), grows into a fine, shapely tree, and makes a handsome specimen; the foliage throughout the summer and autumn forms quite a distinct feature in the landscape; a large tree close to a Copper Beech formed during November a striking contrast to its dark neighbour. The two varieties of *Pyrus Sorbus* also make nice trees, both as regards growth and fruit. Although none of the trees just named require much attention, it should be remembered that a little is necessary in the early stages of growth, in order to lay the foundation of a good specimen. Thus where the subsoil is very sandy, hard, wet, &c., as the case may be, the hole for planting should be large enough to permit drainage to be worked in if necessary, and in all cases to allow for one or two cartloads of good new soil to be mixed with the best taken from the hole. With this precaution and all sides of the hole well loosened, the tree will have ample chance to get well established before the roots extend to the old soil; it is in fact a sound precept that an ornamental tree intended for a prominent position should have the same care and attention at planting as its neighbours in the

fruit garden. *Liriodendron tulipifera*, *Ailantus glandulosa*, and *Taxodium distichum* are all good as specimen trees, and the foliage of the last-named is very useful for decorative purposes.

E. B.

THE MONTEREY CYPRESS IN SUSSEX.

PROBABLY others besides myself have noticed that the neighbourhood of Tunbridge Wells seems to be particularly favourable for this tree, for no matter where it is planted, it appears to thrive with a vigour unequalled in any part of the south-eastern counties. It must be something in the climate or the soil, and possibly both combine to favour such growth. I lately visited the garden at SHERNFOLD, FRAIT, where this Cypress is the prevailing feature, towering above all other evergreen growth, and forming in some parts where at all thickly planted dense walls of foliage. Some of the trees must be 50 feet high, and most of them are feathered to the ground with branches. Among the dozens of fine specimens about the place there is a good deal of variation in habit, some being almost as thick through as high, while others shoot up into tall, slender pyramids; and this is mostly the case among those planted in the most sheltered parts; hence one may infer that exposure to winds, and shelter from them, play an important part in shaping the trees. These SHERNFOLD Cypresses are among the most remarkable sights about Tunbridge Wells in the way of trees. In an adjoining garden, ELY GRANGE, the Monterey Cypress is equally vigorous, and specimens which less than ten years ago were nursery plants are now between 20 feet and 30 feet high; in fact, they seem to outpace all the others. The soil is a sandy loam, resting on sandstone; hence tolerably dry and warm. At Bayham, ERIDGE, and many other places in the neighbourhood, this Cypress is the prevailing tree. At NEVILLE COURT, a beautiful garden just on the outskirts of the town, and laid out by Mr. Marnock, there is a pair of Monterey Cypresses, one on each side of the entrance-gate, which for height, spread of branches, and vigour are the handsomest I ever saw. They were, I believe, planted by Mr. Marnock; and perhaps he could tell us how long they have been planted, and a little about the soil they are growing in. G.

Forsythia viridissima.—In early spring when flowers are few this bright-blooming, hardy shrub just reminds us that it is not planted so extensively as an ornamental plant as its merits deserve. Of so hardy a nature—for even the dread east winds of our western coast cannot make it cease flowering—it is well adapted for planting in cold, exposed situations and in a great variety of soils. We have here several plants of large proportions that flower grandly from year to year, the bright golden flowers being produced, like those of *Jasminum nudiflorum*, before any leaves appear; fine specimens during March and April present a mass of floral beauty that is quite enchanting. Timely pruning is to be recommended in the case of this *Forsythia*, for as stout growths usually make their appearance after the flowering season, a nicely-shaped specimen is soon rendered anything but a beautiful object, unless by carefully removing such, and otherwise pruning into a desirable shape; but the plant is all the better for heavy prunings, its flowering capacity and dense free growth afterwards clearly pointing this out. Propagation of the *Forsythia* is easily managed by taking cuttings of well-ripened wood early in September and planting them in any free soil, and in a shady, northern position. Few plants are more amenable to training than the one in question, for it is just as easily managed to have a 6 feet-high specimen as a dwarf, procumbent bush. Planted against a wall and in fairly good soil, the *Forsythia* will before many years have attained to a large size, if nailing and pruning have been regularly attended to. Then, as a pot plant, it is of great value, for it is capable of being kept neat and in bounds by pinching and pruning, while it flowers freely during mid-winter if kept

in a cool greenhouse. Heavy loam, judging from our nursery specimens, seems to suit the Forsythia well.—W. A. D.

THE NEW PYRAMIDAL POPLAR.

The erect-growing variety of the Abele Poplar, introduced a few years ago under the name of P. Bolleana, is fast attaining the popularity which was predicted for it, as all the important tree nurserymen are working up large stocks of it, and this is a pretty good indication that there is a demand for it. No tree of recent introduction promises to be of such value for ornamental planting as this pyramidal white Poplar, as there is no other tree at all resembling it. It combines the upright growth of the Lombardy Poplar with the handsome leafage of the White Poplar or Abele in a remarkable way, and the fact of its being a hardier tree than the Lombardy adds greatly to its value. Judging by the largest trees in this country at the present time, it must be of quick growth. Some of these are 12 feet and 15 feet high, and these have been planted within the last six years; so that from this we gather that its growth is at the rate of about 2 feet in a season. Like the Abele, too, it is not particular as to soil, and no doubt will be equally suitable for planting in dryish places as well as in low, damp spots. One can imagine what a telling tree this new tree will make by-and-by when it gets to be as high as an old Lombardy, to which it will be a rival on account of its leaves, the silvery white undersurfaces of which are turned up to every slight breeze. No one need hesitate planting this tree, as it has had a fair trial now both in England and Scotland. The only fear is that it will be planted too plentifully, as the Lombardy Poplar once was, and produce a monotonous effect. It is almost as cheap now in nurseries as the Lombardy on account of its being easily propagated. It is increased by layers and grafting on the Abele—the most suitable stock. It comes from Tashkend, an out-of-the-way province in Turkestan, which may yet yield other valuable ornamental trees.

A new Ivy (*Hedera amurensis*).—In the Handsworth Nurseries, Sheffield, there is a new Ivy under this name, which, from all appearance, is a promising addition to the list of hardy Ivies. The leaves are large, quite as broad as those of *H. dentata*, but of different shape, being broad at the top, and deeply lobed. They are of leathery texture, and of a deep shining green. It is thought a good deal of by Mr. Fisher, who propagates it extensively. Every new hardy Ivy is a gain, and especially if it has such bold green foliage as this has, and at the same time is perfectly hardy. Coming from the cold region of the Amur River, there is little doubt that this new Ivy will be hardier and better for our climate than the other large-leaved Ivies.

The Golden-leaved Privet just now shows itself to advantage in the shrubbery, for it has come through the past few weeks of frost and snow perfectly unharmed, while variegated and golden *Euonymus* and other shrubs of a similar nature show unmistakable signs of injury. The Golden Privet is a neat growing shrub with small leaves closely set on the branches; being almost entirely of a rich golden yellow, it produces a bright appearance, and if set off by some dark Evergreen its effect is heightened. It is one of the few golden-leaved shrubs that can be depended on for winter; therefore it is a plant not to be lightly esteemed. It looks well if about half-a-dozen of different heights are planted in a group, but, as in the case of other variegated or golden shrubs, much is lost if advantage is not taken of contrasting them with green. This Privet is a variety of *Ligustrum ovalifolium*, and is known sometimes as *elegantissimum*, and also as *marginatum aureum*. The average nursery price for a good plant is one shilling.

The Holly-leaved Mahonia, always a beautiful Evergreen, is particularly so at this season when its foliage is stained with every gradation of tint from plum-purple to bronzy green, and the late spell of sharp weather seems to have intensified the rich hues

of the Mahonia foliage. There should be a good sprinkling of Mahonia planted in every garden, if only for the sake of its winter foliage, so valuable for cutting from for associating with flowers in vases. In a cool room Mahonia branches will last in water as long as a month or six weeks, and after that time will not appear the worse. In Daffodil time there is nothing that mixes so well with the rich yellow flowers as the bronzy leaves of Mahonia, and, later on in the season, when it regains its green summer leafage, it is always a good thing to cut and mix with flowers. Were we confined to one Evergreen, this Mahonia would be our choice, as it is not fastidious as regards soil or situation. The varieties of *Berberis Aquifolium*, named *latifolia*, *rotundifolia*, *Herveyi*, and *undulata*, are all different from the common kind, but certainly do not surpass it in the matter of foliage.

THE WEST LYNN VINERIES.

In October last, being at King's Lynn, I accepted Mr. Castle's invitation to see his Grapes; and at the outset I may say that, as regards crop and finish, I have never seen them equalled. After careful inspection, I may safely assert that there is not one bad Vine on the premises, all being robust and healthy. Among the different varieties the best appeared to be Gros Maroc, the bunches of which were simply magnificent. Next to this I would place Madresfield Court as seen here, its flavour and colour being all that could be desired, and the crop without one cracked berry. Gros Colmar, too, which must not be forgotten, was, I may say, unique. Let us, however, take the varieties *serifim* as follows:—

ALICANTE.—This variety covers one side of a 50-foot long house. It is on its own roots, and also grafted, and in both cases it bears very heavy crops and well finished, many of the bunches weighing 7 lbs. The Vines on their own roots are six years old, and several of them carry 40 lbs. per rod, and the Vines look none the worse for such heavy cropping, *i.e.*, if laterals and foliage are any criterion. Nine Vines, two years old, are planted in a Cucumber bed, a house which the sun does not touch till nearly noon, and it is astonishing how well they have done in every respect, though the depth of soil is only 15 inches and the bed is only 3 feet wide. The Alicante, grafted on the Black Hamburg, does well, but the crop is much too heavy, eighteen bunches being on a rod, and the bunches not less than 2 lbs. each.

ALNWICK SEEDLING.—On one rod of this there were twenty-three bunches, and the variety always commands attention on account of its deep blue colour. It ripens early, and keeps fairly well—*i.e.*, until April. It requires special attention at blooming time; it sets well with pollen taken from Lady Downes, but water for setting this variety is a fallacy. The syringe was used very freely on one bunch, but to no purpose. The caps of this Grape require rather hard treatment; a good feather brush is just the thing to use on it. The flesh of the berries of this Grape is very highly coloured, and the flavour also is very superior. It is not a very strong grower; growing, as it does here, side by side with Alicante and Lady Downes, the difference between it and these sorts is very striking.

GROS GUILLAUME this year has borne nothing but small bunches, 5 lbs. or 6 lbs. being the heaviest, while in other years bunches have been cut up to 3½ lbs. This crop is, however, likely to be a good keeper, and here it fruits as freely as a Black Hamburg. Mr. Castle is, however, gradually cutting it out, not on account of its not doing well, but because it does not pay, and, singular as it may appear, there is always more difficulty in colouring it than any of the other Grapes grown at West Lynn—this, too, with a much lighter crop.

BUCKLAND'S SWEETWATER seems to be quite at home at West Lynn, and is a noble, early-ripening Grape, and one which always commands attention on account of its size, colour of berry, and good cropping

qualities. In order to show how extremely fruitful this variety is, I may mention that there is a bunch on every lateral, and that, too, under Black Hamburg treatment. Their quality, however, does not improve by keeping.

GROS COLMAR—This is a very trying, yet a most profitable Grape, and one grown in larger quantity here than any other. One span-roofed house 50 feet in length is filled with this Vine entirely on its own roots, and it always produces satisfactory crops, the berries being good, but their colour sometimes not what it should be. Some are, of course, a good black, but a good portion is not so. In mixed houses this variety is, as a rule, very unsatisfactory. What appears to be required to ripen or rather colour this Grape is starting it early, using fire freely, and giving plenty of ventilation so as not to force it unduly. This variety, grafted on the Muscat of Alexandria, has proved to be very good indeed; some have said that on this stock the colour would be bad, but some of the blackest are on Muscat stocks. Certainly if overcropped, bad colour will be the result. This year for the first time the foliage of this sort has been good, none of the leaves being curled. Liberal feeding, early starting, more fire heat than usual, and more ventilation are doubtless the cause of this. Avoid coddling if you wish to get good Grapes. When growing the transparency of its berries is very striking.

GROS MAROC.—This is a profitable Grape either grown on its own roots or grafted. Although grown in the worst position at West Lynn, it is the first to colour, being before even the Black Hamburg, but it is not really the first to ripen. Here it fruits just as well on the old rods as on young ones. When grafted on the Black Hamburg it is very superior as regards flavour. The crop, too, is heavy; in one case 40 lbs. were taken off a last year's rod. On grafts more thinning is required, especially if they are to hang long. This grafted on Buckland's Sweetwater is a really fine Grape, the berries of which are the largest of all, but by the beginning of December they begin to shrivel. It grows very robustly and fruits very freely. As a market Grape it is worth as much again as the Black Hamburg, and it is ready at the same time.

LADY DOWNES SEEDLING.—This has produced a faultless crop, every lateral being fruited, and some of the best bunches are on laterals, on which there are often two bunches; in fact, if a pair of bunches were wanted for exhibition, a pair on a lateral would be selected. This variety is grown here in the form of single rods, two rods and three rods to a Vine, all at 3 feet apart, with this result, that the three rods in every case are the best—this, too, with the same number of bunches on each rod, *viz.*, two dozen. The fruit on the single rod, however, coloured first. Scald in some places affects this variety, but here two dozen berries would cover the loss in this respect. The sun is said by some to be the cause of this disease, for disease it is, but all the berries attacked here are so placed that the sun cannot touch them; indeed, they are quite in the shade. If this variety is started gently in March and steadily grown on, keeping the fire in all through the season until the Grapes are cut, much sounder and better Grapes will be obtained than under any other treatment.

MADRESFIELD COURT.—The crop of this at West Lynn is too heavy to colour well, but then there is no cracking. The two Vines of it grown here have for three years each carried 26 lbs. per year. Some 52 lbs. have been sold, and still 30 lbs. have been left hanging. The berries and bunches are good, and, having cut so many to lighten the Vines, the remainder will be kept for a month. This is not, however, a good keeping Grape, but, owing to the position of the Vines, special ventilation can be afforded them. The treatment is precisely the same as in the case of Gros Colmar up to colouring time; but as soon as there is the least tinge of colour visible tepid liquid manure is given; then a slight layer of rotten manure is applied, firming it fairly well down, then over the whole is put a layer of Grass and straw about 6 inches deep. From the day on which this covering was used, *viz.*, 1st of August, no water has been given to the inside border. This being the

fourth year of such treatment, it can be asserted safely that such treatment does not injure the Vine.

So far the roots have only been dealt with, but, of course, ventilation is a very important point, especially top ventilation, which is continued all night after colouring time. Laterals are stopped all through the season, keeping them well away from the glass; if a leaf touches the glass moisture is condensed, a drip is created, and should a drop of water fall upon a bunch the berries crack. Spider, too, especially at this season of the year, is troublesome if not well kept under. It has been said that Madresfield Court is not a good keeper, but it will keep to the end of November. Madresfield Court grafted on Gros Colmar here lost its fine flavour, but coloured well. Both bunches and berries were, however, small, but the graft is not strong. As regards flavour, Madresfield Court cannot be beaten, and as much as 40 lbs. of sound fruit have been taken from one Vine. By placing Gros Maroc at the top of the list I shall doubtless be found fault with on account of its flavour, but it must be remembered that Mr. Castle's first point is hard cash. Madresfield Court is certainly very superior to Gros Maroc in flavour, but, unfortunately, it comes to an end before or by Christmas, whilst Gros Maroc keeps through March, and at that season it made last year from 7s. 6d. to 10s. per lb. These prices are not given at random, for I myself saw the returns. R. GILBERT.

Burghley.

* * Mr. Stephen Castle sends us specimens of his Grapes, packed in a very simple way in a basket, with wadding round the outside, and the bunches simply attached and resting quite loosely in the basket, except, of course, on the side which supported their weight. They come in as good condition as if just taken off the Vine—perfect bloom, large berries, and delicate flavour. Such a mode of packing would not do if they were rolled over, but it serves very well so long as the basket or whatever they are sent in is kept in an erect position.—Ed.

MARKET GARDEN NOTES.

A FEW days since, when the north east wind was blowing intensely keen over the fields and it was freezing sharp, I watched a couple of men engaged in preparing Rosette Coleworts for market. A colder job during keen, cutting winds could hardly have been found, and as the half-frozen greens were, of course, exceedingly brittle, the effect upon the Coleworts was far from being beneficial. One man pulled the plants, and in doing so gave each stem a half twist and pulled off some of the outer leaves; then he threw them on to a table which was, of course, anything but clean. The second man stood on the windward side of the table, and gathered the plants into bunches by the stems. Grasping the roots with the left hand, he gathered in the Coleworts with the other, pressing into each bunch as many as the hand would well grasp; he then bound them up with a withy and threw them on to a heap behind him. I could not but note how much the heads suffered from this method of preparation, getting dirty as they were roughly turned over from side to side in the making up, and very much torn and bruised. I should say that after bunching these greens seemed to have deteriorated 40 per cent. as compared with their appearance before pulling. Naturally, I enquired whether it would not be far better to cut off these Colewort heads cleanly and place them in baskets as fast as cut, and was told that it would be so, but that the London trade would not so purchase them, but would have them bunched only, although thus damaged and dirtied. This is a sample of the kind of despotism under which both producers and consumers of market vegetables suffer at the hands of the trader or shop-keeper class, which insists upon all this trouble being taken for no other reason than that it is the custom to buy and sell winter greens of this character in bunches, and no other plan, even though preferable in all respects, will be accepted. Beyond the injury done to the Colewort heads the

work of bunching is considerable, the bulk to be sent to market is much greater than it should be, and not least, not only are consumers burdened with all this useless matter of stems and roots, but local authorities have finally to remove it again back into the country in the form of rubbish. Some day, perhaps, a strong local authority emanating from metropolitan municipal institutions will interpose and decline to admit useless lumber, in the form of stalks with excessive leafage, to be brought into London, as not only relieving local authorities of preventable labour, but also minimising danger to the public health from excessive accumulations of refuse and garbage. Common sense, as well as regard for quality and cleanliness, urges that all kinds of small greens should be sent to shop or market only in baskets, and it is certain that so sent they would be much fresher and cleaner for consumption.

Generally I notice that whilst the long spell of frost and heavy snowfalls have not appreciably injured all ordinary green stuffs, all which have hearted in, whether Cabbages or Coleworts, show most damage; many of the firm white hearts, being much seared and under a quick thaw, will no doubt soon decay. Even now this frosted material has a strong flavour. Most of the larger Cabbages, especially Drumhead Savoys, are past marketing, and must be either sheep-fed or be cut to pieces and ploughed in as manure. Early planted Cabbages, which made too much head through the long and open autumn, will probably cut up badly under the influence of March east winds; but, so far, all the later plantings, even in soil so saturated with water that with even a crust of frost upon it will at present hardly hold a man up, consisting of sprouting and white Broccoli, so far, have stood very well. This class of green stuff seems always to suffer most when subjected to keen biting winds, which literally burn or wither up the leafage.

BRUSSELS SPROUTS are not in such good odour this season as in some previous years. I hear numerous complaints of burst or expanded Sprouts, this form of them being seen in large patches, causing much loss to growers. It is evident that there are some bad stocks about, consequent upon the cutting prices of the seedsmen. There is no member of the Brassica tribe which it is more important should not only be true, but should be good, than Brussels Sprouts. It is doubtful, because of its origin, whether any other member of the family sooner deteriorates if not well placed and grown free from association with all others. When the produce of a given batch may be perhaps 1000 bushels, it is obvious that if a shilling per bushel be lost by a bad sample the total loss is great—indeed, makes all the difference between paying and losing.

There can hardly be a better strain for market growers in the open field than Exhibition, Matchless, King of the Market, or under whatever name the large, solid-sprouted kind now so much grown in private gardens is known. Whilst productive of large stems and sprouts, under the high class culture found in private gardens, in the field the growth and sprout production seem to be all that can be desired. Really big sprouts, such as too often find favour in exhibition collections of vegetables, will not suit the market at all. A good, solid, medium-sized sample invariably finds a ready and profitable sale, but such samples are far from being plentiful. I saw a fine breadth the other day of a really capital stock, called Myatt's Brussels Sprout, and it was specially noticeable because so much above the average. The grower said that he gave rather a higher price than ordinarily ruled for the seed, but it paid far the best in the end. The plants were about 20 inches in height, and bore fine crops of clean, solid, medium-sized sprouts. A. D.

MR. JOHN F. M. ELROY, for the past eight years secretary of the United Horticultural Benefit and Provident Society, died at the gardener's cottage, Moray Lodge, Campden Hill, Kensington, on Sun-

day, the 9th inst., after an illness of only two days. On Friday, the 7th, he was seized with a fit, but happily kept conscious to the last. He had lived as gardener to Mr. A. J. Lewis, at Moray Lodge, for twenty years, and during that time effected many improvements in the garden.

We have also to record the death of Mr. R. LAING, nurseryman, Twickenham, at the age of seventy-seven. Mr. Laing was for years a grower of all the better kinds of Roses; but latterly, owing to his surroundings having become altered, he was obliged to turn his attention more to florists flowers and plants under glass. He was a prominent committeeman of the Twickenham and Richmond Horticultural Societies, and was also a warm supporter of the Gardeners' Benevolent Institution.

GARDENERS' BENEVOLENT INSTITUTION.

STATEMENT OF RECEIPTS AND PAYMENTS FOR THE YEAR ENDING DECEMBER 31, 1886.

Dr.	£	s.	d.	£	s.	d.	£	s.	d.
To Balance from 1885							£387	5	9
Annual subscriptions	1311	2	0						
Donations at and in consequence of Annual Dinner	1486	16	10						
Advertisements		49	13	0			2797	18	10
Collecting cards		185	15	9					
							235	8	9
Dividends on stock		633	0	0					
Interest on deposits		22	17	3					
							655	17	3
									3689 4 10
									4076 10 7
Stock in Three per Cent. Consols, £21,100.									
Cr.							£	s.	d.
By Pensions							1950	0	0
Secretary's salary							160	0	0
Rent of office							43	15	0
Furniture, fittings, &c.							26	14	6
Printing							130	0	0
Advertising							3	19	0
Stationery							21	12	7
Book of cheques							3	9	2
Expense of Annual Dinner							60	14	8
Postages, travelling expenses, and sundry petty expenses							96	1	10
									2496 6 9
Amount placed on Deposit							1200	0	0
									3696 6 9
Balances:—									
At Bankers'							368	12	5
With Secretary							11	11	5
							380	3	10
									4076 10 7
Audited January 10, 1887.									

BOOKS AND PAMPHLETS RECEIVED.

- "Revue Horticole."
- "Bullettino della Societa Toscana di Oriticultura."
- "The Zoologist." Simpkin, Marshall & Co.
- "Gartenbau." Verlag von Paul Parey, Berlin.
- "Illustration Horticole." 52, Rue du Channe a Gand.
- "Lumber World." McFaul & Nolan, Buffalo, New York.
- "Nature." Macmillan & Co., Bedford Street, Covent Garden, W.C.
- "The Immediate Future of Agriculture." Mitchen & Son, Clement's Lane.
- "Public Garden Association Report." Hutchins & Crowley, South Kensington.
- "Voluntary Allotments Association Report." 50, Palace Chambers, Westminster.
- "Pharmaceutical Journal." J. & A. Churchill, 11, New Burlington Street.
- "The Entomologist." Simpkin, Marshall, & Co., Stationers' Hall Court, London.
- "Handbook of Practical Botany." Swan, Sonnenschein, Lowrey & Co., Paternoster Square.
- "Text-book of British Fungi." Swan, Sonnenschein Lowrey & Co., Paternoster Square.
- "Jordan's Irish Farmers' and Gardeners' Almanac, 1887."
- "Farmer's Gazette." Office, 23, Bachelor's Walk, Dudding.

Names of plants.—*J. K. (Gower)*.—*Bryophyllum clypeatum*.—*G. W. (Hull)*.—1. *Adiantum fulvum*; 2. *Gymnogramma Pearcei*; 3. *Oncidium auratum*; 4. *Trichomanes pluma*.—*W. H. M.*—*Ledia anceps bella*.—*G. K. (Dob)*.—*Lilium Ulymum*.—*H. E. (Crotchell)*.—1. *Lycaste Skueri*; 2. *Pleurothallis proflera*; 3. *Oncidium agrinum*.—*K. G. (Hortens)*.—1. *Adiantum colpodis*; 2. *Amphibletum Phyllitidis*; 3. *Chelidonium radiata*; 4. *Momordica simplex*.—*J. B.*—1. *Salvia leucantha*; 2. *Erica hycanilla*; 3. *L. gracilis*; 4. *Aechia plutea*.—*G. C. H.*—1. *Adiantum formosum*; 2. *Oncidium japonicum*. We cannot undertake to return specimens.—*J. M. B.*—*Mastocchia tovarense*.

WOODS & FORESTS.

THE CORSICAN FIR.

PINUS LARICIO is a very good name, botanically, and it is a name which writers are fond of using, but the best way is to call this Fir by its English name, viz., Corsican Fir, and then there can be no mistake. Most people, who are not foresters, have been familiarised with the tree under this name. I notice (p. 39) that "A. D. W." claims to have "all along strongly advocated the extensive use" of this Fir, which is probably the case, although I have never seen any of his frequent communications on that subject that were published before the character of the tree began to become known through the medium of *Woods and Forests*. This publication may take credit, I believe, for having done more to popularise the Corsican Fir among planters, and familiarise them with its habits and qualities than all the previous writings on the subject put together, and the result is becoming plain. I like to put the saddle on the right horse. The Corsican Fir was introduced into this country about 130 years ago. It has been familiar to our foresters during a great portion of that period, and has been planted to a moderate extent by a few proprietors, but you may travel for days over estates and never see a plantation of it. Some, who profess to see its value now, have all along been planting Spruce and similar worthless subjects instead of the Corsican, and you may hunt for years through the writings of those who have written regularly on forestry without finding more than a passing reference to the tree. Until *Woods and Forests* and *THE GARDEN* took it up the general reader knew little about the tree, and there has been literally a scramble for it since in the trade, so far as my information goes. It was Larch, Larch, Spruce, and Scotch Fir, with now and then a few Austrians thrown in; but the Corsican Fir, because it was difficult to transplant under some circumstances, and because it was not known, was neglected. Dignified arboricultural societies, north and south, have continued to write their humdrum essays on a variety of topics, consigning the same to the oblivion of their "transactions" as fast as they were written, and they have pilgrimaged all over the country in search of arboricultural knowledge, but they never appear to have stumbled on a Corsican Fir that impressed them in the least as being a tree of special value. I see the Scottish Arboricultural Association has woke up to the necessity of offering a prize next year on "the comparative value of the newer Coniferae as timber trees in Great Britain," but how late in the day! The question has been practically settled, and we predict the essay will put the Corsican at the top of the list; for, though introduced so long since, it is still new as a timber tree. If the essayist does not do this, it will be because he does not know his subject. Considering the state of our woods in England, where they are neglected, and in Scotland, where they are so skilfully managed as to become a burden to the proprietor, one has little or no patience to speak of societies that have, with the best of opportunities, done so little good work, save in indulging long-winded harangues delivered periodically.

The prize offered by the Scottish Arboricultural Society for an essay on "The history and details of the plantations on an estate for a period of not less than twenty years, giving the acreage, annual receipts, and expenditure per acre," ought to be instructive if it can be got; but in judging such a production the utmost care is necessary, and nothing should be accepted that is not vouched for and made clear to the last detail. I, for one, would like to see some of the so-called well-managed woods in Scotland subjected to such a test. I am informed from good sources that few will stand it. One safe inference may be drawn from the ample prize list of the Scottish Arboricultural Society: the members have evidently been reading up on their own account, and endeavouring to realise where they are. The prize above alluded

to—one on the comparative merits of Coniferae raised from home-grown and foreign seed, one on the natural reproduction of forest trees from seed, and another on "the timber grown in Scotland and its uses"—may lead to something if taken up by competent hands, and are all subjects recently suggested in *Woods and Forests*. What on earth the society wants an "original plan for the erection of a forester's cottage" for is more than one can fathom. Foresters, I opine, are like other people, and need no special provision in the shape of a habitation; what, therefore, the society has in its eye is a mystery. If it had been a bark shed, a saw-mill, or a work-shed one could have understood it, but an original plan for a house for a forester!

YORKSHIREMAN.

PREPARING ENGLISH FIREWOOD.

WHERE a stock of wood has been placed under cover, spare hours during bad weather may be devoted to its preparation for use. When the logs are not very large, of whatever kind of wood they may happen to be, it is often best to have them cross-cut by a hand-saw. With a fairly sharp saw of the right character, which should be stiff in the blade, but not too thick, with a coarse tooth set wide enough to allow the blade to work easily, a good deal of cutting may be accomplished by a handy man in a few hours. The amount of labour which is often wasted upon ineffective saws is simply astonishing. It is not to be expected that an ordinary labourer will be sufficiently up in sharpening to keep a saw in going order, as to sharpen a saw well is a comparatively rare accomplishment, but it will well repay all concerned as soon as the teeth go "dead" to see that the saw is at once re-sharpened. For general firewood cutting directly across the grain, when two men are employed, there are few saws superior to the fish-shaped saw with M teeth. This works both ways with a minimum of friction. As to the best mode of fixing the wood whilst the operation of cross-cutting is carried out, for small logs cut by the one-man saw there is nothing better than a framework made of small Oak scantlings constructed to hold the logs whilst they are being sawn. This is familiar to many as the firewood-sawing horse. Two small scantlings are crossed at each end, and these ends are fixed together by means of a square scantling passing from centre to centre of each cross, and further strengthened by longitudinal scantlings nailed to each side. The centre of the framework where the scantlings intersect should be about 2 feet from the ground or floor. The crossed scantlings form a fork at each end of the horse, and in these forks the logs to be sawn are laid. With regard to the larger logs which have to be cut with the two-men saw, it will be easier to fix them to rough transverse scantlings laid upon the ground by means of dogs, or, in other words, iron or steel bars bent and pointed at the ends so as to retain a firm hold when driven into the scantling and the log. This method of treatment will be much the same whatever the wood may happen to be, but the tools used and subsequent splitting will vary according to the size of the sections and the readiness with which they can be cleft. With such woods as the Oak, Beech, Ash, Birch, &c., when tolerably clean and free of knots, a good-sized axe will answer the purpose, but with logs of Elm and other woods which are rough and knotty the beetle and wedges will have to be requisitioned. Tree roots make good firewood, but they entail a lot of labour in removal. To lessen this a good deal has been said about the use of explosives, but in the generality of cases these will not be resorted to. A better plan is to employ a few men, paid according to the amount of wood they remove at per cord or per load. The roots of underwood stools can be removed at a price per pole, either simply by cutting off the roots a few inches below the ground level and removing only the centre of the stool and leaving the remainder to decay, or by the more elaborate and costly process of grubbing up the whole and leaving the ground in a condition for planting. In any case there are but few estates where, by the exercise of a little thought, a good supply of wood fuel is not to be had.

D. J. Y.

Dry rot.—It has been ascertained, says the *Lumberman's Gazette*, that timber which has been floated in water for a considerable time is no longer

liable to the attack of dry rot. The albumen and salts slowly make their escape from the wood, thus depriving the fungus of the nutriment needful for its development. A French experimenter has shown that fresh sawdust rots away in a few years in damp earth, whereas sawdust from which the soluble matters have been soaked by water remains unchanged under like circumstances.

BENEFITS OF SHELTER PLANTING.

SCOTCH plantations are chiefly in masses, clumps, or belts. The first of these is almost the only form in which we can pretend to anything approaching to the picturesque; for here the fence of the plantation may be entirely or nearly kept out of sight, while in the two latter modes this is almost impossible. If a plantation is made for beauty and profit, as regards wood, the mass is certainly the most desirable; but the clump and the belt are by no means destitute either of beauty or usefulness; indeed, as regards the latter quality, I will venture to say that in many districts the country has been benefited 50 per cent. or 100 per cent. by the numerous belts stretching their protecting arms around what are now lovely green pastures, but before the encircling strips were formed were barren heathy uplands. Clumps and strips of plantation, too, come within the limits of many a one who cannot give land for a mass; and if a little persuasion would induce proprietors to carry this most useful improvement a little further, one object of this epistle will be gained.

Our severest blasts of wind here are from the south-west and west, as may be seen from our trees bending to the east. Our belts, therefore, as far as practicable, run from north to south and from north-west to south-east, though this is of course varied by situation and convenience. They ought never to be less than 60 yards wide, and if 20 yards or 40 yards more can be added to their width, the shelter will not only be greater and the wood better, but they will look much handsomer; and if they are wide enough to allow a roadway along the centre of the belt, it will be found a great advantage, both in giving access to the wood for carting, when it is of a size fit for useful purposes, and also when it is young, in affording facilities of inspecting the wood with a view to thinning, which, alas! is so much neglected. Most proprietors know the advantage of a march fence; they would, in many cases, find it greatly to their benefit and not much more expensive to have a march strip, for which each coterminous proprietor should give 40 yards or 50 yards, having a road in the centre along the actual line of march, or it might be more convenient if the strip were for so much of its length on one man's land and so much on the other. By this latter mode, each would be able to thin his own wood to his liking; and this is of greater consequence in a strip than in almost any other form of plantation, and in strips is almost always neglected.

THINNING.—I do not think I could name ten plantations in the south of Scotland where the trees are sufficiently thinned; and the reason you always get for its not being done is, "Oh, the trees are of no use as wood, and they make excellent shelter." Now, in the first place, what is the use of planting thick? It may be said the trees shelter one another; this is a mistake as regards young trees, for by the time a tree is big enough to afford shelter its neighbour is as large, and can give as much shelter as it can; then the expense of thinning, when the trees are worthless, is considerable, and it requires a bold hand to cut down a fine thriving tree. I would say, therefore, if you have not courage to thin (though I am rather an advocate for thick planting), plant sparingly. In belts it is peculiarly necessary to thin. A belt is planted for shelter; and for twenty years perhaps, though that is the utmost limit, a belt, planted as thickly as it is generally planted, will form a good shelter, but after that period the shelter becomes less and less. The trees come to be without a single branch on the stem for 10 feet upwards at least; they are unhealthy, their roots being choked; the wind makes fearful havoc among them, and at the end of the second twenty years there will be but a few stragglers left to tell the melancholy fate of their departed brethren:

and, observe, these stragglers are on the outside of the belt, and possibly on the most exposed side, but where they have had a little more justice in point of room, and got accustomed to the blast. But if a belt is thinned so that the lateral branches barely touch one another, the trees become feathered nearly to the ground, and a dense mass of foliage or branches remains to arrest the progress of the wind, and the desired shelter is gained. The trees, though not so tall, are healthy and in a more natural state; their roots have room, and they stand their ground amid the winter storms, which with us are neither few nor far between.

A great objection to planting being carried on more extensively than it has hitherto been is the great expense of enclosing. In pastoral countries "a dry stane dyke" is almost necessary. English readers, or some of them, may require to be told that this is a wall built of stones without mortar. It is generally about 4½ feet or 5 feet high. This, as above stated, is the most expensive part of the plantation, but one of the most important; if good durable stone is to be had in the immediate neighbourhood in spite of the heavy outlay, it is the cheapest, the most durable, and satisfactory fence in the long run. But a great many plantations have been made with no other fence than a ditch and turf wall, or as we call them "feal-dykes," with a single railing of paling along the top. This is a cheap fence and is put up, paling included, for about 1s. 6d. per rod. The cost will scarcely be a year's interest of the outlay on a stone dyke; but it requires constant attention, as cattle are apt to rub it down, and sundry other misfortunes happen to it. However, with a very moderate degree of care it will answer, and in many situations has answered, all the purposes of the stone dyke, and, so far as appearances go, it is much prettier to look at. I do not, as a rule, approve of sowing Whins (Furze or Gorse) on these dykes, for, unless they are regularly switched, they spread into the adjoining fields, and become a great nuisance, and are often destroyed by frost.

DRAINAGE.—Draining is requisite in a plantation, which also is much neglected; by draining, I mean particularly surface drains; these can be made at a very small cost; about 1d. a rod for the ordinary sheep drains, which they resemble, 20 inches wide at top, 14 inches at bottom, and about 12 inches deep. The benefit of these drains is immense in drying the ground, and it is worthy of attention to observe that along the line of drain, upon the stuff thrown out the trees beat their neighbours; and you can often follow out the line of drain by looking along the tops of the young trees, which in the above situation are so much more vigorous than their neighbours, that they sometimes resemble a hedge on a bare part of the plantation.

If a stone dyke is made, there ought to be, in about every hundred yards, a set of steps, forming a stile, for crossing into the plantation. This will be found a great saving to the wall, if sportsmen and their dogs are in the habit occasionally of following game into it, for both man and dog will prefer the easiest point for getting over the fence, and they will not pull down a stone or two every time they pass, to the danger of their legs and the detriment of the fence. Young plantations are a great shelter for hares, and if it is wished to give them access, let pens or conduits, 12 inches by 9 inches, be made also, every 100 yards or 200 yards, in the dyke. Neither these nor the stiles will add a sixpence to the original contract price of the dyke. Let these pens or conduits, however, be shut up in autumn whenever the corn is cut; as when the hares lie in the plantation, and feed out of it, they are easily snared on the runs leading to the pens. The pens for the hares should be opened about the beginning of March, and the keeper should look sharp to them. Any gate to the plantation should be boarded, so as to prevent hares passing in or out; for if this is not done, it is the poacher's harvest field with his net. During the months of October to March, inclusive, the hares will take the dyke at any part when they wish access, but the young ones are not able to do it. The pens are useful also for young partridges and pheasants passing to and from the cover. H.

How to prevent splitting in the ends of timber when it is being seasoned is a matter now engaging attention. According to a recent report, it has been ascertained, says an American paper, after trying a number of expedients, that by painting the ends of the timber with thick glue several kinds of timber can be dried without splitting. It is supposed that the glue penetrates far enough to cement the layers of the wood together near the ends, and thus keeps the ends from drying faster than the rest of the wood. Of course, this method requires seasoning under cover, since rain would have the effect of dissolving the glue.

Firewood and wood fires.—As I burn nothing but wood in five rooms of my house, I hope you will allow me to say a few words on the subject. The fireplaces are circular; formerly they were square-backed. My father altered them to their present shape, which increased the heat in a marked manner. We have dogs in all the fireplaces. The wood we burn is Oak, Beech, and Ash. In the servants' hall, which has a slate floor, Fir is burnt. The back sticks are, of course, green. The best wood for these is Poplar, which is the least inflammable of all wood. The wood is cut up by a circular saw, worked by water power. As far as heat, appearance, and comfort goes these fires are far superior to those of coal. We never remove the ashes except when absolutely necessary; then only a small quantity is taken away. Of course there is a great deal in the management of the fires. They require constant attention; in this respect they are not so convenient as coal. However, I find servants soon get into the way of them. For cleanliness they are, of course, far superior to coal. The best wood is, without doubt, Ash. The old saying—

Ash green,
Fire for a queen.

is a very true one. Spanish Chestnut is the worst wood there is for flying out. We have always one year's stock in hand. The wood is all stacked and thatched.—REGINALD KELLY, *Kelly House, Liffon.*

Pinus Sabiniana.—This beautiful glaucous, grey-coloured, long-leaved Pine was introduced into Britain from Upper California in 1832 by Douglas, and was named in honour of Mr. Sabine, then secretary of the Royal Horticultural Society. Douglas describes the trees in their natural habitats as being "of tapering form, straight, and of regular growth, from 40 feet to 120 feet in height, 2 feet to 12 feet in circumference, and, when standing far apart or solitary, clothed with branches to the ground." Some few reach 140 feet in height, but those are not of great circumference. The wood is white, soft, even-grained, and perhaps not very durable. The leaves are in threes, very rarely in fours, from 11 inches to 14 inches long, and drooping during winter. Since its introduction this tree has become extensively distributed throughout the country, but, as a rule, it has not succeeded well; indeed, it has been a most disappointing tree, except, perhaps, in a few favoured localities. At Holkar, in Lancashire, there is a fair specimen of it, and at Kew, too, it is succeeding tolerably well. Where it does thrive and grow vigorously, and when it is clothed with its long, glaucous, drooping foliage, it is an object of singular beauty, distinct both as regards feature and form. It is highly ornamental planted as a specimen tree in pleasure grounds or in the foreground amongst other Conifers of darker foliage in a pinetum. It should be planted in sites quite sheltered from cutting and prevailing winds and where there is a good depth of rich vegetable or alluvial deposits; when planted in thin, poor soils and exposed to winds, it presents a ragged, miserable appearance, and its branches gradually become, as it gets old, almost divested of leaves; indeed, in such positions it has been known to perish outright. The idea, therefore, of *Pinus Sabiniana* ever becoming a useful timber in this country may be at once discarded. Its cones, it is said, are very remarkable, being about 12 inches long, and rough and prickly on the outside; they grow in clusters round the branches, are recurved, press on the wood for support, and remain on the tree for several years. Statistics from any of your readers who may possess or know of good specimens of this tree would be interesting, stating age, height, present condition,

soil, or geological formation, or any other particulars as to habit and suitability of climate.—S.

SEASONABLE WORK.

TAKE advantage of mild, open weather to push forward planting operations as vigorously as is consistent with the proper execution of the work. All dry, warm soils should be planted in autumn, but stiff clayey land and deep peat bog which retains an excess of moisture had better not be planted till spring. On such situations Black Italian Poplar, Goat Willow, Huntingdon Willow, Bedford Willow, Alder, and Birch may be planted with success, and as there is always a demand for this class of timber, it soon turns into money. As the different plots of ground are cleared of young trees, lose no time in having the ground dug into rough ridges, which will not only keep it dry, but also expose it to the influence of frost, which will renovate and prepare it for the next crop. In places where the soil is of a poor, thin nature, take advantage of frosty weather to cart and apply a dressing of good loam in order to improve it. Turn over compost and manure heaps, so that they may be ready when wanted.

The cutting of underwood should be finished as soon as possible, after which thinning the timber must be proceeded with, care being taken to mark all the inferior, unhealthy, or badly shaped trees that are likely to interfere with the full development of the better ones that are intended to stand permanently. In cutting young plantations for the first time, great care should be taken to use only good cutting tools, and to finish off the work well. In thinning screen plantations, the workman must, to a great extent, be guided by the depth or thickness of the belt. When it is narrow the removal of any considerable number of trees would mar its effect; but when its extent will permit of such treatment, the best way to secure a permanent screen is to keep the front trees well thinned out from the commencement, so as to allow them to branch low. By such means also a gradual increase in the height of the trees from the front line to the centre is secured, as those in the interior, from being more crowded, are the more rapidly drawn up. In felling heavy timber, which should be one of the principal occupations of this month when hands can be spared, the cross-cut saw should be used in preference to the hatchet, which will not only prevent unnecessary waste of timber, but also give the timber a better and more marketable appearance when put up for sale.

Cutting and cleaving cordwood and grubbing hedges or levelling banks are operations that can be done when the ground is covered with snow. Young plantations and ornamental trees and shrubs should be gone over to see that no injury is done by ground game, and any plants that have been nibbled or barked should be "bushed" by tying Heath, Birch spray, or Fir boughs round the necks of the plants; this will be found a safeguard against further injury for two or three years. Even if the plantations or specimen plants are protected by means of wire netting they will require attention to see that rabbits have not made inroads, as they frequently do during frost and snow, by scratching holes underneath the fence, and when pushed by hunger they frequently bite holes through wire netting. Nursery work, lifting and planting trees and shrubs, making and planting cuttings, digging ground that has been cleared of a crop, should now have attention.

Now is a good time to scour out all open ditches in plantations, and to distribute the soil evenly among the young trees, as by this means the fallen leaves are at once fixed, so that they decay on the spot, instead of drifting and filling up the watercourses, or choking pinnocks or culverts. New ditches should also be cut where required. Though great attention is paid to letting off water from young plantations, the ditches are often allowed to fill up as the wood gets older, but as the roots of trees penetrate deeper into the soil the necessity for removing stagnant water increases, and instead of the watercourses being allowed to fill up, they should be gradually deepened. This is more especially the case with plantations of Larch and Spanish Chestnut. Unsoundness of timber is frequently caused by the presence of too much water in the soil in which it grows.

No. 793. SATURDAY, Jan. 29, 1887. Vol. XXXI.

"This is an Art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—*Shakespeare.*

NOTES FROM MADEIRA.

A VISIT to this lonely island, far out in the great Atlantic Sea, will prove of great interest to all flower-lovers, more especially so, to my thinking, if they are already familiar with the gardens on the Riviera, for the very likeness only accentuates the differences that really exist. A difference of 10° in latitude must needs tell on vegetation; and, in consequence, everything that manages to survive the too frequent frosts or bitter winds of the Mediterranean shore here grows luxuriantly without need of protection. Many tropical shrubs and trees are also added to the flora. Three weeks of brilliant summer weather to greet a new-comer who arrives in mid-December no doubt predisposes to admiration; but I think that those who shiver at home under penitential skies of leaden grey will understand the charm of finding the turf on the mountain-sides (when over 2000 feet above sea-level) carpeted with white Violets and starred with dwarf rose-coloured Oxalis (*O. venusta* and *purpurea*) which on New Year's Day feasted both eyes and nose. Lower down, where water for irrigation may be obtained, the Peach orchards present a most unexpected sight, for here they flower before the leaves of last autumn begin to drop, and quite outrage all our gardening ideas of propriety by showing that they need no winter's rest to enable them to flower and fruit abundantly. From an artistic point of view this behaviour is much to be commended, and for the future I would advise rising artists to add apple-green and red-brown leaves in abundance to their studies of Peach blossoms. Another contradiction to all our northern ideas may be found in the Apple trees, which are also in full flower; while clusters of rosy-checked Apples and deep green leaves are to be found on the next or even the same bush. It is to be remarked that Pear trees do not thrive here, while the hardier Apple succeeds so well, only confessing by its white flowers, which have no rosy tinge such as we are accustomed to, that a cooler air would be more congenial to it. Lower down and nearer the sea precocious Fig trees are putting out fresh leaves to greet the new year; Aloes are blooming in thickets of orange Lantana bushes and red Geraniums; and everything proclaims that here at least there is no such thing as winter. The avenues of Planes and Oaks—which by some curious inversion of taste the Madeirans have planted largely, to the exclusion of their own beautiful native evergreen trees, the Til (*Oreodaphne foetens*) and the Vinhatico (*Persea indica*)—alone show a struggle between habit and necessity, which results in a compromise that is as little satisfactory as such things generally are. The result is that they present a most dishevelled and dissipated look, with about half their withering old leaves still on the branches, which have as partially pushed out fresh growth and young leaves.

Once in the gardens, so brilliant with wreaths of the orange *Bignonia venusta*, gorgeous with wonderful Bougainvilleas of all shades, from the most splendid Indian red, through magenta-crimsons, purples, and mauves, to what may be called white, and all manner of tropical fruits, such as Bananas, Mangoes, Custard Apples, Guavas, and others, which are beautiful in foliage and fruit, nobody can fail to see how wonderful

this climate must be, where the sun does not scorch the blossoms, and where the soft air does not wither the tenderest growth. Soil, they say here, is the cause of the great depth and variety in the colouring of the Bougainvilleas, and I have been shown branches on the beautiful Indian red variety which sported to the most brilliant magenta-crimson, in consequence of fresh soil having been added, which has the appearance of being rich in oxides, if red colour be any test; but sunshine and breeze must also be important factors in the case, or such intense colours could hardly exist. Surely it must be an oversight not to plant *Bignonia venusta* at Nice or Cannes, where so many *Bignonia*s thrive well and flower more or less during the winter, and it is certainly a matter of surprise that so beautiful a flower as *B. Cherere* or *B. Tweediana* is equally unknown here. *Tecoma jasminoides*, *Bignonia radicans*, *Solanum jasminoides*, *Heliotropes*, *Cassia fistulosa*, and the handsome *C. corymbosa* are now in great beauty. Roses are not remarkable, save for their quantity, as they are not cultivated with any care; but one old Noisette Rose named Adam, in habit and scent resembling *Lamarque*, but with blooms shading to bright rose, is worth mention, if only to ask, why do we not grow it in England? A huge *Crinum* with giant umbels of red-purple-backed flowers, which open nearly white inside, is bold and handsome; and the big bushes of *Iresine Herbsta*, covered with feathery panicles of bloom like a white *Celosia*, are extremely graceful and pretty—a pleasant surprise to those who only have seen it in a ribbon border. Coral trees and an orange *Combretum* are unusual to European eyes, especially when associated with Dragon trees, *Pandanus* or Screw Pine, and the rich red-brown bushes of *Dracena ferrea* and *D. terminalis*. Almost every garden has a fine tree of *Strelitzia angusta*, whose large creamy white, blue-lipped flowers with bronzy sheaths are handsome, if not so brilliant as the well-known *S. Regina* that grows underneath. Sugar-canes, Palms, and acres of Bananas, with terraced Vines and Sweet Potatoes, make up the common round of every day vegetation here, replacing the Olives, Orange trees, and Rose fields of the Riviera; and *Ficus indica* and *Bella Sombra*s (*Phytolacca dioica*) make the most suitable boulevard trees. Near Funchal the climate is too dry for the Ferns that are said to be so beautiful on the damp north side, but the Hare-foot Fern is very common on the stone walls when over 1000 feet above the sea, resembling at a distance our English Parsley Fern on a giant scale, as the rhizomes are generally hidden among the stones. It is not my object to-day to do more than mention the fine scenery inland for which Madeira is as famous as for its climate, but rather to show that there is much to see and learn, which will more than repay any garden lover who does not object to a four days' voyage, when he will surely find flowers and warmth to greet him on landing here. E. H. W.

M. Louise, Neapolitan, and Comte Brazza Violets.—These three varieties of Violets are at the present moment laden with fine blooms. It appears to me that it does not matter what the weather may be—mild, severe, sunny, or sunless (the kind of weather we have had since December 6)—if the plants get proper attention through the previous summer, they are sure to repay it by a prodigious harvest of bloom from October to May. *Marie Louise* is a grand acquisition, especially in autumn and early winter, but it has in no way diminished my love for the Neapolitan, which is now, and has been for the last month, studded with flowers. An excellent judge of Violets always impresses upon me the fact that this variety is the sweetest, and has the most powerful odour of any of the Violets. *Comte Brazza* is very robust, and extremely floriferous, the plants at the

present being white with flowers. Like the Neapolitan, it is not so early to flower as *Marie Louise*, but once it begins there is literally no end to the amount of produce. It is sometimes recommended to cultivate the plants during summer in open sunshine, as then they make less foliage than they otherwise would do. That is a practice that I dare not venture on here, where our subsoil is sand—red spider would quickly make its appearance—but probably it answers, and I know it will do where the subsoil is clayey loam, and more retentive of moisture than sand. My best plants are always grown on north borders; the foundations of the wall seem to keep more moisture in the border during hot weather than is found in the open; and, with the exception of the rows nearest the wall, the plants get plenty of sunshine.—Wm. ALLAN, *Ganton Park.*

* * * The flowers sent were exceptionally fine—bright and beautiful to look at under a dull London atmosphere.—E.P.

ORCHIDS.

W. H. GOWER.

BURLINGTONIAS.

THESE are small-growing plants, natives of Brazil and other warm parts of South America. They enjoy an abundance of heat and moisture, and should be rested during the winter months by lowering the temperature, but not by drying them off, for if subjected to this process they recover with difficulty. *Burlingtonias* succeed best in hanging baskets or on blocks, but they dislike having their roots much covered. They require a moister air than that which the *Cattleya* house affords at some seasons, and therefore we have grown them in the East Indian house. All the known kinds are worth a place in our stoves, but the following are the best, viz., *B. fragrans*.—This is a tufted plant with small pseudo-bulbs and deep green leaves; the spike, which is erect, bears from six to eight large flowers, which are produced in April and May, and are pure white, except the centre of the lip, which is stained with yellow. They are deliciously fragrant, yielding a perfume resembling that of the Hawthorn. *B. candida*.—This is another plant of tufted habit. It produces somewhat larger pseudo-bulbs than the last and broader foliage. The spike, which is drooping, bears from three to six large snow-white flowers, which have several fleshy protuberances at the base, where they are stained with yellow. It is also a spring bloomer. *B. Leeana* is a plant of somewhat recent introduction from the country about the Rio Negro. It produces its flowers during winter and early spring; in habit it resembles the species previously named, but it is more robust in all its parts, and the pendulous spikes bear from five to ten flowers, the sepals and petals of which are creamy white, suffused with a tinge of rosy purple, and streaked along the centre with a narrow line of yellow. The lip is also creamy white, dotted and spotted with rosy purple, and ornamented with a yellow crest. *B. decora* belongs to a different section; in habit it is somewhat straggling, and should be grown upon a large block of wood, to which it will soon become firmly attached by its roots; the stems, which between the pseudo-bulbs are several inches in length, produce roots along their undersides. The spikes, which are erect, bear numerous flowers, the sepals and petals of which are convergent, white, blotched and streaked with deep rosy pink. The lip is large and white, and deeply lobed in front. It is a winter-blooming plant.

White *Cattleya Trianae*.—We hear that in several Orchid collections about London this chastely beautiful and much-coveted Orchid is in bloom. One of the largest specimens of it in this

country is now in flower in Mr. R. J. Measures' collection, Cambridge Lodge, Camberwell. This plant carried the other day no fewer than sixteen spathes, on all of which the flowers were expanded. They are snow-white with not a trace of colour in them except a dash of pale yellow in the inside of the lip. Mr. Measures' rich collection of Cattleyas will shortly produce a great show of bloom, plants of such sorts as *C. Triane* and *Percivaliana* being well furnished with flower-sheaths.

Long-spiked *Cœlogyne cristata*.—Mr. Tanner has now among his Orchids at Camden Wood, Chislehurst, some exceptionally fine *Cœlogyne*s. On one plant there are two spikes, one bearing no fewer than ten flowers, the others nine. We have not heard of so many flowers on a spike before. These spikes have been produced in a curious way, for instead of springing from the base of the last fully developed pseudo-bulb, they are produced from the top of small bulbs about the size of Hazel nuts, made after the normal bulbs were fully grown.

***Lycaste plana*.**—It is not often that one meets with this handsome Bolivian Orchid in bloom. Mr. Dorman, however, has it in that condition in his garden at Sydenham, in company with *L. Lawrenceana* and no fewer than four plants of the rare *L. Skinneri alba*. *L. plana* has flowers nearly as large as those of *L. Skinneri*, a species which it resembles in growth. The broad sepals are of a pleasing rosy red colour, and this, in contrast with the white inner petals which are adorned with erimson blotches, makes a pretty flower. In some varieties the lip is white, but usually it is spotted. It always flowers in winter and generally about this season, hence its value.

***Odontoglossum ramosissimum*.**—Ordinarily this is not a showy Orchid, but the best forms of it are extremely pretty and very different from the type. Mr. Dorman has a variety in bloom, at The Firs, Sydenham, which is one of the best we have seen. The flowers are spotted all over with violet-purple on a white ground, and not flushed with pink, as is usually the case. In habit of growth it resembles *O. cirrhosum*, the flower-spikes being tall, much branched, and bear numberless flowers having narrow wavy-edged sepals and petals. As it flowers during winter it is desirable. The *Odontoglossum* collection altogether is just now interesting. Of *O. Rossi majus* there are endless varieties in bloom, and also of *O. erispum*. Among others are *O. Andersonianum*, both the yellow and white forms; also *O. Cervantesi* and its superb variety *decorum*, whose flowers are larger than those of the original, and heavily spotted and barred with deep rose-purple.

***Oncidium tigrinum*.**—This is a very useful species during the late autumn months; its long spikes of primrose coloured flowers have a pleasant perfume resembling that of Violets. Now is its resting period, and therefore it should have a rather dry atmosphere, and a temperature of 45° to 50° suits it admirably. It should be placed quite close to the glass roof, and, as a rule, it needs no water until it shows signs of growth. With it are placed *Lælia majalis*, *L. autumnalis*, and the brighter coloured form *L. a. atro-rubens*. We flower *L. majalis* well annually by growing it in a light, warm position in the summer, and in a light, cool, and dry place in winter. We give the plants, as a rule, no water during the winter months.—J. D.

***Cypripedium caudatum*.**—Of this singular and well-known species large plants in good health have always been, and probably always will be, very valuable. I have grown it for many years, but my plants of it have not, as a rule, been so vigorous as I should have liked. We tried them in the cool house, but were not satisfied with the result. They were subsequently placed in a cool, rather shady part of the Cattleya house, where they did better; but with us the older leaves have a tendency to die back, making the plants look unsightly. Some time during the past season a very well grown specimen was exhibited by Sir Trevor Lawrence, and attached to it was a label stating that the plant in question had been grown

in the cool house for two years. Mr. Houghton, at Walthamstow, grows his plants in the warmest house, along with *Phalanopsis*s, *Cypripedium Spicerianum*, and other moisture and heat-loving Orchids, and they seem to do well. He had some plants, part of a recent importation, that seemed to be doing better than ours from the same source. This seems conclusive that an East Indian house answers best for this species.—J. D. G.

ORCHID CULTURE.

"W." speaks (p. 41) of Orchids not being ornamental. I admit there is not much beauty in many of the deciduous kinds when in a state of rest, but many varieties hold their own as regards variegation of an ornamental kind with what are termed fine-foliaged plants, and many others not variegated have a pretty and graceful habit of growth. I am not surprised that the grower alluded to by "W." should have given up his Orchids in disgust, when, to use "W.'s" own words, "he had plants which never flowered from the day they came—several years—many that flowered but sparingly, and only a few that flowered fairly well." In this case was there no blame attached to the grower? I was once asked by a gentleman to go and see his Orchids which he had decided to get rid of. I found them in a plant stove, cool and stove varieties receiving the same treatment—*Odontoglossum*s and *Cattleya*s, *Lycastes* and *Angraecum*s, *Oncidium*s and *Cymbidium*s side by side. I recommended that he should not give them up, but treat them according to their several requirements. My advice was taken, and now, although for want of space he has only a small collection, it would be difficult to find a more enthusiastic admirer of Orchids than he now is, or plants in a more thriving condition. "W." implies that Orchids are going out of fashion. If such is the case, I am at a loss to understand what becomes of the enormous consignments that continually reach this country. Orchids, as a rule, are not more expensive to cultivate than a collection of flowering and fine-foliaged plants. "W." admits there are a few varieties worth growing, but limits their number to ten, a number, which I think, might be a little extended. I should like to know which are the ten "W." would recommend. For supplying cut blooms during winter and late in autumn, Orchids are invaluable, both for freedom of flowering and beauty of bloom. Under judicious treatment flowers may be had in abundance, say, from the end of November till March, which, as a rule, are dull months. Here we have *Lælia*s in great variety; amongst them may be named *aneeps*, *autumnalis*, and *albida*; also *Lycastes*, *Odontoglossum*s in many varieties, *Cœlogyne*s, *Cattleya*s, *Dendrobium*s, *Phalanopsis*s, *Oncidium*s, *Angraecum*s, and many others. One other item may be mentioned in favour of Orchids, and that is, that really good varieties, given good cultivation, are always increasing in value, so that if the owner of such plants be at any time desirous of parting with them, he may rest assured of getting not only the money originally paid for them back, but in addition a good percentage on his outlay.—G. H.

— Here Orchid blooms, as well as those of Roses, have to be forthcoming all through the year, and in quantity. The East Indian house has for the last six or seven weeks been gay with such Orchids as *Angraecum sesquipedale* and the beautiful *A. Ellisii*, both of which are fragrant. We have also *Phalanopsis Sehilleriana*, with upwards of forty flowers on it, and even at this dull season they make a grand display. The rare and beautiful *P. Stuartiana* is also unfolding its blooms, and on *P. amabilis* there are thirteen flowers, not one of which is as yet spotted, as is too often the case with this particular species; it has been in flower for upwards of six weeks, and still retains its beauty. I feel confident that if only a few of these plants were disposed of at any of the auction rooms, they would realise more than treble what the whole collection cost three years ago. Surely "W." must confess, therefore, that here at least

Orchid culture pays. In the same house, too, are *Calanthes*, *Lady's Slippers*, *Saccolabium*s, and others intermixed with *Euphorbia jacquiniiflora*, *Poinsettias*, *Justicias*, and other stove plants, and the effect of the whole may be more easily imagined than described. Now, if we gave up the cultivation of Orchids and wholly depended on ordinary stove plants, we should never produce an effect at this time of year such as we do now. In order to convince "W." that Roses as well as Orchids are cultivated here on an extensive scale, I may state that the number of blooms cut from a Rose house 50 feet by 18 feet was above 2000 between October 21, 1885, and April 30, 1886.—A. J.

***Oncidium Marshallianum*.**—Amongst yellow-flowered species this is my favourite, but I must confess that, until the present season, I had not quite mastered its culture. It used to be grown suspended near the roof in the cool end of the Cattleya house, but the plants never seemed to grow there with very great vigour, and the bulbs either did not increase in size, or grew beautifully less. They have for twelve months nearly been grown in the cool house, and since the first month in which they have been placed there the increase in vigour has been steady and continuous. They prefer a light position, and basket rather than pot culture.—D.

***Aerides odoratum*.**—Amidst such a plethora of new orchidaceous plants this old-fashioned, sweet scented species is becoming neglected. That should not be so, however, for it belongs to a popular genus that can be maintained in good condition for half a century at least under good cultivation in an ordinary plant stove. It does not require a high temperature, and grows with less care bestowed upon it than almost any other stove plant with which I am acquainted. I have grown it in pots without any renewal of potting soil for three years, and the pots outside and inside have become quite interlaced with roots. The variety *purpurascens* has longer spikes than those of *odoratum*, and the flowers are more richly coloured. It was grown in the Royal Gardens at Kew so long ago as the year 1800, plants of it having been introduced by Sir Joseph Banks from China. Both kinds may be grown in any ordinary plant stove in which there is a winter temperature of from 50° to 55°.—D. S.

***Lycaste Skinneri* at Higham Hill.**—Since the Orchid conference was held some eighteen months ago at South Kensington, the question of applying manurial agents of some kind to Orchids has been before the public. Mr. Borwick, the owner of the collection at Higham Hill, has persistently advocated the use of fish manure for Orchids. Nearly, if not quite, the whole of the plants in this collection have been treated to fish potash manure in the shape of powder dusted amongst the potting material, or applied in the form of a pinch of the powder thrown into the water with which the plants are watered. All the Orchids thus treated are in a thriving condition, but the collection of *Lycaste Skinneri*, comprising about half a houseful, is as well grown as it is possible for such plants to be. The most remarkable evidence of good culture is to be found in the two years' growth of quite small plants. Bulbs not much larger than Windsor Beans will form a bulb four times that size in the first season, and this larger bulb will produce another the next season quadrupled in size. The lovely white variety grows quite as freely as the others. There are at present numbers of very beautiful varieties in flower, and these bear some relation to the quality of the plants, the flowers being clean, of large size, and of considerable substance. The potting material used is in all cases of the simplest description; the best fibrous peat is used for *Cattleya*s, *Lælia*s, &c., and the finer particles passed through a sieve are used for the *Lycastes*, a portion of loam and leaf-mould being used with them; in some cases loam and leaf-mould only are employed, and the plants succeed equally well. Many good Orchid growers fail to cultivate this handsome species of *Lycaste* well, while with others it succeeds well for a time,

but subsequently declines in vigour. Some grow their plants in the coolest house, and others succeed equally well with them under Cattleya house treatment. I have plants now purchased twenty-three years ago which are quite as healthy as others obtained four or five years ago. We only grow a dozen plants, and in that number we had two double-flowered peduncles this year. Mr. Gilks, the gardener at Higham Hill, told me that they frequently had two flowers on one stem there, but that they cut one off in order to allow perfect development in the case of the other. From personal experience I can assert that the use of leaf-mould with peat in Lycopodium-culture gives greater vigour to the plants than they otherwise would have. I grow the whole of our plants in the Cattleya house, as they grow with greater vigour there than in the more shady and cooler atmosphere of the *Odontoglossum* house.—J. DOUGLAS.

Phaius grandifolius.—In my opinion the remarks made by "W." (p. 41) apply to many kinds of Orchids, but there are others which can undoubtedly be grown as profitably as other flowers, and amongst these *Phaius grandifolius* deserves a place. It is one of the easiest managed and most floriferous of Orchids. It may be grown like any ordinary stove plant in summer, and it never fails to throw up its flower-spikes most freely at this season. Our best plant last year produced fifteen spikes. They were about 1 foot high each; the blossoms began to open on them at the beginning of March, and they were not over until May. The single blooms, if taken off and wired, are very useful. I do not know any ordinary flowering plant which would stand so much knocking about in church or mansion without being injured or destroyed as this does. It likes rough material in which to root, abundance of water, and plenty of light.—CAMBRIAN.

Phalænopsis amabilis.—Of this I send you a specimen, in order to show how we grow it at Henham. I have forwarded single flowers of this *Phalænopsis* before, but by the enclosed cut spike you will have a better opportunity of judging what a beautiful Orchid it is. We have similar spikes every year, but have not seen a better than that which I now send you on this variety.—GEO. EDEN, *Henham Hall, Suffolk*.

* * The spike received is truly beautiful, being upwards of 18 inches in length and bearing thirteen snow-white flowers, unusually broad in the sepals and petals, and measuring nearly 4 inches in diameter.—ED.

SHORT NOTES.—ORCHIDS.

Zygopetalum Mackayi majus.—This is a most useful winter-flowering Orchid. The flowers remind one of those of a lovely Iris, and they are very fragrant, but perhaps one of its most meritorious points is the grand way in which it submits to being confined to a room when in blossom. A plant here which was attractively in flower on December 1 was placed in a room on that date, and at the present time, January 24, it is there still as bright, fresh, and fragrant as ever. Could anything in the form of a flowering plant do better than this? I think not.—J. MERR.

Calanthes.—Some of the finest of these I have seen this winter were grown at Hendre. The varieties were *C. vestata* and *C. Veitchi*. The majority of the spikes were about 4 feet in length, and a yard of this length was covered with fully opened blooms, remarkable for the brightness of their colour. The bulbs are kept quite dry when developing their blossoms, and this is undoubtedly the best of all ways in which to treat them.—J. M.

Cattleya Trianae alba.—We have received from Mr. W. Gibbs a beautiful form of this rare Cattleya, the flowers of which measure fully 6 inches in diameter. The sepals are narrow, but the petals are nearly 2 inches broad, and undulated at the edges. The lip is also pure white, with a faint stain of lemon colour towards the base, the front being deeply crenate. The same form also comes from Mr. Horstman, of the Marks Tey Nursery.

Cattleya Percivaliana.—Flowers of a very fine form of this labiate type of Cattleya came to us from Mr. Osborne, Wilton House, Southampton. This section is not generally notable for size, but the flowers before us measure, nevertheless, nearly 5 inches across, and they are exceedingly fine both in colour and form; the petals are much broader than the sepals, and deep rosy bluish suffused with violet. The lip is prettily fringed on the edge, and bordered with a deeper shade of the same hue, passing into purplish crimson; centre rich velvety maroon, basal portion blotched and raged with deep orange. This is one of the finest varieties of this useful winter-flowering Cattleya which has come under our notice.

Odontoglossum Rossi majus.—With this I send you six varieties of *O. Rossi*, which we think are very distinct, viz., *Humeanum*, *asperum*, *rubescens*, and a supposed cross between *Rossi* and *Cervantesi*. With these are associated two other fine unnamed varieties: also flowers of the distinct *Lycopodium* *Barringtonia grandiflora* and a very fine variety of *Odontoglossum odoratum*, likewise *Cattleya Trianae* (Measures' variety), cut from a plant with thirteen leading growths and nine flower-sheaths. The flowers sent have been open more than a fortnight. Other *Cattleyas* blooming here are *C. Trianae Dodsoni*, a very large-flowered and handsome variety; *C. chocoensis amena*, also sent, you will observe the fog has completely crippled. It is an elegant and delicate flower, the brilliant colour on front of the otherwise pale lip rendering it very attractive. The *Laelia anceps* sent we recognise as the best variety. This spike opened at Mr. Measures' county house, the fog having cut off all our *anceps* in London this season.—H. SIMPKINS, *Cambridge Lodge, Camberwell*.

* * The forms of *Odontoglossum Rossi* sent herewith are very fine indeed; *O. Humeanum* and *O. asperum* are, however, separated from *Rossi* by Prof. Reichenbach, who considers them natural hybrids—the former between *O. cordatum* and *O. Rossi*, and the latter between *O. Rossi* and *O. maculatum*. The last has much the appearance of a yellow-flowered form of *O. Rossi*. The *Laelia anceps* is a large, bright-coloured form, and the *Cattleyas* are charming, confuting the assertion that Orchids are not ornamental, even during winter.—ED.

NOTES OF THE WEEK.

Helleborus niger major.—Our Devonshire variety of this is now finely in bloom, and a very handsome Christmas Rose it is. The flowers have long foot-stalks, a great advantage when they are used in a cut state.—ROBERT VEITCH & SON, *Exeter*.
* * Foliage and blooms both fine, and the foot-stalks, being so stout, hold the flowers erect.—ED.

Christmas Roses.—Herewith I send you flowers of a pretty form of what I presume to be *Helleborus antiquorum*. It is always the first to open of this section, and the colouring is distinct and attractive. F. MOORE, *Royal Botanic Gardens, Glasnevin*.

* * A handsome Christmas Rose of a dull reddish plum colour outside, but paler within, and most welcome at this season of the year.—ED.

The white winter Heath (*Erica hyemalis alba*).—This new white form of the old and well-known winter Heath is a welcome addition to winter-flowering greenhouse plants. It is the exact counterpart of the type in habit of growth and floriferousness, differing only from it in colour, and when better known it cannot fail to become extremely popular. We saw it recently finely in flower in the nurseries of Mr. Kinghorn, at Richmond.

Acrotiche divaricata is the name of a pretty little plant at Kew that seems worth attention as a winter greenhouse shrub. It has the appearance of a small *Epacris*; the branches are very slender, and every twig is terminated by a cluster of snow-white flowers. The plant is a profuse bloomer, and as neat as a Heath in growth. Its flowers would be found very useful for making up small button-hole bouquets. It may be seen among the Australian plants in the temperate house.

The late Marshall P. Wilder.—At a meeting of the Massachusetts Horticultural Society held the other day, it was stated, concerning Col. Wilder, that a fund established by the provisions of his will, by which medals are annually to be given for the encouragement of the cultivation of certain fruits, would for ever be associated with his name, and would be the means of perpetuating his memory.

Royal Botanic Society.—Arrangements for 1887.—Exhibitions of spring flowers, Wednesdays, March 23 and April 20; summer exhibitions of plants, flowers, and fruit, Wednesdays, May 18 and

June 15; evening fête and exhibition, probable date, July 6; special exhibition of American plants, by Mr. Anthony Waterer, Knap Hill, Surrey, daily during June; promenades, Wednesdays in May, June and July at 3.30 p.m.

Acacia longifolia.—This is one of the very best of the *Acacias* for growing as small plants for the greenhouse, and as it is one of the earliest to bloom it is the more valuable. Some well-grown pot plants in the greenhouse at Kew make a very bright show, the clear sulphur-yellow of the flowers being different from that of others. They are produced in dense round spikes about as thick as a pencil, and some 2 inches in length, and these spikes wreath each of the slender branches. It is a far finer plant than the common *A. platyptera*, also in flower now, which, though singular in growth and floriferous, is not of such a good telling colour.

The Silver Wattle tree (*Acacia dealbata*) is again the chief attraction of the great temperate house at Kew. The fine tree of it, which reaches the roof, will be presently quite a golden cloud of blossoms, which, with the silvery foliage and white stem and branches, have a charming effect. This tree has for many years been the feature of the house for several weeks from the end of January, and it seems to have reached its full growth, and it is only when such grand specimens as this are seen that one can form an idea of the glow of colour these *Acacias* make in the Australian bush, and one can scarcely judge of the grandeur of this Kew tree from seeing the Silver Wattle as a pot plant.

The white Freesia.—A lovelier or more fragrant plant than this does not exist, and its blossoms at this dull season afford the greatest treat in the greenhouse that one can have. But it is not generally known that *Freesias* may be forced into bloom so early or so easily. A few weeks only elapse from the potting of the bulbs till the flowering time, and if good sound bulbs only are potted, and these not subjected to a great heat, a good crop of bloom will be the result. The pure white variety known as *F. refracta alba* is the sort to choose, the flowers of the others being of a yellowish tint, while those of *alba* are pure white, and deliciously scented like Violets. A group of white *Freesias* in the greenhouse at Kew quite scents the house.

The Rose Mallow (*Hibiscus rosa sinensis*).—It is much to be regretted that this extremely showy, free flowering, and easily-grown plant is so little cultivated as it is in private gardens. It is an excellent subject for covering back walls in lean-to stoves, and by a judicious use of the knife can be readily formed into a handsome specimen in a pot; there is no lack of variety in the colour of the flowers both single and double. A large single scarlet variety, named *fulgidus*, having a crimson blotch at the base of each petal, we saw recently covering the back wall of a stove at Beddington House, where it was very effective; the large, rich, shining, green leaves quite hid the wall, and formed a charming background for the brilliant blossoms.

Iris reticulata.—Roots of this I potted up in August, and plunged them in a cold frame till December; then I placed them on a shelf, near the glass, in an early Rose house, in which the minimum temperature was 45°. With this small amount of forcing we were able to have them in flower along with the earliest batches of *Lily of the Valley*. When one takes into consideration the heat required in order to have *Valley Lilies* by Christmas and the new year—certainly not less than 80° or 90°—it is surely a great recommendation to this handsome little Iris, with its Primrose-like fragrance, that with so little trouble and attention it may be had in flower in the depth of winter.—WM. ALLAN, *Ganton Park*.

* * With this came lovely flowers—beautiful even as those of an Orchid, rich deep violet in colour, set off with bright yellow markings on the blade; their fragrance, too, is delightful; doubtless the ease with which this Iris forces arises from the fact that it blooms naturally, in ordinary seasons, in the open air, in the end of January and February.—ED.

The Nepaul Barberry (*Berberis nepalensis*), a common plant in open air gardens, is now a fine object in the temperate house at Kew, where there is a plant

10 feet or 12 feet high in bloom. Each of the tall stems is terminated by a dense cluster of lemon-yellow flower-spikes, and these, with the long, handsome foliage and chalky white stems, are highly attractive. It is only when planted in a large conservatory or against a warm wall that the full beauty of this noble Himalayan Barberry can be seen, for it rarely flowers when planted in the open. It is one of the handsomest shrubs one could choose for planting out in a large, cool conservatory border, for, being an Evergreen, it is a handsome object all the year round.

GARDEN IN THE HOUSE.

Spiræa japonica.—This is of such exceptional merit indoors as to be worthy of a prominent place, and it is of very easy culture. Few flowering plants indeed have such an elegant appearance, the plume-like masses of bloom, so pure in colour, being set off to the best advantage by the fresh green, much-divided, elegantly-disposed foliage. As regards habit, this *Spiræa* is the ideal of what a pot plant should be, and it is not to be wondered at that it should be in such great demand for indoor ornamentation. Many thousands of it are annually disposed of in Covent Garden Market, and it is equally in favour in other countries. The important point is to obtain well-grown roots, for small weakly pieces yield but a faint idea of the beauty of this *Spiræa*. These should be obtained at the close of autumn when growth has come to an end, and be potted at once in their blooming pots, in free but rich soil, such as loam with a good addition of decomposed manure. From the beginning of November till the middle of March a cool room is the best place. After the last-mentioned date they will do very well in a living room, and will, of course, come into bloom earlier, but if allowed to come on in a cool temperature, the flowers will be much finer. As this *Spiræa* is a coarse-rooted plant, the pots become well filled with fibres by the time the spikes are thrown up; therefore, they require an abundance of water during that time onwards, and some weak liquid manure at frequent intervals. It is absolutely necessary that the growth be made in the open air; therefore, the last week in May plants which have bloomed in the dwelling should be turned out. Do not neglect to water them, and, if you have a garden, you cannot do better than plant them out in rich soil for the summer. As they will be too large for the same pots the following year, it is best to cut the clumps in two when setting them out. If they are to be kept in pots they will need dividing and repotting in rich soil, and in this way *Spiræa japonica* may be successfully grown where there is no convenience for planting out. *S. palmata* resembles its congener in manner of growth; it is not quite such a graceful plant, but the flowers are of a fine rose colour, and it is well worthy of careful culture. The treatment required is identical with that described for *S. japonica*.—J. C.

Deutzia gracilis.—When in good bloom this is one of the most pleasing plants in cultivation, the numerous pure white flowers contrasting admirably with the delicate green foliage. Although by nature a hardy shrub, and therefore of easy culture, it does not seem to be so well grown as one would think it ought to be—a fact attributable to the want of liberal culture after the blooming season. I would advise window gardeners to grow this little shrub in a cool room; it blooms much better when it comes along very gradually, and in the confined atmosphere of a living room the flowers are apt to come very small and deformed. Like *Spiræa japonica*, the *Deutzia* enjoys a free root run in good soil throughout the growing time, and this is the way florists and market growers treat their plants. At the same time good results are obtainable when the plants are ripe in the pots, but they require strict attention in the matter of water and feeding when making their growth. *Deutzias* often suffer much when they are turned out of doors after blooming, and cold nights and biting winds cripple the growths,

which are more tender than those of any flowering shrub that I am acquainted with; and therefore they should remain under cover, and where they get plenty of air until quite the latter end of May. Those who possess a cold frame will have no difficulty in giving their plants the treatment they need after blooming; but when this accommodation fails, select some sheltered, rather shady position, allowing them to remain there for a week or two, and then placing them in full sun. Another equally important point is not allowing them to want for water and food, as such neglect induces a crippled condition, which it takes a month or two of liberal culture to remove; I may add that unless these little details are observed, there will be but little use in attempting to grow this *Deutzia*.—BYELEFT.

CAMELLIA CULTURE.

BUD-DROPPING.—It is not unusual for *Camellias* which at the end of the autumn are full of buds to cast the majority of them during the winter. Bud-dropping, in the case of *Camellias*, is undoubtedly due to an insufficiently active flow of sap at a critical moment. Just at the time when the first flowers begin to open, the great strain on the resources of the plant commences, and it stands to reason that if only sufficient food for a dozen buds is drawn up, and if there are more than that number on a plant, some of them must suffer. This is the case with all flowering plants, but they show it in the shape of small or deformed blooms; whereas the *Camellia* gets rid of the buds that it cannot nourish. It is a singular fact that weakly *Camellias* are apt to set a larger number of buds than those in robust health. The buds are, however, not large, and lack substance. I have noticed this peculiarity in the case of many kinds, notably such free blooming varieties as the red, double white, Lady Hume's Blush, and Donekelaari. When a not over-strong plant carries half a dozen, or more, buds on a shoot, it is a great chance if any of them comes to perfection. The best way in such cases is to give the plant a complete rest by picking off the buds for a year or two. This, in combination with good cultural care, will bring it into a healthy, floriferous condition in a couple of seasons. There are not many, however, prepared to make so great a sacrifice, and unless a plant is in a very bad state indeed, disbudding will suffice. Not more than one bud to a shoot should be left, and the thinning should be done as soon as the buds are formed. By retaining all the buds none of them will become good, well-formed blooms whilst they remain on long enough to keep the vital forces of the plant at a low ebb.

There are some kinds, such as *Jacksoni* and *Mathotiana alba*, that produce buds sparingly, and in a general way in their case there is but little margin for thinning, but the generality of *Camellias* are the better for being examined as soon as they are housed, leaving only as many buds as the strength of the plants will allow them to develop properly. This will alone in many cases do away with bud dropping, and would maintain the plants in a healthy state. Overcropping a *Camellia* lowers its vitality for some years. The great point is to know how many flowers a plant is able to expand without distress, and to leave that number only. Although bud-dropping does not as a rule occur before winter is well on its way, the injury is often done at a much earlier period. A dangerous time is when the plants are brought in from the open air. Unless care is taken to give them plenty of air for a time the change is apt to partially arrest the flow of sap, and then good bye to a satisfactory show of bloom. Another fertile source of mischief is fire heat in winter. Dry heat is what *Camellias* cannot bear. A gentle warmth of from 50° to 55° will be rather beneficial to them than otherwise, but give them 10° or so more and you court disaster.

REPOTTING.—Opinions differ considerably as to the best time for repotting, some preferring autumn when growth is completed and before the

roots have ceased to be active, whilst many choose the late spring months for doing so. I should myself prefer the latter period, choosing the moment when young growths are beginning to push. This is the time when *Camellias* are always kept warmer and closer than usual in order to promote early growth, conditions which favour free root action. If discrimination is used as regards the amount of fresh soil employed, the roots ought to take good possession of it by the autumn, so that when placed in the open air they are in a condition to bear heavy rains without suffering. If potted in autumn they ought to be taken under cover immediately, or many of the roots will decay. I cannot but think, however, that it is rather risky to repot *Camellias* when buds are on them. There is one thing about which all *Camellia* growers ought to be careful, and that is to avoid all semblance of overpotting. The health of thousands of good *Camellias* in this country has been permanently injured in this way. I do not know any flowering plant that can be retained in a floriferous condition for so long a time in a root-bound condition as the *Camellia*. One grower told me that he had not repotted his plants for seven or eight years, and stated that he did not intend to disturb them for another equally long period if they remained in the same healthy floriferous condition that they were then in. I myself have had plants in my charge that had not been repotted for ten years, and they looked remarkably well. They were, however, in tubs and very large pots. In the case of young plants it is, of course, desirable to bring them along as quickly as possible, and their roots should not be allowed to become too thickly matted. As to compost, either peat or loam alone will grow good *Camellias*, that is, if the right material can be obtained. I have always preferred about half of each with a dash of leaf soil, plenty of silver sand of the coarsest description, and a little charcoal, which, by the way, is about the best thing that can be used as drainage. Young plants should not be potted hard, but when they come into 8-inch pots they can scarcely be potted too firmly. Firm potting causes the roots to ramify and fill the upper portion of the compost better than when they can easily find their way to the bottom of the pot. This is one of the surest safeguards against the soil becoming soddened.

RENOVATING UNHEALTHY PLANTS.—Whatever may be the cause of ill-health in *Camellias*, the roots are sure to be deficient in quantity and activity, and before top-growth can again become satisfactory they must be brought into a healthy condition. The surest way of doing this is to put them for a time on a spare diet. As much of the old soil as possible should be got away; the plants should be replaced in clean, well-drained pots just sufficiently large to contain the roots, using fine, well-sanded peat. All pieces of decayed roots should be cut away with a sharp knife. With careful watering and suitable atmospheric conditions a certain amount of healthy growth will be made the following season. In a general way the fresh compost given will be enough for a year or two. When the pots get full of roots and a good amount of healthy foliage is made, they may be shifted again. After potting they should be placed in a close house and be well syringed twice a day in fine weather, keeping off hot sun. On no account should plants which are undergoing this process of restoration be allowed to flower. J. C. B.

QUESTIONS.

5543.—**Pear tree scale.** If any reader of THE GARDEN would kindly give the best means of freeing Pear trees in an orchard house from scale, I would feel obliged.—M. D.

5544.—**Sulphate of ammonia.** I have been told that this is a capital manure for Vines, Peaches, and pot plants generally. Will someone kindly say if that is so, and the strength at which it should be used?—P. S.

5545.—**Skating-rink.** I should be very grateful if any reader of THE GARDEN would give me a few practical hints for the best construction of a skating-rink. I can procure water through pipes for flooding the same when necessary.—V. T.

ROSE GARDEN.

T. W. GIRDLESTONE.

ROSE-COVERED PORCHES.

How is it that plants are often seen flourishing in cottage gardens with a luxuriance which seems unattainable in gardens where all conditions appear to be so much more favourable? The great masses of Hepaticas, for instance, in the cottagers' gardens in some of the western shires are unsurpassed, while the clumps (sometimes almost forests) of Madonna Lilies are the envy of passers-by, and the climbers by which the cottage is often half hidden seem to grow with more enjoyment than anywhere else. Perhaps the reason may not be further to seek than in the employment of materials well suited to the climate and conditions, for there is no doubt that common plants well grown are more decorative than half-starved specimens of more brilliant things, for whose proper cultivation the requisite means are not attainable; and a cottage porch smothered with Honeysuckles and some old-fashioned Rose is about as pleasant a sight as can be seen, in spite of the climbers being neither rare nor costly.

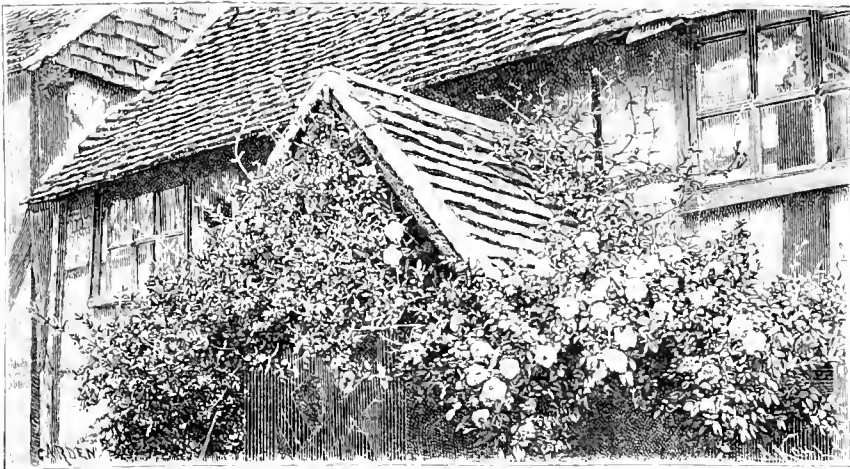
of striking specimens in cottage gardens will probably be found in the fact that, not being too numerous, each plant is tended and looked after with the greatest care; the precious and carefully collected road-scrapings, not having to be spread over too wide an area, are heaped round special favourites to provide at once food and protection, and thus is encouraged that luxuriance of growth which renders possible the Rose-covered porches of our Surrey cottages, whereby a pleasant feast of brightness is afforded to weary travellers passing by.

— It is remarkable how seldom the white Rose (double or garden variety of *Rosa alba*) is to be seen in any but cottage gardens, and the same may be said of its near relation the Maiden's Blush. Such good Roses, capable as they are of highly ornamental treatment and so individually charming, certainly deserve more general culture than they receive. The white Rose does equally well as a bush 5 feet to 6 feet high, or as a low climber. The cottage porch we engrave shows it in the latter form, trained to meet a Honeysuckle in the front, the training not overdone, but with that happy knack of supporting and guiding without apparently constraining, that

with Roses entirely unfitted for the purpose, or the employment of too many varieties. The number of available sorts is not large, and perhaps a dozen names would exhaust the list of first-rate kinds, but the employment of these or any twelve different Roses upon some half-a-dozen arches would effectually preclude the possibility of anything like a fine display. On the other hand, what could be more striking than such a series of arches, each arch densely wreathed with the Evergreen *Félicité Perpétuelle*, probably the best of all varieties for the purpose, with its rampant growth, its dark green persistent foliage, and its myriad pure white flowers, each one a perfect rosette. If numerous varieties are employed, the result is seldom satisfactory from a decorative point of view, because the different sorts will not flower at the same time; but this difficulty is obviated by using only one variety at a time, whereby the striking effect obtainable by having a number of arches of Roses simultaneously sheeted with bloom is ensured.

In case of the employment of several varieties on a series of arches, each arch, at any rate, should be covered with one Rose, and not have two different kinds planted beside its two pillars, so that at the flowering time each arch, at least, may be complete, rather than have one half blossoming while the other half is green or bare. Even if they can be induced to bloom at the same time, unless they are of the same class and habit, the effect of two different Roses mixed up together is generally somewhat incongruous and unpleasing.

In the selection of varieties the qualities to look for, in addition to the obvious essentials of rampant growth and profusion of bloom, are hardiness, pliability, persistence of foliage—which foliage should be handsome, but only of moderate size, as the very large-leaved Roses, when grown on arches, get their leaves so lacerated by the wind and soon look untidy—and comparative freedom from the more disfiguring of Rose pests, such as mildew, &c. In addition to *Félicité Perpétuelle*, which is unsurpassed as an arch Rose, there may also be mentioned as fulfilling the above conditions the Ayrshire splendens, whose white flowers, less regular in outline than those of the last-named, are relieved by a slight pink edge. These two varieties are the pick of their respective classes, but if a pink variety in the same section be desired, there is no fault to be found with the Hybrid *Laure Davoust*, whose charming pink flowers are produced in immense clusters, except that in the north it is not quite hardy enough to avoid some disfigurement in a severe winter, unless it be somewhat protected with Bracken, or such covering. In the southern counties, however, both this and the climbing *Aimée Vibert*, or *Aimée Vibert scandens*, as it is sometimes pelantically called, make good arch Roses, and the two are sufficiently near in character to make a good pair, the one pink and the other white, where several sorts are desired. But when it comes to the *Noisettes*, there are two varieties of which use should be made whenever possible, for if not perfectly hardy they are well worth the slight protection of Fern, which renders them so. The first of these is *Rêve d'Or*, an exceedingly vigorous Rose and the hardiest of its class—a Rose which could not be considered otherwise than a highly ornamental plant, even if it never flowered, for its young shoots are brilliant red, and the handsome foliage is rarely without some bright tint; but its character does not belie its name, and the wealth of golden and tawny blossoms displayed constitutes truly enough a vision of gold, and not a fleeting vision like an every-day dream either, for the flowering only ends when the frosts begin. The second variety is the now well-known and deservedly popular



Climbing Rose on porch of cottage in Surrey. Engraved for THE GARDEN from a photograph.

But the supposition that the denizens of cottage gardens are so fine because they are indigenous or exceptionally hardy plants is not sufficient to account for the handsome subjects there so often met with; the finest Catherine Mermet I ever saw was climbing on the chimney of a cottage by the roadside in Surrey, and in a similar position in another part of the same county I have seen blooms of *Gloire de Dijon* such as I have never seen elsewhere, even in celebrated Rose gardens. Everyone will doubtless recall Canon Reynolds Hole's description of the noble specimens upon the walls of a cottage of the glorious, but hardly-to-be-flowered *Noisette*, *Cloth of Gold*, which so rarely gets sun enough to ripen its shoots in this climate, and even more rarely succeeds in preserving them uninjured until the flowering time. I myself have experienced the pangs of jealousy when passing a house masked with a climbing *Devoniensis* in full bloom, the cultural attention to which consisted in its being occasionally gone over with a long handled bill-hook, such as is used in trimming hedges, "just to keep the shoots from rattlin' on the windows."

In spite of these seemingly anomalous instances, however, the real reason of the presence

best shows the beauty and natural growth of rambling plants.

ROSE ARCHES.

THE mode of decorating our gardens with arches of Roses carried over paths seems of late years to have gone very much out of fashion, although Roses so grown may be made to constitute a very attractive feature, a fact to which the engraving in last week's GARDEN abundantly testifies. It has been urged that Rose arches are always ineffective or inconvenient, and generally both; but if so the reason is probably to be found in a want of skill in the cultivator or constructor, or both. For there is no design that is safe from being made to appear ridiculous through its attempted execution in ill-chosen materials; a house built of bricks and stucco from designs intended to be carried out in stone would not be more grotesque than the gaunt iron arch one sometimes sees with a stunted Rose bush growing half way up each of its pillars. Such an arrangement certainly is ineffective, but then it is not a Rose arch. Where there has been a want of success in making Rose arches decorative, the failure may usually be attributed to one of two causes, either an attempt to furnish them

William Allen Richardson, not so rampant as Rêve d'Or, but quite sturdily vigorous enough for all practical purposes, and very nearly, if not quite, as hardy as the latter. At any rate numerous plants of William Allen Richardson of various forms passed unharmed through the trying winter of 1885-86 with only the slight protection of a few fronds of Bracken twisted among them, which all Teas and Noisettes deserve and are the better for in hard weather; and, as far as can be seen at present, the long spell of cold now coming (it is to be hoped) to an end, although the thermometer twice registered upwards of 25° of frost, has not inflicted appreciable injury on plants of this delightful Noisette, whose decorative value is enhanced by the fact that the bright orange colour of its flowers is unique among Roses, while the plant is almost evergreen and thoroughly autumnal.

Red Roses that are available for training over arches are few and far between, but the Hybrid Tea *Reine Marie Henriette* is a first-rate variety for the purpose, and, growing with immense vigour, produces its bright, clear red flowers in abundance throughout the season. The attractive semi-double red Hybrid Tea or Hybrid Noisette *Reine Olga de Wurtemberg*, which was figured in *THE GARDEN* early last year, would make an admirable arch Rose, but for the solitary objection that its magnificent foliage is liable soon to become "tattered and torn" by the action of the wind when this Rose-giant is grown anywhere away from a wall. But a lack of good hardy red climbing Roses is no reason for ignoring good hardy climbers that are ready to hand, even though they be not bright-coloured; and there are two single Roses which are both better worth growing to cover arches than all the Hybrid Perpetuals so often recommended put together. One is *Rosa Brunonis*, often called the Himalayan Brier, which makes incredibly long shoots, enough to furnish an arch in a single season, and of which the pretty bluish green foliage is almost hidden at the flowering time by the mass of snowy single blossoms; the other, last, but not least in value at any rate, is *Rosa polyantha*, a Japanese sub-species of *R. multiflora*, and one of the most attractive Roses in cultivation. It has all the recommendations enumerated above; it grows with the utmost luxuriance, and regularly becomes smothered with blossom. M. Jean Sisley, of Lyons, declares his belief that it is the hardiest Rose in existence; it may be easily trained in any direction; the foliage hangs on late, and though composed of many leaflets, the leaflet is not large, and the plant appears almost exempt from mildew; moreover, it will grow in any soil or situation, it roots as a cutting with the greatest readiness, and its white flowers, though individually small, are produced in such immense trusses as to be highly decorative, while their delicious fragrance scents the air for yards round a large plant in blossom. Under these circumstances, the only wonder is that this plant is not abundant in all gardens where Roses are appreciated; but the fact probably is, that too many gardeners still consider single flowers a reproach to a Rose, which no other merits can compensate.

There are many other Roses which are often included in lists of kinds said to be desirable as arch Roses, such as the Boursaults, which, however, cannot conscientiously be recommended on account of their dreary colouring. Again, the charming Rose which goes under the name of *Fortune's Yellow* is too tender to be grown in this country anywhere but against a wall—a position which it thoroughly deserves; and the same may be said of the *Banksias*. None of the Mosses are of real value for the purpose; *Lancei* is the only one of sufficient vigour, and that is too stiff and rigid to

be ornamental. One or two Hybrid Chinas, such as *Blairi No. 2*, may be employed, but all the Hybrid Perpetuals practically involve an outlay of time and trouble by no means repaid by the effect produced; while the few Gallicas, &c., that might possibly be available are such victims to mildew as to be hardly ever otherwise than an eyesore.

In arranging Rose arches it must, of course, be borne in mind that it is essential that things intended for use be eminently usable; and if arches are made across a path, care must be taken that they do not make such path inconvenient for traffic. Thus, the pillars of an arch should be at least 3 feet from each margin of the walk spanned, in order that the dresses of passers-by may be safe from the thorny shoots; and if the walk be 6 feet wide, this will give a base of 12 feet wide, for which a central height of 10 feet will be found to give an effective and practical arch. Where there is to be a series of arches, they should be at least 3 yards or 4 yards apart, and each arch should be composed entirely of iron, for if the uprights be made of wood they soon give way at the ground-line, especially when the plants trained upon them become vigorous and offer considerable resistance to the wind. The only objection to iron uprights is that from their smaller diameter they are less convenient to train plants to than wooden posts; but any difficulty arising from this may be obviated by fixing a few horizontal cross-bars on to the iron uprights, and to these the Rose shoots can be tied so as to avoid undue crowding in the earlier stages of growth. The best way of planting is to put in two trees of the same kind, one at the foot of each upright, and then by liberal culture to encourage the most vigorous growth possible; but if a variety is used which does not furnish well, there is no reason why two or three plants of it should not be planted at either pillar in order to get the arch more completely wreathed. Then, if varieties well adapted to the purpose, such as those above suggested, be employed, the shoots from the two sides will soon meet across the centre, and, interlacing, form a triumphal arch or series of arches of a most attractive kind.

PROPAGATING.

TREES AND SHRUBS.—Where different hardy trees and shrubs are propagated many of them are grafted on allied kinds, and in the case of some of these it is necessary to keep them under glass till a union has taken place. When stocks are required for this purpose they must be potted during winter, and plunged in the open ground till needed. No time should therefore now be lost in potting up any stocks not yet moved, and which are likely to be required. This more particularly applies to such trees and shrubs as the various Conifers, *Rhododendrons*, some Oaks, *Ivies* (as stocks for the tree varieties), *Privets*, which may be used as stocks not only for members of the same genus, but also for the allied species of *Osmanthus*, and for the deliciously scented *Olea fragrans*, which grows well treated in this way, but though grafted on a hardy shrub it will not withstand our winters out of doors. The common Spindle tree is by some largely used as a stock on which to graft the various variegated forms of the Japanese *Euonymus*, and, strange to say, the deciduous character of the stock does not in the least seem to affect that of the scion. In potting up stocks for grafting, all straggling branches should be shortened, and the height of the plant may, if necessary, be reduced. One thing to bear in mind is that space under glass even during summer is somewhat limited, so that in order to economise it the different stocks should be put in as small pots as possible consistent with the preservation of the roots. Small

pieces of Spurge Laurel (*Daphne Laureola*) may also be potted if likely to be required later in the season on which to graft the sweet-scented greenhouse kinds.

DRACENAS may now be propagated in quantity, as if struck thus early in the season they may be grown into good-sized specimens soon enough to become well coloured before winter. Where they have been employed indoors during winter there will be plenty of plants with just a few leaves on the top of a tall, naked stem. These are the very best for propagating purposes, as the tops can be cut off just below the leaves, or rather with stem sufficient to hold the cutting in position. Pots for their reception should be prepared by placing a few broken crocks in the bottom and filling up with a compost consisting principally of peat and sand in about equal parts, with just a little loam to give it body. When the cuttings are inserted they must be pressed down firmly, and as the leaves are heavy and often sway about, they are best secured in position by means of a small stick, as unless this is done the action of rooting is retarded. One point to bear in mind is, on no account to allow any soil to get about the base of the leaves, otherwise decay is apt to set in there. After the cuttings are in their pots a thorough watering must be given; they can then be plunged in a close propagating case in a bottom-heat of from 80° to 85°, when they will soon root. When the tops are disposed of the stems may be shaken out of their pots and cut into pieces of 3 inches or 4 inches in length. The thick fleshy roots may also be treated in the same manner, only in their case a length of a couple of inches will be quite sufficient. These stem cuttings should then be laid horizontally on a bed of Cocoa-nut fibre, and covered for about an inch with the same material. A space of an inch or more should be left between each row of stems or roots to allow room for the plants to grow when they make their appearance. If these cuttings are put in a close propagating case no water will be needed, for the condensed moisture and that contained in the fibre will be sufficient to maintain them in a fresh condition till growth takes place. In a short time young plants will be pushed up from every joint, and when they have made four or five leaves they will be quite fit to be removed from the parent stem. On moving them, nearly all the young plants will be found to have pushed out roots; all that is necessary then is to pot them, and, after keeping them close for a few days in order to allow the roots to recover from the check sustained, they may then be inured to the ordinary treatment of a stove. After the shoots have all been removed the stems that are still sound may be laid in again if any more plants are needed, but the second crop will be by no means equal to the first. Some prefer to lay the stems in well-drained pots or pans of sandy peat, treatment which is perfectly successful, but longer time is needed than when laid in fibre, though where numbers of different sorts are grown they are less liable to become in any way mixed if a pot or pan be kept for each sort. By some, too, the large tops are simply struck in the fibre; this they do readily enough, but the roots there formed are so brittle that the greatest care is needed in potting them. In this respect those struck in small pots have the advantage, as they can be shifted into larger ones without injury. Some *Dracenas* cannot be increased by means of stem-cuttings, and in their case a slower mode of procedure is rendered necessary. Among the best known of these are *Goldiana*, *gracilis*, and *eugesta*. In their case the top must be cut off, and treated in the same way as the first-mentioned kinds; but instead of turning the naked stem out of the pot, it must still be kept there, when another head will be produced to take the place of the one removed, and when large enough it is then available for a cutting. By this means a considerable number can, in time, be produced from a single plant; but, of course, the rate of increase is much slower than in the case of those whose stems break freely into growth. Where it is especially desired to maintain the crown of foliage, in the case of a choice variety, in as good

condition as possible, two or three incisions may be made in the stem, which should then be bound round with Moss, when from the wounded portions roots will push forth, and when sufficiently advanced the stem may be separated just below the ball of Moss, and at once potted. The same end is attained by breaking a small pot in two and encircling the stem with it, as if the pot is held in position by a bit of wire, it forms a good receptacle for the Moss, or other compost, into which the plant is required to root.

SOFT-WOODED PLANTS, such as Fuchsias, Bouvardias, Heliotropes, and a host of other things, kept partly at rest, should now be taken from their winter quarters, cleansed from all decaying leaves or other impurities, and placed in a gentle heat, when they will soon bristle with young shoots, which strike root very quickly. Sometimes, however, a few of the plants do not break into growth with the freedom that could be wished; this may, as a rule, be remedied by re-potting them in good, light compost, the stagnation in most cases being caused by the roots being in bad condition, frequently from the soil having become sour and exhausted; when in that state young healthy roots cannot make their way, and consequently the growth of the entire plant is arrested. Where the pretty white *Dentzia gracilis* is forced for early flowering, a good opportunity presents itself to obtain an almost unlimited stock of cuttings, for the shoots produced in the temperature of a forcing house will frequently commence to push forth roots while still attached to the parent plant, caused, doubtless, by the moist atmosphere. If these shoots are taken off at about 3 inches in length, the bottom pair of leaves removed, and then dibbled into pots of light, sandy soil, they strike root in about ten days, that is, if kept close in the same temperature as that in which they have been grown. If they are then potted off and sheltered by a frame till frosts are over, and then planted out, they make sturdy little plants the first season.

FERN SPORES.—The best time to sow these is about the end of this month and the whole of next, as the young plants then grow away without any check, which is not the case if sown late in the season. In the case of deciduous kinds it is, of course, necessary to secure the spores at the proper season, but in that of evergreen species it is totally different, as the spores can be gathered at any time. Where any are needed for sowing they should be at once gathered, and if folded in clean paper and laid in a dry place, they will be ready for sowing whenever required. Fern seed is all the better to lie for a week or two before it is sown. In choosing fronds from which to gather it, do not select those in which the spores appear very brown and ripe, as the probability is, most of their seeds have already dropped; but choose those rather in which the spore cases are just opening. T.

PROPAGATING HARDY PLANTS.

THERE is just as much reason why we should have propagating houses for hardy plants as for any other, yet we must often be contented with an odd frame or two for that purpose. The house we use for hardy plants is such as might be used successfully for any class of plants, from the softest, such as a Phlox, to the hardest, such as a Heath. It is a modern span-roofed house, 50 feet long, 9 feet wide, 4 feet high in the walls, and the angle of the roof is 50°. The walk down the centre is, I may say, 2½ feet wide; the beds are 3 feet wide, and their level is 6 inches from the glass at the back. The beds have slab bottoms, tight sides, and are filled with 4 inches or 5 inches of coarse, grey sand. Coarse silver sand would do, not fine of any kind, and red sand not at all. The hot-water pipes are boxed in, with flaps to let out heat into the body of the house during the coldest weather, a flow and return on each side answering our purpose. More piping could be added, depending upon the class of plants desired to be propagated. For Crotons, Stephanotis, Dipladenias, Allamandas, and Palm seeds bell-glasses could be used. One side, too, could be kept cooler than the other by means of

the valves. Such a house is clean, and the dangers arising from damp and mildew are lessened.

Our beds are used summer and winter. We take cuttings of anything we want whenever we can get them. But our most important season is winter, in order to meet probable demands in the coming spring. I have been successful with cuttings of *Achillea tomentosa*, *A. moschata*, and *A. Ptarmica* fl. pl. Although the majority of Asters come quickly from seed, yet with some, division or cuttings is about the only method by which they can be increased, and cuttings always make neater plants. The sorts to which I allude are *A. Auellus* and *A. alpinus*, their varieties and allies. Most Campanulas root as easily as Lobelias, and the cutting plan can be adopted wherever desired. In some cases it is required to take up plants in the autumn, wash the soil off them, and cut them up. This happens in the case of *C. garganica* and *C. Walsteiniana*, and probably others. Geraniums may be struck from root or stock, though it is slow work in the case of *G. cinereum* and *G. argenteum*. In the case of the double *Helianthus multiflorus*, flowering shoots make the nicest plants imaginable. There is a *Houstonia* (*H. rotundifolia*) which can be most efficiently increased by cuttings, by division, and also by seeds. In habit it resembles the pretty little *Veronica alpina*, or *V. repens*, as it is often called. This species of *Houstonia* is from Florida, and is a beautiful carpet plant. When in bloom it is just as lovely as *H. carulea alba*, the blooms being pure white. The creeping *Hypericum* will possibly all "strike," but *H. aureum*, probably the best of all decidedly shrubby kinds, comes so easily and quickly from seed, that I have never had occasion to try it from cuttings. I have the lovely *H. reptans*; also *H. Coris* and *Oenotheras*, particularly *H. missouriensis*. Of the latter, I usually take up a few plants in autumn and bring them along in heat, so I take cuttings, which form nice plants for sending out early, of the lovely *Osmunda tauricum*. Much has been written about its propagation: we have not the least trouble. I put in 200 cuttings (or, to express myself exactly, hackings or slips) last November, and 90 per cent. are rooted now (Jan. 10). It stands our winters unprotected in the open ground, and our winters here are not the ideal ones that are experienced east of the Alleghanies. The worst winter weather we have is that which is exceptionally warm following a period of frost and snow. Experience has told me that when we can plainly hear a certain steam pump in the vicinity, a blizzard from the north-west is nigh at hand. In less than twenty-four, sometimes twelve, hours the water and mud, which could not properly drain off on account of the ground not being thawed quite through, become frozen into a solid mass; then it is when the cold wind does the damage. The Oriental Poppy (*Papaver orientale*) can be increased quite easily from root cuttings. Petal-stemum decumbens, a lovely rosy flowered alpine, almost, if not entirely, unknown in Britain, will strike, but seed is better. This, when known, will prove a valuable acquisition. Underground species of *Polemonium reptans* root easily, but in very little heat, being liable to rot. Roots of *Saxifraga crassifolia*—in fact, all the *Megasea* section—increase readily from cut-up roots, as does also *Stokesia cyanea*.

T. D. HATFIELD.

Passaic, New Jersey, U.S.A.

Leaves for leaf mould.—I was rather surprised to note that Mr. Coleman recommends Beech for this purpose, as my experience is that Beech leaves are almost the worst that can be used. Against the others, Oak and Spanish Chestnut, I have no objection to urge. But Beech leaves are too hard, and more given to the production of a species of white fungus than almost any other leaves. Lime, Elm, Plane, and Sycamore form better mixtures with Oak than Beech, though most of these are almost too soft and perishable by themselves. They, however, soften, mellow, and enrich leaf-mould, and for general purposes probably form better leaf-mould than others with any large percentage of Beech. Again and again I have found Beech most mischievous as regards the diffusion of white fungi in fruit-tree borders, where leaf-mould made from it had entered even sparingly

into their composition, or had been used as a stimulant to start the roots off more freely.—HORTUS.

STOVE AND GREENHOUSE.

T. BAINES.

ROGIERA GRATISSIMA.

THE Rogieras are a small genus of Evergreen shrubs indigenous to South America; they consist of some four or five species, the first of which was introduced near upon half a century ago. But the kinds that first made their appearance have not met with much favour at the hands of cultivators, being rarely met with even in gardens where a feature is made of plants that are scarce and uncommon. The last of the species introduced, *R. gratissima*, is much the best of the genus, and is a real acquisition, yet so far it also seems to have made so little headway that to meet with it is a rare occurrence. Possibly this may in some measure have arisen through the plant having been described as requiring stove heat, and which has induced those who have undertaken its cultivation to subject it to a higher temperature than it could bear, a course of treatment that has caused many desirable plants to get a bad name. This is especially the case with such as hail from the same country (Mexico) as the species under notice, and which generally are found to do best in an intermediate temperature, or even in that of an ordinary greenhouse, as under the over-exciting influence of too much heat they keep on growing until their energies are exhausted, showing little inclination to flower in a way that admits of their merits being fairly judged. *R. gratissima* is more like the stronger-growing form of *Rondeletia speciosa*, *R. speciosa* major, in appearance than any other plant that I can think of, but the wood is stronger and longer-jointed than that of the *Rondeletia*, and maintains a more erect habit of growth when it gets old. The flowers are borne in comparatively large terminal corymbs, in shape like those of the *Rondeletia*, but larger and much more imposing in appearance; the colour is a pleasing shade of pink. The plant when well grown is a very free bloomer, flowering from the point of every shoot. It flowers in summer, earlier or later, according to the temperature it is subjected to. It will succeed fairly well under pot culture, small examples in 5-inch or 6-inch pots sometimes blooming as well in proportion to their size as larger specimens. But it is best adapted for planting out and training against a wall in a house or pit where it will get sufficient light. A dark position, such as the back of a lofty house affords, does not answer for it, the shoots coming long and straggling, whilst the leaves are wanting in substance to admit of their enduring as they should do. The end of a house that is composed of 2 feet or 3 feet of brickwork with glass above suits these plants well, and in such a position it will keep on in a thriving state for a lengthened period, flowering profusely.

It strikes readily from cuttings put in as early in the spring as they can be had in right condition. To insure their rooting satisfactorily, the cuttings should consist of young shoots, such as are usually forthcoming from branches that have been cut back to the hard mature wood; when they are a few inches long and have got a little firm, they should be taken off with a heel attached, inserting them singly in small pots in sand. Keep them fairly moist, and set them under a propagating glass in brisk heat and shaded from the sun. When sufficiently rooted, dispense with the glass and move them into larger pots well drained, using good turfy peat, to which

add as much sand as will maintain the soil in a healthy porous state, for it is well to bear in mind that this is one of the numerous sections of hard-wooded plants that have a dislike to any interference with their roots, such as occurs when submitted to shaking out with the intention of renewing the soil; consequently the material in which the young plants in their earliest stages are potted ought to be of a character calculated to keep the roots in a healthy condition for an indefinite time. When fairly started into growth, pinch out the points of the shoots so as to secure the plants being sufficiently furnished at the bottom; that is indispensable in whatever form they are to be grown. There is no necessity for a high temperature during the ensuing summer; about 60° in the night will answer, letting the heat rise proportionately higher in the daytime, and giving a little shade in the middle of the day when the weather is bright. Keep the atmosphere moderately moist with air until closing time in the afternoon; then syringe overhead. If all goes well the plants will require moving into 5-inch or 6-inch pots; this should be done before the summer is too far advanced to admit of the roots getting well hold of the soil before the season of active growth is over. Continue to treat as before until about the middle of September; then dispense with shade and cease syringing, giving more air. All through the growing season keep the plants well up to the light, without which they will be wanting in one of the first essentials to success—hard, well-matured growth. A temperature of about 50° will suffice in the night during winter, keeping the soil a little drier than whilst active growth was going on.

In the spring it will be well to decide whether the plants are to be allowed to flower this season, or whether it will be better to push them on, with a view to their attaining a larger size without the loss of time that their blooming will involve. If the latter course is followed, the points of the shoots should be removed before growth commences, and as soon as they have started, more root room must be given. If the pots they now occupy are well filled with roots, 9-inch or 10-inch ones will not be too large. The temperature should be kept up during the spring months similar to that advised last season, treating in the matters of air, shade, and moisture as before. As summer approaches, the sun-heat will be sufficient, closing the house in good time in the afternoons, so as to run up the temperature for a few hours, syringing the plants overhead at the same time, the conjoint effects of which with this, as with most other plants, do more to promote healthy growth than anything which can be done by the use of fire-heat. Where the plants are required to flower the year after they are struck, the potting will be best deferred until their blooming is over, shortening the shoots a little as soon as the flowers have faded, and when growth has commenced, shift them on into larger pots. Again, in autumn dispense with shading, and discontinue the use of the syringe, giving more air to get the growth matured: winter as before.

In the case of such of the plants as are to be turned out in a bed and grown either bush fashion or trained against a wall or the end glass of a house, as already suggested, the bed must be prepared and the plants transferred to it just as the growth is about to commence, not disturbing the roots more than is necessary, or it might have the effect of interfering with the flowering. After this the attention required consists in cutting back any shoots that take an undue lead, so as to distribute the strength evenly over the plants. When the roots have occupied the soil manurial assistance in a liquid form or by applying to the

surface a dressing or two of some concentrated manure during the growing season will be necessary.

NEW RACE OF CHINESE PRIMULAS.

THE suggestion (p. 44) as to crossing Chinese Primulas with a yellow-flowered species is worthy of further consideration. I know Mr. Barlow, of Stakehill House, near Manchester, tried crossing the Chinese Primula with varieties of the laced Polyanthus, and he showed me plants which he thought had some resemblance in leaf to that of a Polyanthus, although the seeds had been saved from the Chinese Primula; but I fancy the experiment was a failure. The most likely species to cross with *Primula sinensis* would be the deep yellow *P. floribunda*. The specific differences do not seem to be so far apart between these two as between *P. sinensis* and the common Primrose. So far the improvement in varieties of *P. sinensis* has been obtained by selection or crossing varietal forms of the species. Messrs. Sutton's single blue varieties are far in advance of any that have yet been exhibited at South Kensington, and I believe that if a yellow variety is obtained, it will be from the purplish blue varieties. The tint of some of these blue varieties are not far from that of the colour of the common wild Hyacinth, and from that colour numerous yellow varieties have been obtained. We may in the same way by chance get a yellow Chinese Primula. I would suggest that *P. floribunda* or the Polyanthus form of the Primrose with the deepest yellow flowers be crossed with the blue varieties of *P. sinensis*. Messrs. Sutton have been experimenting with *P. japonica* and *P. sinensis*, but, as far as I could see, not with any greater measure of success than Mr. Barlow obtained with the laced varieties of *P. vulgaris*. Some five or six years ago I crossed two distinct alpine species of Primula with deep purplish lilac flowers, and raised a distinctly yellow variety, which was exhibited at the Primula Conference; Mr. Churchill, who is well acquainted with alpine Primulas, said it was a yellow form of *P. pubescens*; at all events, I am quite certain that it was raised from two purplish lilac varieties, as I did all the work of crossing, saving the seeds sowing and attending to them myself.

J. DOUGLAS.

Boronia heterophylla.—In an article in THE GARDEN (p. 71) on the best Boronias no mention is made of this species, yet it is a very handsome kind, and one that should before this have become popular, for it has been introduced quite long enough to have been far more widely distributed than it is. I was much struck with its beauty a couple of years ago at Kew, and noted it then as in the way of *B. elatior*, but rather stronger in the growth and larger in the leaves. The most prominent distinctive feature is, however, the flowers, which instead of being rosy carmine, as in *B. elatior*, are rich vermilion, with a zone of pure white around the corolla. They are borne freely from the axils of the leaves and are agreeably scented.—H. P.

Epacris onosmæflora fl. pl.—The typical *E. onosmæflora* is a very old introduction, but, except in botanic gardens or in the collections of lovers of curiosities, it is rarely met with, the principal reason no doubt being that from an ornamental point of view it is inferior to the many garden hybrids now in cultivation. This last remark, however, will not apply to the double flowered variety, for it is not only totally distinct from any other Epacris, but is also possessed of high ornamental qualities. It is a stout, free-growing kind with long shoots thickly clothed with leaves, from the axils of which the small white rosette-like blooms are produced in such profusion that the whole shoot is a mass of white, that is to say, when the blooms are first expanded, as before withering they become slightly flushed with pink. This Epacris has now been before the public some few years, but no doubt two reasons have tended to retard its distribution. These are the apathy now entertained towards hard-wooded plants in general, and the fact that it is a difficult subject to increase, as

owing to the succulent character of the young shoots cuttings do not strike root at all readily. The most successful method is to keep the stock plant, whence the cuttings are to be obtained, warmer than usual, when the growth will be more attenuated; the weaker the shoots are the greater will be their chance of striking root. The best cuttings are obtained from a plant that has been shortened back but slightly after flowering, and then treated as just described. A length of 1 inch to 2 inches is quite suitable for the cuttings, and they must be dibbled into the pots very firmly, using sandy peat, and covered with a bell-glass till rooted.—H. P.

Brugmansia Waymanniana.—"W. G." asks (p. 46) if this plant is still in cultivation. From his description both of it and of the other Brugmansias, I fancy I have got it. "W. G." mentions but the other double, namely, *B. Knighti*, which is simply a double form of *B. arborea*, partaking of its unsymmetrical tube, which is bent, and too small in proportion to the mouth of the trumpet, and sharing also in the, to me, most offensive scent of *B. arborea*. But last autumn I was sent by a relative in the west of Ireland a plant with a bloom which was very different from *B. Knighti*. The tube was long and straight and well proportioned; the trumpet was fairly double or hose-in-hose, washed with purple, which, however, was not very conspicuous, and the scent was as delightful as that of Primroses. If the plant is not *B. Waymanniana*, I am at a loss to know what it is, as it certainly is not *Knighti*. Can the fine straw-coloured Brugmansia be merely a colour variety of *B. sanguinea*? It is so unlike in growth, being weak and straggling, spare in side growths, and decidedly more delicate. It is, as "W. G." says, rare; but if he has not got it I shall be glad to send him a couple of cuttings, if he gives me his address. I am always anxious to spread a good thing so far as I can do.—FREDERICK TYMONS (Clk.), *Cloghan, Co. Dublin*.

I well remember the purple Hose-in-hose Brugmansia about which "W. G." asks. It was to be seen every summer at a country house in Bucks up to 1861, but about that time it disappeared (with many other old favourites) under the rule of a gardener whose ideas were limited to two, viz. Grapes and Achimenes. I knew it as the purple Datura, and always supposed it to be *D. fastuosa* (Don), but it was certainly shrubby, though small, and therefore, I suppose, a Brugmansia. At Nice, thirty years ago, the single form abounded, and it may do so still. It was a greenhouse plant there (where *B. arborea* grows freely out of doors), and would have been much prized for indoor decoration but for its rich and overpowering perfume, which few could bear in a room. The flowers were about the size of those of *B. arborea*, but less graceful in shape; the texture was leathery and the colours very beautiful, purple outside and ivory white within. The Hose-in-hose form was not (so far as I remember) so strongly scented as the single one.—JUNIOR.

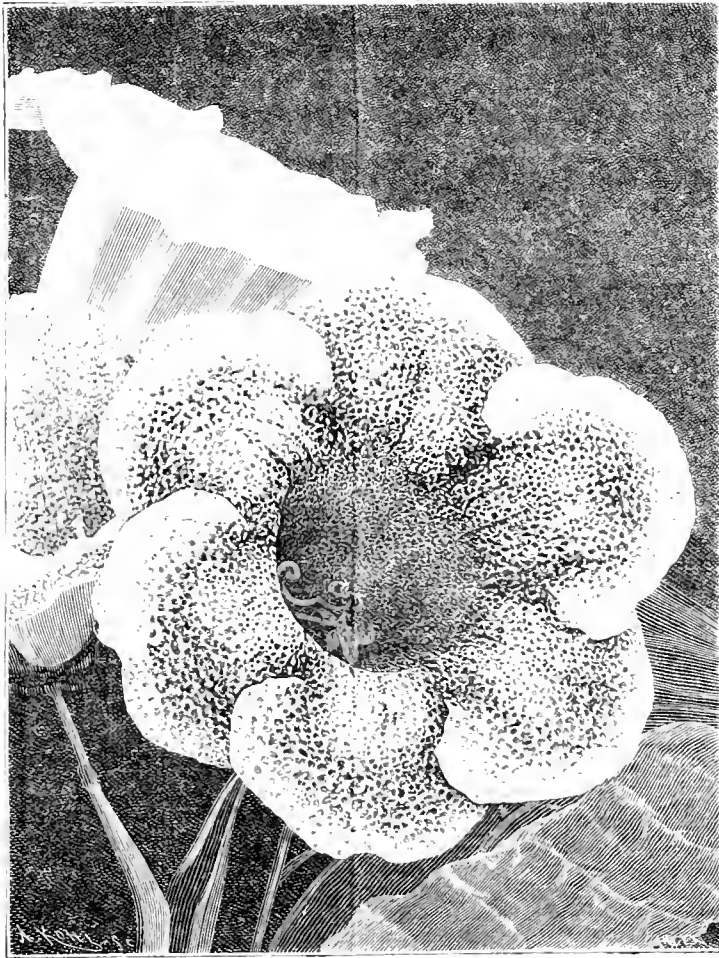
The Brugmansia, so well illustrated (p. 45), has grown here for many years, and when in full bloom is one of the most attractive of plants. It is one of the fastest-growing subjects with which I am acquainted, and therefore it would not answer to plant it out in a low house. The structure which contains it here is 14 feet in height, and in the growing season it soon reaches the roof. It has several stems about 3 feet in height, to which, as soon as it has done flowering, it is cut down. It re-starts and grows up again very rapidly. Cutting down is the only way of keeping it dwarf and bushy, and with plenty of feeding at the root it may be cut down three times in the season, when it will grow up again and bloom afresh. Its paper-white, trumpet-shaped flowers are often a foot or more in length. They are rather flimsy, and are absolutely useless when cut, as they fade rapidly; but they are so effective on the plants that I would not like to be without them.—J. M.

Cyrtanthus McKeni.—I was much pleased to see notice taken in THE GARDEN (p. 42) of this prime favourite of mine. Not a word too much

is said in its praise. I am surprised that so good a thing should be still so unknown, as it increases well under proper treatment. It may be well to impress on those beginning its culture that it likes abundant drainage, very firm potting in fibrous loam, enriched with a little thoroughly decayed old hotbed manure, and to be left undisturbed until the pot is completely filled with roots. It is an evergreen Amaryllid, and should never be subjected to drying off. My one original root has increased to some dozens, which I kept potting on as required until they were in a 12-inch pot. Then I split it up into four large potsful, besides putting several single bulbs into 4 inch pots. I have another variety which I believe is *C. lutescens*, and is in every respect the counterpart of *C. McKeni*, except that it is a lovely clear yellow. They make excellent com-

frame for a little while, and then the bulbs may be planted out.—H. P.

Early Tulips.—We always require as many flowers in December and January as we can possibly secure; we have therefore tried to force many varieties of Tulips to bloom about that time, but the one above all others which submits most readily to this treatment is the scarlet *Duc van Thol*—in fact, we have given them all up but this one, as we find it a very easy matter to have it in quantity from December onwards, and its bright scarlet colour is remarkably attractive during the short, dark days when bright flowers are by no means common. Some might think that *Poinsettia* heads were the most brilliant at that time, but the Tulips are more vivid in colour than even these are.—J. M.



Recent forms of Gloxinias. Engraved for THE GARDEN from a photograph by Mr. Heineman, of Erfurt.

panion plants. I wonder if there are any other colours among *Cyrtanthuses* of the same type as these two.—FREDERICK TYMONS.

Scilla sibirica in pots.—As blue flowers are by no means strongly represented among forced plants at this season, except amongst *Hyacinths*, the fact of the readiness with which this Squill can be forced seems to be generally overlooked, for it is seldom seen treated in this way, though it is as amenable to forcing as a Tulip. During the dull days of the early part of the year some pots of it form bright and cheerful objects in the greenhouse. With regard to the comparative merits of this *Scilla* and the newer *Chionodoxa*, I may say that here in rather an exposed spot the *Chionodoxa* is often greatly damaged by March winds, which the sturdier habit of the *Scilla* enables it to resist. Where this Squill is employed indoors after the blooms are over the pots should be sheltered by a

Gloxinias.—Few stove plants have shown more charming and novel variation during the last dozen years than the *Gloxinia*. The engraving is a reproduction of one of a beautiful series of photographs sent us by Mr. Heineman, the well-known seedsman of Erfurt. It is needless in our columns to say much concerning plants the cultivation of which is so well understood by our gardeners.

SHORT NOTES.—STOVE AND GREENHOUSE.

Forcing Lilies of the Valley.—It may possibly be remembered that last year I had something to say regarding Valley Lilies forced with plenty of leaves as well as flowers. In confirmation of this I sent you a potful in February. I have now some very good ones, and quite a mouth earlier than those sent last year. I have therefore had a potful photographed, and today I have sent you the self-same potful and also the photograph. They serve to show what can be done

with these Valley Lilies in twenty-one days from the day on which they were put into heat.—Wm. ELLIOTSONE, *Shipley Hall, Dublin.*

A beautiful plant, of which we shall publish an engraving soon.—Ed.

Primula flowers.—The different shades to be found in single *Primulas* are very pretty, but when cut they require to be carefully handled, as their coming in contact with other flowers frequently drags the blooms from their sockets, and they are at all times rather difficult to arrange effectively. The most charming of all ways of arranging them is to dish them up by themselves. If the colours are massed and mixed in a bowl, and not too much hidden with green material, the result is all that could be desired.—J. M.

SEASONABLE WORK IN PLANT HOUSES.

STOVE.—Tuberous *Begonia* seed should now be sown in order to have the plants in a condition to bloom satisfactorily during the ensuing summer. When sowing is put off until later the young stock has not enough time to allow of its acquiring the requisite strength to flower as it should do till the season is too far advanced. In preparing soil wherein to sow seed of almost any kind care should be taken that it is sufficiently light in texture, as if at all close and adhesive when the seedlings have to be removed from it the tender young roots are sure to get more or less broken, a mishap that it is necessary to guard against. Some growers use loam in which to raise seedlings of these *Begonias*, but unless it can be had of a free sandy nature I prefer peat, passing it through a fine sieve and adding some well decomposed leaf-mould and sand. Fill the pans with the material to within an inch of the rim, pressing it down so as to make the surface smooth, distribute the seeds thinly, and cover lightly with a little of the finest of the soil. In a temperature of 60° or a few degrees less the seed will vegetate; from the time that the little plants appear they must have plenty of light; in the absence of this they make weak growth. Whilst quite small they must be pricked off into pans or boxes an inch or two apart; if their removal from the seed pan is delayed, the roots, which are more impatient of injury than those of most things, suffer.

PERPETUAL-FLOWERING CARNATIONS.—Raising Carnations from seed is a very interesting proceeding, but to have a reasonable chance of varieties worth growing being obtained, seed from a strain that can be relied on must be at hand, otherwise the result is not likely to turn out worth the trouble. The seed should be put in at once, sowing them about an inch apart in a pan or shallow box, drained and filled with fine-sifted loam, a little leaf-mould, and some sand, covering the seed with about a fourth of an inch of the material, keeping it moderately moist—not too wet. To induce the seed to vegetate quickly, it should have a night temperature of from 55° to 60°; 5° or 10° less than this will do, but it will take correspondingly longer to get the plants up, and they will necessarily come on slower afterwards. As the object is to get the stock as much advanced as possible early, the seedlings must be kept until the weather gets warm in a temperature similar to that in which they were started. As soon as the little plants appear they must be stood close to the glass or they will spire up thin and weak—a condition that must be avoided. Directly they are large enough to handle, put them singly in small pots, using soil of a like nature to that in which the seed was sown; if a little rotten manure is added it will help them to gain strength. When the plants have got established, the weather may be expected to afford warmth enough without the aid of artificial heat, in which case a cold pit or frame will be the best place for them.

CELOSIA PYRAMIDALIS.—Where a good strain of this elegant-habited annual is secured and the plants are well managed, their usefulness for greenhouse and conservatory decoration can scarcely be overrated. The vivid tints of the reds and crimsons, and the soft agreeable shades of the yellow and straw-coloured varieties, are not surpassed by those of any flowers in cultivation, whilst for use in a cut state in combination with other

flowers of any kind, they are equally serviceable. The plants can be had in good condition through the greater part of the summer, and almost up to the end of the year, by making successional sowings, the first of which should be got in at once; a moderate sized seed-pan will hold as many plants as necessary for each batch. Use soil such as recommended for the Begonias, being careful not to sow too thickly, a proceeding that should always be avoided, especially in the case of plants that are raised under glass where the tendency in the seedlings to become more or less drawn up weakly is unavoidable.

AMARYLLIS.—The time for potting these plants depends on the time they are required to be in flower. Many growers start their whole collection at the same time, whilst others prefer to have them come on to bloom in succession. Such as are wanted early should now be repotted. The deciduous section may have nearly all the soil shook away from their roots, replacing it with new; rich turfy loam, with a little sand, will grow them well. In potting, ram the soil in the pots so as to make it moderately solid. Whatever offsets the large bulbs have produced, and which it is deemed desirable to separate, should be taken off and placed in separate pots. In severing them from the parent bulbs, be careful not to injure the roots more than is unavoidable. Give pots proportionate in size to that of the offsets, and treat in other respects like the old bulbs. In repotting the evergreen kinds, it is safer not to shake away all the old soil, but to leave, say, a third or a fourth of it, as sometimes when the whole of the material is got away it causes some of the leaves to decay prematurely, an occurrence that goes so far to weaken the bulbs. Where there is the means of giving them gentle bottom-heat for a time, in common with many bulbous plants, it will benefit them; but there need be no misgivings as to success in the cultivation of Amaryllis without their being assisted in this way. In a temperature of about 60° they will soon push up their flower-stems; and as they begin to move see that the plants are stood where they will get a fair amount of light. Do not give much water for two or three weeks, or until the roots and the top growth are in motion, after which, especially as the leaves begin to grow, the soil must be well supplied.

BOUGAINVILLEA GLABRA.—The flowering of this plant each season is not confined to the production of a single crop of bloom, as when started early and there is enough heat at command to push it on, the plant will flower two or three times. Grown in pots or when planted out this species usually produces a good deal of small shoots that are not strong enough to flower; these are best cut away before starting the plants into growth, at the same time shortening the strong branches from which alone flowering growth of any consequence may be looked for. If, as usual in the winter treatment of this plant, the soil has been let to get quite dry the ball must be thoroughly soaked; this is a matter of importance, as if the whole mass of soil is not moistened the growth made will be weak and puny. Syringe overhead once a day; afternoon is the best time. Where the plants have occupied pots as large as is desirable, a portion of the old soil may be removed, replacing it with new, made very rich with rotten manure; this species will bear more assistance in this way than many things would utilize; good turfy loam is the best for it. If the plants are to be trained on trellises, see that the sticks inserted in the soil and which support the trellis are sound and strong enough to last until the end of the season.

CLERODENDRON BALSIFOLIUM.—The flowers of this plant are much liked by some for cutting, whilst their enduring properties when allowed to remain on the plant make it useful for general purposes of ornamentation, and if when the flowers are open the plant is moved to a cooler atmosphere, they will last still longer. Small or medium-sized examples are preferable to large specimens for general use; plants started now in moderate stove heat will be

in flower in seven or eight weeks. With this *Clerodendron* it is also necessary to see that the soil is properly moistened when starting into growth. Except in the case of plants that occupy smaller pots than they are intended to be grown in during the ensuing summer, the potting is better deferred until the flowering is over.

ALLAMANDAS.—Where there is the means of giving these plants brisk heat they should now be cut back, and at the same time have the greater portion of the old soil shook away, repotting in new loam well enriched with rotten manure. In potting, ram the soil so as to make it more solid than necessary for most things, as when so treated the plants always flower better. I have found it best to re-pot Allamandas at the same time that the shoots are cut in; if they are allowed to break into growth before being repotted, as usual with most plants, many of the young shoots receive such a check that they refuse to move afterwards. Allamandas and Bougainvilleas that are planted out should now also be pruned, at the same time soaking the bed or border in which they are grown. As much of the surface material as can be removed without too much interference with the roots should be taken off, replacing it with new that consists of about one-fourth of rotten manure; this will not be too rich, as these plants are strong growers and require a great deal of support to keep them going through the long season that when vigorous they keep on flowering. The best sorts are *A. Chelsoni*, *A. grandiflora*, *A. nobilis*, and *A. Hendersoni*; the latter is one of the freest bloomers, but the colour of the flowers and the way in which the segments of the limb recurve make it the least effective, especially when the flowers are used for cutting, for which purpose the two first named sorts are the best.

GREENHOUSE.—Whatever training and tying is required by the hardwooded plants in this department should be completed without delay. For ordinary decoration nothing more in this way is needed than to support the branches in a manner that gives to each as much of the appearance natural to it as the circumstances of cultivation will permit of. Most of the hardwooded section of flowering greenhouse plants are naturally of a bushy habit, and when in the early stages of their existence due regard is paid to stopping the leading shoots, and keeping them well tied out so as to lay the foundation for their being well furnished at the base, much less in the shape of stakes and ties is required when the plants attain more size. With this object the young stock should receive especial attention in keeping the centres well open by tying the strongest shoots out horizontally, a position which they will ever afterwards retain, and in this way prevent the naked unsightly appearance that plants of the character in question, when they are thin and scraggy at the base, always present.

Rainfall at Bury St. Edmunds.—In THE GARDEN (p. 43) Mr. Uphill shows that the rainfall in 1886 at Dorchester was as much as 47.44 inches, an amount which contrasts very strikingly with the rainfall here, where the average annual fall during the last twenty-seven years is 25.71 inches, and the fall last year only 22.37 inches, or 3.37 inches under the average. The last month of the year furnished the largest monthly fall, being 3.33 inches, while the smallest was that of February, which amounted to only 0.24 inch, or less than one-fourth of an inch. Indeed rain did not fall during the month, and that mentioned was the result of melted snow. The largest annual fall here during the last twenty-eight years was that of 1872, when it amounted to 34.64 inches, and the smallest that of 1861, when only 16.44 inches fell. The following is the rainfall in 1886:—

	Inches.		Inches
January	2.14	August	1.26
February	0.24	September	1.00
March	1.58	October	2.82
April	1.15	November	2.57
May	2.63	December	3.33
June	0.46		
July	2.80	Total	22.37

—P. GIBBER.

FRUIT GARDEN.

W. COLEMAN.

ORANGE CULTURE IN POTS.

THE late Mr. Thomas Rivers, of Sawbridge-worth, some twenty-five years ago, began the culture of Orange trees in pots on a large scale, and grew delicious fruit of the little Tangerine variety as well as good examples of *St. Michaels* and the *Malta Blood*. I saw his trees growing in a heated house, and was so pleased with them that I determined to try the culture of the three varieties just named under the same conditions as regards temperature. In the West Indies Oranges ripen about the end of October in a temperature varying from 70° to 80°, and those who have been fortunate enough to obtain the fruit as it is gathered from the trees say that it is most delicious, far superior in flavour, indeed, to anything in that way obtained in England. Mr. Rivers' tropical orchard house was a well-heated and well-built structure, but when I began to cultivate Oranges I had to grow them in a house devoted to Melons and Pines. It was about 12 feet wide, and had a hipped roof. There were beds in the front for the Pines and Melons, and we placed a narrow stage against the back wall, wide enough to hold a row of Orange trees, and the temperature was about what they required. I soon found out that in order to grow good flavoured fruit it was necessary to maintain the highest hot-house temperature, viz., from 60° to 65° as a minimum in winter, and from 65° to 70° in summer. The day temperature was 5° higher, and with sun-heat in summer it sometimes reached 85° and 90°. The best trees we had, and those which produced the largest and best fruits, were worked on stocks raised from Lemon seeds. These were sown in a pot in the plant stove. They soon vegetated and grew freely, and in twelve months the plants thus raised were strong enough to be worked in the shape of dwarf plants. We, however, wanted some with stems 3 feet 6 inches high, and they made that height in two years from the time when the seeds were sown. The Lemon tree being the strongest grower of the two, makes the best stock if large trees are required. Grafting is an easy operation; when performed the plants ought to be placed in a warm house or frame, and kept close and moist. This is necessary to prevent shrinkage in the scions. If allowed to shrink by exposure to dry air the grafts will not unite, and will ultimately die.

I grafted standard and dwarf plants in this way without a single failure. The small Lemon trees, one year old, were in 4-inch and 5-inch pots. Being intended for dwarf specimens, these were cut over 6 inches or 9 inches from the ground. They will be found full of sap in February. With a sharp knife cut a slice from the scion, 2 inches long; to this the graft, after being correspondingly sliced, is firmly tied, no "tonguing" being necessary. It is useful that the bark of the stock and scion should fit at least at one side. Cover the union with a mixture of clay and finely chopped hay. The newly-worked plants should then be placed under a close handlight inside a vinery which has just been started. The cover of the handlights should be taken off, and the leaves gently dewed daily with a fine rose from a pot or syringe. Standards should be treated the same; but it is necessary over the top of the plant to place a bell-glass, which is made to rest on a small board placed below the union. If the hand-glass can be placed over a bed of gently fermenting material so much the better; in that case damping the leaves and grafting clay would be unnecessary. In three weeks a union will have taken place; this is indicated by the growth of the graft. In two weeks more the young shoots will have formed small leaves. It is now time to remove the clay and tying material, but this last must be at once replaced with some fresh raffia or soft matting, but not tied quite so tightly. Gradually admit air into the handlights, and when it is seen that the grafts are firmly established, remove the plants to a house where they can grow freely in a warm temperature. I have had fruit

to form and ripen on these young plants the first year. The flowers had, of course, been formed on the scion, but this is unusual, and if any fruit should set it is best to pinch it off. Fruit will be borne the third year; those who do not care to wait so long had better procure trees from some nursery. In one respect Orange trees differ from most other fruit trees, *i.e.*, they are always either in fruit or flower. A tree may be laden with golden fruit quite ripe; and it may also have small green fruits on it as large as Hazel Nuts, and likewise blossom. Oranges do not seem to require a period of rest; they are, indeed, perpetual bearers in every sense of the word. The flowering period is from January to March, and fruit may be gathered from them from September to March.

The old-fashioned way of growing Orange trees as greenhouse plants did very well if the object was to obtain blossoms only, or perhaps fruits, which were inside like the Apples of Sodom. Even the black peaty soil in which they grew was not adapted to produce sweet, juicy fruits. The soil in which Orange trees, cultivated to produce dessert fruit, succeeds best is four parts good turfy yellow loam, one part decayed stable manure, and to each barrowload of loam add an 8-inch potful of inch bones that have been boiled, and as much pounded charecoal. If the loam is of an unctuous character, add to it a portion of sharp sand. In potting, press the compost into the pots very firmly. I use for this purpose a wooden rammer, and the trees do not dislike a good large shift.

J. DOUGLAS.

FORCING STRAWBERRIES.

THERE is no fruit forced in spring or during the early summer months which gives so much satisfaction as the Strawberry, which is peculiarly attractive in all stages of growth. In some places there is a special Strawberry house, from which large quantities of fruit are obtained early in the season, but the majority of people who force Strawberries have no special houses for their production, and in that case they have to be grown in various structures in conjunction with other plants. Many first-rate Strawberries are produced in Pine stoves, vineries, and plant-houses generally. In such places, however, too early forcing must be avoided, as the plants under such circumstances have not the same chance to produce good fruit during the short days as they have in a house specially devoted to them. Market reports show Strawberries to be most valuable in February and March, but unless grown under the most favourable conditions, they are at that time deficient in flavour, and the crop is never so heavy as it is later in the season. Our most satisfactory crops of Strawberries are produced from the beginning of April onwards, and, although I have had them ripe in February and March, I now regulate the forcing so as to obtain the bulk of them during April and May; they are then secured in such quantities and of such good quality, that they more than compensate for any deficiency that may have occurred in February and March. When ripe at Easter they are very acceptable. Plants forced very early are apt to go blind or fail to produce anything like a full crop. April cannot be regarded as late in the season for early Strawberries, as it is quite two months or more in advance of the supplies from the open air. I would, therefore, strongly advise those who are not thoroughly experienced in such matters, or who have not the best of appliances for forcing, to aim at having their first fruits ripe early in April. I know that there are employers who insist on having Strawberries earlier, let the forcing appliances be what they may, but if they only considered how much finer their crops would be later they surely would defer their demands till they could be had in perfection. It generally takes ten weeks from the time when the plants are put in to force until the fruit is ripe, and I am greatly in favour of starting them very gently and growing them slowly until the flower-heads appear; then they will bear more forcing. It is absolutely

necessary that they should always be kept well watered, and it is a great advantage to keep them well up to the glass and in the full light. We find them to do exceedingly well upon a back shelf in a lean-to Pine house; immediately they begin to colour they are moved into a cooler pit to gain flavour and to prolong the succession. If a few plants of an early variety are put in to force now, and more about the first week in February, quantities of fine fruit will be produced by Easter, and a succession may easily be kept up afterwards.

J. MITCHELL.

FIGS ON THE EAST COAST.

MR. GROOM, of Gosport, recently favoured us with an interesting article on Figs on the south coast. It may probably surprise not a few of your readers to hear that the Fig does fairly well in the open air on the east coast, and in almost any warm nook or corner on walls throughout the eastern counties. Some of the finest Figs I have seen on this coast were close to the sea at Felixstowe. These were of several sorts—the White and Black Ischia, Lee's Perpetual, and the White Marseilles. They were stubby bushes that had been grown in pots for several years in pits, and had then been planted out against a south wall in poor, sandy loam and lime rubbish within sound and touch of the sea spray. The trees produced enormous crops of rather small Figs that ripened well, and were of excellent flavour. This was many years ago; but I believe these plants are still in existence, and probably ripening annual crops. A good deal of this success at the time was attributed to their close proximity to the sea. But possibly the effect of this was exaggerated, and for the encouragement of those that live so far inland as to derive no direct assistance from the saline spray or atmosphere, it may be added that Figs may be as successfully grown fifty or a hundred miles inland as on the coast.

What advantages there are on the coast probably arise from the higher and more equable temperature rather than additional grains of salt. Certain it is that attempts that have been made to supply Figs with more salt either in earth or air have not been encouraging, and that they can be grown to the highest perfection without any addition to our natural supplies of salt inland. But it is equally true that Fig leaves or roots are seldom injured by sea spray in moderation close to the coast. Of course, unless in specially warm localities, Figs in the eastern counties need to be backed up against walls or buildings to enable the fruit to ripen in the highest perfection. But this backing up does not mean training like thin skeletons over the surface Peach or Pear fashion, but the Figs are simply backed by the walls and allowed to scramble bush fashion over and in front of their warmest sides very much in the same way as the old Fig trees that had left the walls so graphically described by Mr. Groom.

The less dense the growth and the more limited the range of the trees from the walls the more heat they will enjoy; hence, the colder the situation the closer the Figs should be kept to the wall, and the thinner in reason the tops should be kept. Another chief means of commanding success is to use poor soil on a dry bottom. Protection, as a rule, proves a mockery, a delusion, and a snare, and those gather the most and the best ripe Figs in the open who ignore all protection, encourage short, sturdy growth, and prune but little.

D. T. F.

SHORT NOTES.—FRUIT.

The Pershore Plum.—We have for some few years back grown this Plum, which is much liked for preserving. This variety seldom misses a crop. —B. GIBBERT, *Burghey*.

Dicks-bill Apple.—A correspondent has sent me a sample of this Apple gathered from an espalier, which is said to invariably bear a good crop. The fruit, I may mention, is of Pearmain shape, medium in size, dark red on the sunny side, and yellowish green on the other. The flesh is remarkably firm, and I do not doubt that the fruit will keep sound until April. —J. C. C.

The Prune Damson.—In THE GARDEN (p. 26) I notice "B. C. R." giving this old favourite a name which it nobly

deserve. I was not aware before reading "B. C. R.'s" article that it was a Worcester production. It has been grown at Burghey from time immemorial, and for the last nineteen years in the majority of seasons it has always borne well. It is undoubtedly the prince of Damsons. —B. GIBBERT.

SEASONABLE WORK AMONG FRUITS.

FIGS.

SINCE my last paper upon this now popular fruit was written we have had more than a month of hard frost, repeated falls of snow, with a black, murky atmosphere, relieved by only three days of sunshine. These conditions, it is hardly necessary to say, have told heavily on the fuel store, and the progress has been extremely slow. Still, trees that have been forced for a number of years are now making a push, and a few weeks hence will be less backward than the inexperienced at the present time imagine. Judging from present appearances the worst of the winter is now over, but until milder weather has fairly set in it will be well to work on the give-and-take principle by allowing the night temperature to range low consistent with safety, and running up to a high figure whenever the sun again gladdens the earth. There are two distinct modes of managing or manipulating forced Figs—both good, as I have proved to my own satisfaction, and either of them being extremely simple they may be explained in a few words. The first and oldest is known as the close stopping principle, well adapted to old trees which have attained their full size, and generally show a great deal more fruit than they can carry to maturity. When these have made four to six leaves the points are crushed with the finger and thumb, or pinched quite out of the strongest shoots for the two-fold purpose of swelling up the early shows and inducing another break for giving the second or succession crop. If started very early and the trees are highly fed, they may be made to carry three crops, but nothing is gained in the long run, as the third crop which comes when Figs are very plentiful interferes with the season of rest, and not unfrequently results in the loss of the first crop in the ensuing spring. Short spur-like pieces of wood do not require pinching, as the fruit which they carry checks growth, and having sound plump buds they always set plenty of embryo Figs ready for swelling when the strain of the first crop is over. Constant pinching induces the formation of a great number of side shoots, and light as well as air being such important elements it is often necessary to cut away many of these to insure an even spread of foliage the reverse of crowded. Close pinching results in two distinct crops of fruit, the first from the embryo Figs formed near the points of the shoots of the previous year; the second from the spring growths, which I have just suggested stopping at the fourth to the sixth leaves, with, as a matter of course, an intervening period in which there are no ripe Figs fit for use. By the other, *i.e.*, the extension system, which best suits younger trees having plenty of trellis room, the supply of fruit from the beginning to the end of the season is continuous, as well-fed trees are constantly extending and forming young fruit in the axil of every leaf. In course of time the most advanced shoots reach their limit, when shortening back to a dormant eye whilst making room for others to extend ensures a relay of young wood all over the tree for succession. Whichever system is adopted the young fruit and foliage now making good progress will require copious syringing with tepid water, not forgetting the small bag of soot submerged in the cisterns, at least twice every fine day. When the weather is unfavourable to ventilation and evaporation the walls and floors only must be syringed, atmospheric moisture and ammonia at such times being secured by the frequent turning and renovation of the fermenting material. From this time forward liberal supplies of diluted liquid must be given to the roots, otherwise spider will become troublesome and the trees will most likely cast the finest and, as a matter of course, the most valuable fruit. More heat, too, may be given, especially in genial weather, when the temperature may range from 56° to 60° by night, 65°

to 70° from fire-heat through the day, and 70° to 80° when the sun is shining and air can be given.

Succession houses recently started will require supplies of tepid water at short intervals to ensure a thoroughly moist condition of the soil before the buds burst into leaf. When properly moistened old trees may be well mulched, but young ones will not be improved by the use of stimulants in any form, at least for the present. This remark, of course, applies to trees established in internal borders, as it is always possible to feed at the proper time, but very difficult to check gross growth—the most common cause of the fruit dropping when they are too highly fed at the outset.

Young stock.—If young trees of last year's propagation still remain dormant they may now be started in a moist, genial atmosphere, reduced and re-potted when the buds show signs of swelling. If fairly formed by the end of the past year the young shoots will most likely ripen a few fine Figs after the turn of the year, but all depends upon the purpose for which they are being grown. If for forming large bushes or pyramids the few fruits they might carry should not be taken into account until they are well furnished with good bearing wood worth forcing. Cuttings or eyes should be put in without delay, and after they have stood for a short time to heal they may be plunged in bottom heat and treated precisely the same as Vine eyes. The cuttings should be made of short, well-ripened pieces of wood having good terminal buds and a heel, or an inch of two-year-old wood at the base. Every bud likely to be buried in the soil must be removed before the cuttings are inserted, otherwise suckers will be found troublesome.

THE ORCHARD HOUSE.

As some of the trees in the early house will soon be coming into flower steps must be taken for ensuring freedom from aphid during the time the fruit is setting. Some syringe with a strong decoction of quassia, but I give preference to the fumigator for the simple reason that tobacco smoke permeates every part of the house more effectually than liquid through the syringe. The trees should be perfectly free from moisture and the day calm when the fumigator is introduced, and the weather being dull a second smoking may be performed before they are syringed, a very important operation which should always precede exposure to bright sun. When the trees are clean syringing, always with a rising temperature, must be resumed and continued until the flowers begin to expand. This stage reached, a somewhat higher and drier state of the atmosphere, with a nice circulation of air, always provided cutting draughts can be avoided, will favour the setting of the fruit. To secure these conditions the pipes, unless the weather is very bright and mild, should be kept constantly warm, and the better to prevent the air from becoming too dry the pots and lower parts of the stems of the trees may be syringed with tepid water every day. Fruit growers at one time thought Peaches, Vines, and other fruits could not be kept too dry when in flower, but many now recommend syringing, whilst others take an intermediate course and fertilise with a camel's-hair brush when the air is light and buoyant and the pollen flies off in bright golden showers. When the latter method is adopted the pollen from robust sorts like Royal George Peach and Elrube Nectarine is generally selected, and the large flowered section of Peaches and Nectarines is considered most in need of careful attention. Whichever mode is decided upon the great secret of success lies beneath the surface of the soil, for unless the roots are healthy and active and properly supplied with genial warmth and moisture the syringe or the brush may be pried in vain. If this were not the case all experts would not so rigorously insist upon trees being thoroughly established in well drained pots before they are taken in for forcing.

Pruning and disbudding.—I have often advised the inexperienced to defer shortening back until

the fruit is set, as they then escape the dilemma which dropping or mistaking a flower for a wood-bud might place them in. Shortening the shoots before disbudding is commenced does no harm, if it does not actually benefit the fruit, and having secured a good set near home, pyramids and bushes can be reduced to shape with good leading growths from every point. If the trees were thoroughly ripe and have not been hurried, the young growths will not be in advance of the fruit, and disbudding will be found a very simple operation. The first thing to be secured, be the tree a bush or pyramid, is a good leading shoot to draw the sap, and another, starting from near the base, for bearing fruit in the following year. These two generally furnish a well-formed tree, but it sometimes happens that an intermediate shoot may be needed, when three must be left. All others, in the first instance, should then be pinched to two or three leaves and eventually removed, unless well placed fruits are swelling at their base, when a short spur, furnished with a few leaves, will help them forward. Pinching should be performed piecemeal, commencing at the top of the tree and working gradually downwards, taking all the strongest shoots first and leaving weak ones to gather strength, or perhaps form short spur-like pieces of wood, which the loss of the terminal bud would render useless.

Top-dressing and feeding.—It is not a wise course, as soon as the fruit is set and the trees are disbudded, to heap on powerful top-dressing, as strong stimulants at this stage very often induce a gross habit of growth before they feel the weight of their load. Mild diluted liquid may, however, be given twice a week, and the trees must be well syringed once or twice a day. Meantime the top-dressing, previously prepared and kept covered up with fresh horse manure in an open shed, should be examined and turned, to thoroughly incorporate the loam, which is the staple, the manure and bone-dust ready for use. This, when the fruit is swelling freely, may be placed on the tops of the pots, in small quantities at first, and supplemented as often as it is washed in or loses its virtue. As growth proceeds, and the young foliage, by its size and colour, shows signs of too much or too little vigour, the strength and quantity must be regulated; and here it may be well to remind the tyro that moderation until after the fruit is stoned is the best and safest course to follow. When this process is complete more liberal supplies of food may be given to trees carrying full crops of fruit; and clarified liquid, also soot water, may be used for damping the pots, stems, and floors of the houses.

Succession houses.—If any of the trees still remain out of doors no time should be lost in getting them housed and placed in position for the season. If a mixed collection, Figs should occupy the hottest part of the house. I take it for granted that every orchard house is fitted with a flow and return pipe, if only for ensuring a set of fruit. Peaches and Nectarines should follow, Pears, Plums, and Cherries bringing up the rear. If large trees in medium-sized pots must be let into the borders, I would suggest placing them on two bricks, with the apertures immediately over the joint, for the double purpose of allowing the free passage of water and preventing the roots from rambling beyond control. If, on the other hand, it is necessary to elevate them on inverted pots or pedestals, then a good sod of old pasture turf, Grass side downwards used as a cap, will save labour when hot weather necessitates constant watering, and prove a safeguard should the soil in any of the pots become too dry. When the trees and pots are washed and placed, a good supply of lime-water will settle the account with any worms which may have got into the balls during the winter, and they will be ready for starting upon the lines laid down for early trees, or, lacking fire-heat, the house must be freely ventilated to keep back the buds until all danger of a nipping frost has passed away. So important, however, and so cheap withal is a simple heating apparatus, that I cannot once more forbear asking those who

have not introduced one to do so without delay. Many a houseful of trees has been wrecked by a single night's frost when in full bloom. More perhaps have failed to set through the petals and pollen becoming damp and pasty in a low, murky atmosphere, and how many become barren through the want of a ton of slack to ripen up the wood in the autumn it is impossible to calculate.

A good slow combustion boiler needing no setting can now be bought for £3 to £5, and pipes with screw joints can be fixed by unskilled labour. For a long time I was prejudiced against these diminutive boilers, but having had two in work for some years, I can strongly recommend them for doing an immense amount of work in large houses in the spring and autumn, and for protecting Chrysanthemums from frost and that subtle enemy, damp, in winter. If Strawberries have been prepared for fruiting in the succession house, a good batch of plants should be well rammed to settle the frost-lifted soil, top-dressed, and placed on the floors, where they may remain until the crowns show signs of swelling. In this position they will make roots and start quite as well as on the shelves, and standing on a damp surface the balls can be kept moist by the occasional application of water; whereas on dry, airy shelves their wants will require daily attention. Vicomtesse Haricart de Thury, La Grosse Sucrée, Sir Charles Napier, Comte de Paris (a good form of Keen's Seedling), and Prince of Wales are good sorts for coming in early and producing heavy crops of fruit. President, Sir Joseph Paxton, and the Queen come later, and in order to secure a good succession, may remain in cold frames until the end of February. Strawberries this season have had a most decided rest, and cultural conditions being equally favourable, well ripened crowns should make a bold start and flower profusely.

GARDEN FLORA.

PLATE 581.

CARPENTERIA CALIFORNICA.*

THE accompanying illustration of this beautiful new Californian shrub represents it so well, that a description of it is scarcely necessary. It is one of the latest introductions to our gardens from the flowery west, and promises to prove a really good garden plant. It may, however, we fear, be too much to say that it is a perfectly hardy shrub, except in such favoured spots as the Isle of Wight, the Devon and Cornish coasts, and the warm and moist southern parts of Ireland. The most successful cultivator of it we know is Miss Jekyll, who has some fine plants of it in her garden at Munstead, Godalming, and that part of Surrey is not one of the best for tender plants; but then she grows it against a wall, and chooses for it the most suitable spot that can be found. She was, we believe, the first to flower it in England, and perhaps in Europe, and from the plant that flowered at Munstead last June the present plate was drawn. Miss Jekyll speaks of it as a free-growing and free-flowering shrub, which, we believe, corresponds with the experience of others who grow it. In Mr. Gumbleton's garden at Belgrove, Queenstown, it grows at a rapid rate, and six or seven years ago he wrote in the highest praise of it. Now that it has become well distributed about the country it would be useful to hear from growers of it in different parts as to its behaviour, more especially in reference to its hardiness. We believe that it has not been thoroughly tested fully exposed, and until it becomes commoner it is not advisable to plant it away from the shelter of a wall. The soil at Munstead, where it grows so well, is light and naturally very dry and warm in summer. It is readily increased by cuttings or rooted suckers, which it produces freely.

* Drawn for THE GARDEN at Munstead, Surrey, June 27, 1886.



CALCEOLARIA CALIFORNICA

The *Carpenteria* is a new plant in every sense of the word. A few years ago, when the "Botany of California" was written, it was not perfectly known to the North American botanists, for no flowers (only fruits) had been seen upon the specimens then collected. The information, therefore, that botanists can give us is consequently very meagre. It is described as a tall shrub from 6 feet to 10 feet high when fully grown, having slender branches clothed with long narrow leaves of a pale green colour, and producing great clusters of large white fragrant flowers. It grows wild in the mountains of the Sierra Nevada, particularly about the head waters of the San Joaquin River. The *Carpenteria* as a cultivated plant has no history. It somehow crept into English gardens in a mysterious way, and without the trumpet-flourish that usually heralds the advent of a beautiful new foreign plant. The first we heard of it (and probably before anyone else in Europe) was from Mr. Saul, of Washington City, D. C., U.S.A., who sent us dried specimens of it in 1880, and from these pressed flowers and leaves the first drawing of the plant seen in this country was made. It is, botanically, nearly related to the Mock Oranges (*Philadelphus*), which it somewhat resembles. There is but one species in the genus, and therefore it is monotypic, as the botanists say. It is a singular fact that there are several genera in the same Order to which the *Carpenteria* belongs represented by only one species, among these being *Jamesia*, *Fendlera*, *Cardiandra*, and *Decumaria*.

FERNS.

W. H. GOWER.

SWEET-SCENTED FERNS.

WHILST some plants are valued for the brilliancy of their flowers, others are scarcely less appreciated for their agreeable fragrance, and a third class, in which are included the Ferns, depend for their popularity upon the grace and elegance of their fronds and their vivid shades of green. Amongst Ferns especially, few would expect to find sweetness in the way of scent, yet some few members of this family have this additional charm. The following, therefore, are a few which may claim to be designated sweet-scented: *Lastrea æmula*, the Hay-scented Buckler Fern, a robust-growing plant, has a stout, creeping root-stock, from which its fronds are produced. These are erect, from 1 foot to 2 feet in height, twice divided, and narrowly oblong in outline, pale green in colour and agreeably fragrant, both in a fresh and dried state. It is found in various parts of England, but not everywhere. The Mountain Buckler Fern (*Lastrea montana*) is another of our indigenous plants which must not be overlooked. It has also a creeping root-stock, and the fronds vary from 1 foot to 2 feet in height by about 6 inches in breadth; they are lanceolate in outline, arching, and pale green. Its general aspect is that of the Male Shield Fern (*L. Filix-mas*), from which, however, it is easily distinguished by its fragrance when shaken or rubbed. It is found mostly in our northern and western counties; it also occurs in Ireland, but is most plentiful in Scotland. *Anemia tomentosa* is a tropical American plant, and, as the annexed illustration shows, belongs to the section popularly known as Flowering Ferns. The whole of this family are handsome, dwarf-growing plants, requiring stove heat, but the fronds of this particular kind give off a strong odour of Myrrh. *Cheilanthes fragrans*, one of the Lip Ferns, is a dwarf plant suitable for the greenhouse. It produces fronds about 6 inches in length, by about an inch in breadth, deep green above, but paler below; these are delightfully fragrant—almost

as sweet as Violets. *Lastrea fragrans* is a small-growing hardy Fern found in North America; it produces oblong-lanceolate fronds some 9 inches long, and deep green, with a fragrance which some liken to that of May. *Lindsaea cultrata* is a Fern common in Northern India, but not plentiful in cultivation. It is a dwarf plant with a slender creeping root-stock; fronds from 6 inches to 1 foot long, and about 1 inch broad. They are once divided into segments about half an inch or somewhat more long. They are what is termed dimidiate; that is to say, the whole leafy portion is developed upon the upper side of the mid-rib; they are pale green, and yield a powerful odour resembling that of sweet vernal Grass, and which they retain a long time after being cut. *Sitobolium punctilobum*.—This hardy kind, the sweet-scented Fern of the Americas,

may be likened to a long, narrow-fronded form of *A. cuneatum*; the fronds in a young state are slightly tinged with pink, and yield a perfume resembling that of Cowslips or Primroses. It is a most serviceable plant for cutting from, and to the bouquetist its scented fronds are a decided acquisition.

SHORT NOTES—FERNS.

Hart's tongue (*G. Morron*).—The Hart's-tongue Fern, stated to have been found by you at Gibraltar and in several places in the Mediterranean, is, in the absence of specimens, we imagine, *Scolopendrium Hemionitis*. At the base of this Hart's-tongue are rather large, pointed lobes, which give the fronds a somewhat spear-shaped outline. It is a handsome plant, but whether obtainable in this country or not, we cannot say.

Fiji Hare's foot Fern (*Davallia foveolata*).—This is a distinct and handsome plant, and somewhat new to culti-



Anemia tomentosa (fertile frond, half natural size).

is very odoriferous when shaken or rubbed; its fronds are about 18 inches high, three times divided, the ultimate segments being small and vivid green in colour. It is an elegant plant for the outdoor fernery, contrasting strikingly with our native kinds. *Muhria thurifraga* is an elegant species from Natal, suitable for the greenhouse; its fronds, which are erect, are from 9 inches to 18 inches long, and three times divided into small-toothed segments, which, however, become obtuse when fertile; the stem and mid-ribs are clothed with reddish hairs; the fronds give off a strong aromatic odour, resembling that of benzoin. *Asplenium fragrans* is a West Indian plant, resembling somewhat the English black Spleen-wort; its perfume resembles that of newly-cut hay. *Adiantum fragrantissi-*

um, although found in the Fiji Islands many years ago by Milne when attached to the expedition of H.M.S. *Hecla*. It has a creeping, short, thick scaly root-stock; the fronds, which are gracefully arched, are from 1 foot to 2 feet high and nearly a foot broad. They are about four times divided, the ultimate segments being long, narrow, and forked at the ends, whilst the colour is an intensely deep green. This plant is just now very conspicuous in the fernery in the Holloway Nursery.

The preservation of our native flora.—I have just received from M. Correvon, of Geneva, a pamphlet regarding the method of plant-preservation in Switzerland, with rules of the society formed for that purpose, and a short account of the valuable work done since it was instituted four years ago. Strange as it may seem, the method adopted by this Swiss society for preserving rare plants is similar in almost every respect to what I have frequently suggested should be done in our own country, and quite lately when the erection of *Spiranthes Romanzoviana* was attracting attention. It is to be hoped that the work of this Geneva society, under M. Correvon's guidance, will be attended with good results, and be the means of preserving many of the now rare plants

of the Alps. The sooner an English society of the kind is formed the better, if our notice be given to preserve even in its present shattered condition.—A. D. WILDSMITH, *Leeds, Broomfield, Broomfield.*

KITCHEN GARDEN.

W. WILDSMITH.

BEST FORCING KIDNEY BEAN.

FOR many years Osborn's Forcing was generally selected for the earliest crops, and, as far as quality is concerned, I am inclined to think it still the best. Of later years Ne Plus Ultra has become first favourite, and, on the whole, it may safely be said to be the most profitable early variety in cultivation. Osborn's Forcing is scarcely robust enough, and three or four good pickings are usually the extent of its crop. If gathered before it is too old to snap in two readily and used at once, its colour is certain to be good and the quality unequalled. Our cook could always tell if we had kept them with their stalks in water for a day or two, and he has repeatedly asked us to do without it if possible, this treatment tending to make them hard when boiled. The same remark applies to any variety of Kidney Bean, but in most cases they have of necessity to be frequently placed either in water or bunched and put on damp, clean Moss. The plants must be gone over almost daily and the most advanced gathered, otherwise they soon become old and tough, and when the hamper of vegetables for the town house is only sent bi-weekly, it follows that something must be done to keep the Beans fresh. They ought to be stored in a comparatively cool room or shed, and if water is employed it should be frequently changed, and the pans or saucers scoured out.

NE PLUS ULTRA, if the true sort is obtained, is rather more vigorous than Osborn's; it is equally early and quite as free-bearing. Than this no other sort is now grown here, either in pots, boxes, or pits. At one time we were obliged to augment our later supplies with Canadian Wonder, but this and other strong growing varieties, although longer in the pod, require too much room to be profitable. Many sow the seed in 3-inch pots, shifting the young plants into larger pots later in the season. If space is limited, there may be something to say in favour of this plan; otherwise, it has nothing to recommend it. Most people are in the habit of only two-parts filling the pots in which they intend to grow the Beans, completing the filling with rich loamy soil when the plants are growing strongly. This practice involves an unnecessary amount of labour without any compensating advantages. Very frequently the top-dressing is never occupied by the roots, and more harm than good in that case is the result. Our plan is to sow the seeds in the pots, leaving, after the seeds are covered, about the depth of the rim for holding water. For the very earliest supplies 8-inch pots are large enough, but later on 9-inch pots are preferred. These will stand on comparatively narrow shelves or ledges, and if properly attended to will produce a good crop of Beans. Very little drainage is needed, and this being covered with a little rough manure, the latter prevents clogging, and affords good food for the roots. In order to hasten germination, the seeds may be soaked for a few hours in a pan of water set on the hot-water pipes, and the soil being warmed for their reception, no check is sustained. Our earliest batches are usually started on the hot-water pipes, and transferred to a warm and lighter position before they become badly drawn.

In order to maintain a continuous supply, fortnightly sowings are necessary, and a batch of twenty-five pots, each containing about six plants, is usually ample for affording a good-sized dish at a time as required. The plants can be readily supported with sprays from old birch brooms, and, failing these, a few sticks and two or three encircling strips of matting will keep them together equally well. Where more seed is sown than plants are required thinning out should be

done early. At no time should the seedlings suffer from drought, either at the roots or in the atmosphere; frequent gentle syringings overhead and liquid manure after the plants have commenced to bloom greatly benefit them. An ordinary stove temperature suits them well. Many are obliged to grow them in early vineries, but this should be avoided where possible, no class of plants being more liable to be infested with red spider. If heated pits are available, these are usually well adapted for Bean culture, especially for affording a succession to the earliest crops from pots. A mild hotbed, consisting of leaves and manure and about 9 inches of good loamy soil, suits them well. We prefer to raise the plants in small pots, two or three in each, and put them out thickly in rows about 15 inches apart. The very latest spring supplies are drawn from plants put out in unheated frames in succession to early Potatoes, another large batch of plants being put out on a sunny border and protected with hand-lights just liberated from Cauliflowers. According as the sun gains power so the difficulty of growing Beans in pots in a clean profitable condition increases; in fact, they require more attention in the shape of waterings and syringings than they are worth. During hot weather, and, indeed, any time after March, they succeed better in boxes than in pots. These may be of any length, but of a size to fit the shelves, and with rough loam or manure for drainage and good loamy soil for the plants to root in, very little water is needed. In boxes the plants remain more healthy and last longer in bearing than those in pots do, especially if not unduly crowded. One good row in each box is ample.

W. I.

Self-protecting Broccoli.—By selecting varieties of Broccoli that come into use at different periods an almost unbroken supply can be maintained during the greater part of the year in ordinary winters. One of the best is Veitch's Self-protecting, which comes into use when the Autumn Giant Cauliflower is finished. It produces large heads of a particularly clear white colour, firm, and of fine shape. In order to have a crop to succeed the Giant Cauliflower, a sowing should be made upon a warm south border the last week in March, or, better still, in a cold frame. In the latter the seedlings will come up earlier and be ready to prick out at the bottom of a south wall, where they will get strong and stocky. They will then be ready to plant out finally about the middle of May. This crop will be ready to cut by the time the latest crop of Giant Cauliflowers is over. The main crop of Veitch's Self-protecting Broccoli should be sown from the 8th to the 12th of April. The young plants have then time to make their growth and mature it before commencing to form their heads. The stalks must be well hardened before the button commences to form in the crown of the plant, or one need not expect a head of well-finished Broccoli. Plants growing in shady places or underneath trees, even if the stalk or stem is as strong as that of plants in open quarters, only produce small and imperfectly-formed heads; and it may be observed that the usable parts of plants growing in such situations are found to be deficient in flavour. Broccoli of this description is not comparable with that produced in the fields. The latter have fine dark-coloured stems and beautiful close, compact heads, fit for any table. The seeds may either be sown upon beds broadcast, or in drills 3 inches apart. As soon as the plants are large enough to handle, prick them out 3 inches asunder upon a piece of ground which has been well firmed. Some time during the latter part of June plant them out upon a piece of ground which has been deeply dug and well enriched with rotten manure. Plant 21 inches apart row from row and 18 inches plant from plant, treading the ground firm in the rows. I commenced cutting my earliest planted Broccoli the first week in November, and had a continuous supply of fine heads up till Christmas. I lifted a number of plants and planted them in a light airy shed. They had partly formed their heads before being lifted, and the latter developed

properly, and have only been finished a few days ago. The leaves of this variety afford the heads more protection than any other variety with which I am acquainted. They twist over each other very closely, and I think this Broccoli may be said to be tolerably hardy. A few plants which still remain look as if we might get a few heads yet from them before Snow's Winter White is ready to cut.—WM. CHRISTISON, *Homewood, Bromley.*

GOOD VEGETABLES.

LETTCES.—I have never seen mentioned in the lists of desirable varieties of this most useful article of salad, which have from time to time appeared in THE GARDEN, a kind which I myself have grown for several years called Bossin. It is greatly liked and admired by all who have seen and eaten it. I first got to know of it through getting a packet in a collection of vegetable seeds from the Royal Horticultural Society, and was so much pleased with it, that I looked through catalogue after catalogue with a view to growing it in the future, and at last, by good luck, found it in a list sent me by Messrs. Vilmorin, of Paris. The Bossin Lettuce is one of the Cabbage varieties. The outer leaves are slightly bronze, but the hearts, which are very solid and of a large size, are light green, the leaves being tender and crisp. It stands the hot weather well, showing no tendency to bolt. The seeds are black.

CAULIFLOWERS.—Do any of your readers know a new early variety of this vegetable called Extra Early Sea Foam? It was offered last year by an American firm from whom I procured seed. It proved to be a very desirable sort. It is rather earlier than Sutton's First Crop, which I have always grown before, and consider a most useful variety; it is also superior to the latter in the flower, which is closer and whiter. I intend to give them another trial this year. As a succession to the above mentioned sorts, I do not think Sutton's King of Cauliflowers can be beaten. I always get it myself and find it most satisfactory.

CHOU DE BERGHELY.—Can some of the readers of THE GARDEN kindly give me some particulars of this vegetable, which is so highly praised on all sides? I should like to know when it is considered to be in season, and the best way of cooking it. I had a few plants of it last year, but I am afraid they have been spoiled by the recent severe weather. Has it come true when the plants have the appearance of a sugar-loaf Cabbage with a sprout growing at the foot of the leaves?

F. R. H. S.

A new esculent (Coleus tuberosus).—M. Paillex publishes the following in the *Moniteur d'Horticulture*: "On the 15th of July, 1884, a correspondent in the Transvaal, M. Mingard, wrote to me as follows: 'With this letter I send you some tubers of the wild Potato called by the Magbambas, Matambala. It is grown like the ordinary Potato and is used in the same way. The natives highly value it, preferring it to all other tuberous-rooted esculents. They keep the seed tubers either in dry sand or hung up in their huts. They are planted at the sowing season of the Maize.'" M. Paillex has been successful in getting a few good tubers of this esculent in good condition. These were planted in a frame and did well. The following year a mistake was made in watering up to too late a period, so that many of the tubers rotted. M. Paillex thinks that if planted in June and taken up in September, very good results would be obtained. It is a curious fact in connection with this tuberous-rooted Coleus that it was described in an old work by a certain M. Placourt, director-general of the French East India Company, so long ago as 1661. The author was at one time commandant at Madagascar. His description of it is: "Roots small, about as large as one's thumb, and increasing exceedingly, one plant yielding upwards of two hundred." Until M. Paillex received his tubers this plant had never been introduced into Europe. It is rather strange that this

esculent should be cultivated at Madagascar and the Transvaal, and it would be interesting to know if it is now a staple article of food in the former place. It is said to prefer a light soil, and undoubtedly likes a warm climate. In the south of France it ought to do well.—J. CORNHILL.

Early Cauliflowers.—When nice fresh Cauliflower heads can be had about the first week in June they are most acceptable, and now that we possess so many early sorts, that need not be difficult. The old plan of sowing in August or September and keeping the plants under glass during winter entails a great deal of labour, and therefore we have ceased to follow it, and now sow in spring. If seed of some of the earliest sorts is sown now in gentle heat the young plants will appear in a week, when they may be grown slowly on until the end of March and then they should be planted out. If kept near the glass and not allowed to become too crowded they will be found to be much more healthy and robust than plants sown in autumn and wintered under glass.—CAMBRIAN.

Early Peas.—It is now time to think of these, and where open-air conditions are unfavourable to early growth the plan of raising the young plants under glass should be adopted. If not grown in too much heat, plants raised under glass are very useful, but when kept very close in strong heat until they are 10 inches or 1 foot high and then planted out without being properly hardened, little or no success need be expected. We raise quantities of early Peas under glass, especially new early ones, which we wish to make the most of and are afraid to trust out too early, and when the young plants are from 4 inches to 6 inches in height, sturdy and very dark green in colour when planted, they invariably do well. The best of all the ways which we have tried of raising Peas under glass is to sow ten or a dozen seeds in a 3-inch flower-pot, and plant them out of these without breaking the balls of earth. When in pots they can be conveniently moved about or placed further apart to prevent crowding, and one or two hundred pots make a grand batch. In planting them out it is unnecessary to put them in so close as to touch each other, for even if each little clump is kept 6 inches or so apart, the row when they grow up will be complete.—J. MURR.

Early Leeks.—These need never be grown extensively, but a few dozens of them are easily managed, and when grown to weigh 3 lbs. or more each in August they are useful either for exhibition or other purposes. A pinch of seed should be sown in a 6-inch pot, and if placed in a little heat it will germinate in three weeks or so. The plants should then be kept near the glass and in a temperature of 60°. As soon as they can be handled lift them from the pot and dibble them into shallow boxes in very rich soil. Keep them about 2 inches apart, and they may remain in the boxes until they are planted in the open ground. This should be about the end of April or early in May, and if put out in trenches like Celery their growth will be found to be most satisfactory. Apart from big Leeks, however, Leeks generally are a most useful crop from mid-winter onwards, and especially in severe weather. They ought, therefore, to be cultivated extensively. Market gardeners near Welsh seaports grow them largely for supplying the ships. Than Leeks I have been told no crop pays better, and I do not know of any winter vegetable which gives such a long supply as a good bed of Leeks. They never shrink by frost, and when well cooked they may be set before a prince.—CAMBRIAN.

SHORT NOTES.—KITCHEN.

Kitchen garden seeds.—We hope our correspondents will not send us any more articles on the selection of seeds for the kitchen garden. We observe that some of those that we receive are lists of mainly newish things, and exclude some of the best old standard vegetables.

White Elephant Potato.—I find that this seems to give me the most delicately flavoured Potato of all the kinds that I grow, and it has good qualities in other respects. Generally the effect of my soil on Potatoes is so bad, that I do not care to eat them. Have others of your readers noticed the same merits in this Potato?—G.

KITCHEN GARDEN NOTES.

GLOBE ARTICHOKEs.—Twenty degrees of frost, twice in succession, and many nights 12° and 11°, combined with repeated successions of thaw and frost, the protecting leaves notwithstanding, have been too much for our plot of Artichokes. They are so injured, that they might as well be killed outright; and having made up our mind to this, a sowing has just been made in deep boxes, which in due course will be potted singly and grown on in a warm pit, and gradually inured to bear full exposure by planting-out time early in April. Meantime the old plantation will be heavily manured and deeply trenched in readiness for the seedling plants. A deep, moist soil—or, lacking the moisture or holding property of the soil, a half-shaly position, with plenty of depth of soil—is essential to the obtaining of large, succulent heads. The next requisite is plenty of space for free development of growth, 5 feet being none too great between the rows, and not less than a yard apart in the rows. The 5 feet may to some appear excessive, but in good soil during the second year of growth the foliage of the plants will fill out that space, and the first year the ground between the rows can be utilised for a catch crop of Cauliflower, Lettuce, Spinach, Radish, or dwarf French Beans. Of course, if there is plenty of ground for keeping up a full supply of the various kinds of vegetables without having recourse to double cropping, so much the better for the Artichokes, for then a full amount of manurial mulching can be given; and this, with waterings over it in dry weather, will by the end of the summer and all through the early autumn months result in a good crop of medium-sized heads of the finest quality; and next year, if well guarded from severe frost with plenty of leaves, long dry litter, or Bracken, the produce of the plants will be at high-water mark. Three, or at most four, years are the longest period that the plants should remain. Perhaps the simplest, but in prospect of such winters as the one we are passing through, by no means the surest way of keeping up successional relays of plants, is to sow in drills in well-prepared ground about the middle of March, and thin out the seedlings to about 18 inches apart, transplanting to permanent positions any time during the month of February in the following year, and treating liberally in respect to rich top-dressings. Repeat the plan year after year, and, as a matter of course, destroy a proportionate number of the old stools that have borne for three or four years. To obtain handsome and extra-sized heads, it is necessary that all weaklings—hard, wiry stems—be cut away, and the small branchlet heads—what I call gills—that sometimes form on the strongest stems immediately under the large heads should be rubbed off as soon as perceived, for they are not only great robbers of the finer heads, but even when full grown they are useless, because so small.

CABBAGE.—Cabbage plants will be scarce this spring, and they will be in great demand, as many are killed, and there are many blanks in the autumn-planted plots; and, worse still, the sprouts from the old plantations that can generally be relied on to afford ample supplies of greens till the autumn planted are fit for use, are quite done for, and in prospect of such scarcity we think it advisable to sow at once in pans or boxes, and put them in a dry airy frame to germinate, bringing them up as sturdily as possible by airing freely, and pricking out in cold frames as soon as may be. With careful treatment in respect to the avoidance of a check in growth, and when ready to plant to lift them with the soil adhering to them, the probability is that they would be ready for use quite as early as the autumn planted. The earliest varieties should be selected for this sowing, of which Reading All Heart and Ellam's Early are two of the best that have come under my observation. We shall make a sowing of these kinds on a warm border in the open air, as well as in frames as soon as the soil is workable. Cabbage of every description to be of high quality must have deep tilth and abundance of manure. As to texture of soil, light, heavy, or medium

suits it, provided there is plenty to feed on. To poverty of soil and successive cropping of the same ground with Cabbage of some description or other is entirely due that worst of all pests to Cabbage culture, viz., "clubbing." Moral: avoid the same and be even as I—, never bothered with it. All early varieties of Cabbage are small, and may, therefore, be planted closely together. As a general rule we allow them a distance of about 10 inches in the row, and draw out alternate plants for use, as Coleworts, which leaves 20 inches for the growth of the remainder, and there is a space of 2 feet between the rows, which we find sufficient to get about comfortably on the plots to move the soil for the destruction of weeds, and, if needs be, which is sometimes necessary to keep the plants firm, to draw soil to the stems of the plants. It is only for the sake of securing the plants in position that we care to earth up at all, for there really is no other merit attached to the process.

FORCING ASPARAGUS.—I suppose that this is a favourite vegetable with everybody. It is greatly appreciated here, but supplies are never asked for till February, because we consider that it is never of high quality till there is sufficient daylight to well green the tops. A terribly heterodox notion this I know with the "blanchites," who apparently prefer insipidity to sweetness. We force it in frames placed over ordinary hotbeds of leaves principally, and a little long litter added, which has the property of starting the heat of the leaves into rapid motion. Soon as the frames have been put on, about 6 inches of roughish vegetable mould is placed over the beds, and on this the plants are packed closely together, the roots being spread out flat-wise; then another 6 inches of the same mould buries the plants from sight. A good watering with tepid water is at once given, and in from a fortnight to three weeks a supply can be had. It is necessary to guard against the heat of the beds getting too violent. This can only occur from the too free use of litter with the leaves, as the latter never overheat of themselves, unless the bulk necessary—about 4 feet—be greatly exceeded. To keep a constant supply till it can be had from the open ground—about the middle of April—we find it necessary to put in successional batches once a fortnight. Strong plants continue bearing for about three weeks, and this period can be somewhat extended if, as soon as the plants seem to languish, a thorough drenching with tepid manure water be given and the linings round the sides of frames be renewed.

PEAS AND BROAD BEANS.—Our first sowing in the open ground of both these will be made this week: the former on the best sheltered border we have: the warmest is, of course, reserved for the Peas that were sown in pots three weeks since. Broad Beans are given more open quarters, though, for the sake of earliness, the most sunny spot that can be spared, and for once they are favoured with a bit of our very best ground, more by chance than election, though. It happens in this wise. Our winter Spinach being a failure, we must have this vegetable at the earliest possible date; hence the fine sunny spot and good ground that the Beans are destined to share with the Spinach. They will be planted in a double triangular line 6 inches from seed to seed and 4½ feet between the rows, and midway between them will be sown a row of Spinach, which crop will be off before the Beans are full grown, when they will take up the entire space. I care for no other variety than the ordinary Long-pod for this early sowing, and for late supplies none excel the Broad Windsor.

HORSE RADISH.—"Mistakes in gardening" would be a fine subject for an essay of interminable length for anyone who felt disposed to begin the work of reforming the same, and who believed that long winded effusions in the gardening papers would start the ball rolling in that direction. I, for one, do not think that plan half so good as tackling the mistakes one at a time, and showing, by what has been done, the way to avoid mistakes in future. But, it may be asked, what has that to

do with Horse Radish? Why, just this much: that no other kitchen garden edible receives such unfair treatment; and it is a mistake, as the plant is as amenable and as profitable to generous cultivation as is the most valued vegetable of the garden. As a rule, any out-of-the-way corner and any kind of soil are considered good enough for this, and such being the case, can the roots be expected to be aught else but small, dry, and shrivelled? Granted that Horse Radish plots look for the most part of the year nearly allied to weed crops, that is no justification for neglect as to growing it well, though it may be for keeping it out of the most conspicuous parts of the garden, a far different matter that from giving it any sunless spot under the shade of trees, and of manure, none. We are able to boast that such is not our plan. We are now trenching up part of the old bed, some four years planted, and all the roots, small and great, are picked out as the work proceeds: the stout sticks are heeled in for present use, the medium-sized are reserved for planting, and the smallest rootlets are thrown away. The ground is being trenched three spits deep, and a good layer of manure is put in immediately over the surface soil, and the trench filled up without adding another layer of manure, which would conduce to the production of side or lateral rootlets, that are ever to be discouraged. In the meantime the medium roots will be prepared for planting by being cut into from 6-inch to 8-inch lengths, and all the eyes, except one or a couple at top, be rubbed out in order to prevent the growth of the thong-like or forked rootlets just mentioned. We plant with long dibbers in lines 2 feet apart, and a foot apart in the row, the top of the stem being pushed a couple of inches beneath the surface of the ground, and this completes the process. By this mode of cultivation, sticks half as thick as one's wrist can be had in twelve months' time; in fact, by the autumn of this year the produce will be far above the average of that from the "as-you-were" style that continues in vogue in many gardens.

TREES AND SHRUBS.

W. GOLDRING.

THE AROLLA, OR SWISS STONE PINE.

(PINUS CEMBRA.)

THE Arolla is as conspicuous in Swiss scenery as the true Stone Pine (*Pinus Pinea*) is in an Italian landscape. It is the prevailing tree throughout the Swiss Alps, where it forms dense forests in the valleys and clothes the mountains up to a higher elevation than any other coniferous tree. It has been found at heights of 6000 feet, but, though it is the prevailing tree of Switzerland, it is indigenous to various other parts of Central Europe, and extends across the Carpathian and Ural Mountains to Siberia, where it is again the



Coning branch of *P. Cembra*.

predominant tree in the forest regions. It has, therefore, a very wide geographical range, and in every country where it grows wild it is a most valuable tree—valuable for its timber, and not unimportant in the way of affording an article of food. As a cultivated tree this sturdy mountaineer is also most useful in ornamental planting. Being different in shape and in colour from its associates, it is capable of adding effect to a tree group such as no other Evergreen could do. Its

peculiarities are its heavy masses of very deep bluish green foliage, and its erect conical growth, so compact and dense as to render it discernible at a glance among crowds of other Pines.

There is a considerable diversity of opinion



Seedling of *P. Cembra*, showing the numerous seed leaves.

among writers upon Conifers respecting the merits of the Arolla as an ornamental tree. Some consider that it is too gloomy and monotonous in appearance. That was London's opinion. Lambert, than whom no one knew Pines better, considers it one of the handsomest in the genus, and that is my opinion. It is a beautiful little tree, hardier than any other Pine, and one which never refuses to grow and thrive in any situation, however cold, or in any soil, however poor. Such a tree, therefore, is worth attention, and by planting it well at the outset and by placing it well so that it may borrow additional beauty from other trees in its neighbourhood, it would for generations form a striking feature in any garden or park. Some object to it on account of its very slow growth, but as it is known to be slow, no one would think of planting it in a place where a tall tree should be. On an average it grows about 9 inches in a year, according to the soil and locality in which it is placed. In Scotland, where the climate is more akin to that of its native mountains than that of England, it grows faster, especially if in good free soil. The best soil for it appears to be a deep sandy loam, but no one need go to much trouble in the matter of soil for the Arolla, as it grows in any material from peat-bog to dry sand. As regards the planting of it, so that its fullest effect may be obtained, my opinion is that it never looks so well as when you see a group of it, consisting of, say, about six or eight trees planted irregularly and of different heights, the tallest overtopping the smallest by about half its height. Such a group as this one may see any day in the Kew arboretum. When a tree is large and fully clothed to the best so as to make what is called a fine specimen, as one sees at Dropmore, then

an isolated tree has a fine effect. This Pine, associated with any other Evergreen, always has a telling effect, especially in winter; but one should be careful in mixing it solely with deciduous things, as in winter its darkness may produce a spotty effect.

The Cembra Pine belongs to that group of species which have five leaves or needles in a sheath. The leaves are 2 inches to 3 inches long, deep green above, lined with silvery white beneath, and this silvery line is so marked in some trees, that it shows distinctly at a distance. The cones are well represented in the accompanying woodcuts; the large one is full-sized, and the small coning branch shows how the cones are borne erect on the branches. The seeds are wingless, and, compared with those of other Pines, are very large. The seed is enclosed in a very hard, bony shell, so hard indeed, that it is with difficulty broken. The seeds are eatable, being very oily and pleasant to the taste, and like the seeds of the Italian Stone Pine, are eaten by the poorer Swiss in winter. For squirrels and other seed-eating creatures they are dainty food, and it is interesting to see how dextrous the squirrel is in extracting the dainty morsel from its bony covering. In the Kew museums there are the actual cones of the Arolla that had been half-devoured by squirrels, and one can see how cunningly they manage to get out the kernels with the least amount of labour. The cones take a year and a half to grow full-sized; that is, the catkins are produced in early summer, and the cones ripen in November of the following year. In a young state they are of a rich violet-purple colour, the colour of a ripe Orleans Plum, as one writer puts it; and seen nestling amongst the foliage they have a pretty appearance.



P. Cembra. Full sized cone, leaves, cone scales and seed.

P. Cembra is a very old tree in this country, having been introduced by the Duke of Argyll, or the tree-monger, as he was called, who first

planted it at his place at Whitton, in Middlesex, in 1746. Afterwards it was much planted about the country, and so plentifully was it planted at Gledhow, in Yorkshire, that it went by the name of the Gledhow Pine. Perhaps some reader could say if any of these trees at Gledhow are still growing there. At Walcot, in Shropshire, it was also largely planted by the late Lord Clive, and thirty years ago the largest of the Walcot trees were from 40 feet to 50 feet high. But it is more for ornament than utility that it has been planted in this country, although many have advocated the planting of it as a timber tree in hilly districts. Its wood is excellent, being very workable, of a pleasant light brown colour, with scarcely any grain, and, moreover, agreeably fragrant. The quaint wooden figures sold in Swiss shops are mostly carved from wood of this Pine. An excellent idea of the aspect of the Swiss Stone Pine as it appears on the Swiss Alps may be derived from the illustration given in THE GARDEN, Vol. XXVIII., which was re-

slow in growth, it is true, during the first few years from cuttings, but when old they remain as they are, and never require clipping, pruning, or cultivating in any form.

The Golden Scotch Fir.—It is stated in THE GARDEN, January 8, with reference to this tree, that "it may not be so rapid in growth as the green, and it will be years before a big tree can be seen of it." Now, neither of these assertions should be accepted as an *ipso facto*, for twelve years ago I saw in a mixed Larch, Scotch, and Spruce Fir wood on Churchhill estate in Ireland a tree of the Golden Scotch Fir that was then fully 16 feet in height, and had kept pace as regards rate of growth with its surrounding neighbours. Since that time I have not seen the tree, although I have had specimens of the foliage sent me for scientific purposes, but if now standing, and I have good reasons for believing it to be so, it must be considerably over 30 feet in height. The variegation was constant and beautiful, not wanting in summer and reappearing again in winter, as your correspondent states is the case with this tree, and evenly spread over all the foliage. It was a chance seedling, and was not detected until the plantation in which it was growing had attained to a considerable height. The Golden Scotch Fir is beyond doubt the most ornamental Conifer we have, the deep bluish green of the normal foliage offering such a marked and pretty contrast to the rich golden of the variegated leaves. This was strikingly exemplified in the specimen above alluded to, and which, growing side by side with the normal green-leaved plant, brought the different colours of foliage into bold relief, and as the tree was growing within easy distance of the road, curiosity tempted many a passer-by to halt and examine so beautiful, distinct, and imposing a plant. An Edinburgh nurseryman to whom my father pointed out the tree was simply electrified with its appearance, and would willingly have undertaken the rather arduous task of transferring it to a conspicuous spot in the Scotch metropolis. I wish the commonly accepted opinion that both the golden and silver-leaved forms of the Scotch Fir revert to the normal colour in a year or two would receive less credence, but it is not likely to, for late authors on Coniferae simply perpetuate the mistake.—W.

Spiræa Douglasi.—Where, as is the case in most home nurseries, there is excess of certain plants over and above the demand, it sometimes becomes a matter of consideration how to profitably dispose of surplus stock, and such is usually the case with rapidly increasing shrubs like the one above referred to. To avoid waste experiments with such plants for other purposes than those they are usually applied to is the rule in most nurseries, and it, therefore, will not perhaps sound so strange when I recommend the present *Spiræa* as a valuable hedge or covert plant, and one that is well worthy the attention of persons who, at the present season, have the formation of such on hand. Amongst the shrubby species of *Spiræa* no other, in my opinion, is so well suited for extensive park planting as *S. Douglasi*, it having at least half-a-dozen of the best recommendations that could be linked to any plant. It is perfectly hardy, of free growth, and increases rapidly from the root, is not fastidious about soil, situation, or shade, forms a dense, well-shaped bush, and is, when in full flower, one of the most ornamental shrubs that can be imagined. The flowers, which are of a bright pink—but there is a lighter-coloured form—are arranged in dense, terminal panicles, of from 6 inches to fully 10 inches in length, and are borne in great abundance. A hedge of this plant during the flowering season is pretty almost beyond description, and the flowers, being of good substance, last well, and remain during fine weather in exemplary condition for a long period of time. For planting in masses in conspicuous places, this *Spiræa* is especially valuable, and it is not required to plant thickly, for if the soil be only of average quality, the roots soon wander about and fill up with their many and strong shoots the

intervening spaces between the plants, thus rendering the shrub a much-to-be desired one for using in game preserves or wherever a dense, twiggy undergrowth is desired.—D.

The Winged Elm (*Ulmus alata*).—By far the most conspicuous tree in our deciduous woodlands at present is the Winged Elm, a fact that I could not help noticing some days ago when passing along a private road, one of the sides of which was lined with fair-sized specimens of this useful tree. What renders it so distinct from Elms in general is the peculiar corky excrescence with which either side of the branches, big and small, is furnished, thus imparting to the whole tree, when destitute of leaves, a gouty appearance, or rather as if the branches were of inordinate dimensions, but which, on closer inspection, is found to be caused by the corky winged ridges of the bark. On examining some of the smaller branches this ridge of bark is found to be quite as deep as the diameter of the tree on which it is growing, and as there is the same excrescence on either side, the whole appearance of the branch is increased to fully twice its real size. Here the Winged Elm has attained to a height of fully 40 feet with a trunk circumference at a yard up of 4 feet 7 inches, dimensions that are rarely exceeded by the tree, even in its native American wilds. The leaves are small, serrated, and resemble in no small degree those of a vigorous growing young Hornbeam tree. Being of easy culture, perfectly hardy, and an interesting species that imparts an unusual appearance to our woods in winter, the Winged Elm is worthy the attention of planters, and, being obtainable at a moderate cost, may be used freely enough along the outskirts of such woods as border roadsides and drives. In thinning the wood in which these trees occur in some plenty it was found that the timber was hard and firm, redder in colour than that of either the Scotch or English Elm, and more difficult to cut with the axe. As regards lasting qualities of the wood, I cannot speak with any amount of certainty, for the trees cut down were not deemed of sufficient size, nor were they so fully matured as to form a just idea of the wood when full grown and ripe. The soil composing the wood in which they thrive best here is light loam resting on deep gravel.—A.

The Colchic Laurel.—This is a finer, a more genteel plant than the common form, one that has been found to be perfectly hardy in this country, and almost proof against the attacks of game. Where a large, strong growing plant for screen purposes is wanted, by all means use the common Laurel, but where a refined appearance, a dense dwarf growth, and a non-troublesome plant—at least, so far as pruning is concerned—is of paramount importance, give the Colchic form preference. The leaves of this latter plant are of a pale green colour, fine in texture when compared with the common form, slightly serrated, and remarkably smooth of surface, in this latter approaching very near to those of the Rhododendron. We have used it rather extensively for some years past, and find it a very desirable and useful estate plant, it coming in well for shrubbery formation, for clothing of banks with a procumbent evergreen growth, and in the making or renewing of game preserves. The "catalogue" statement that the Colchic Laurel is proof against the attacks of ground game is rather "stretched," and it might, perhaps, have been better to say that it is almost so, or less liable to get nibbled and barked than the commonly cultivated plant. It is of slow growth compared with the latter, but spreads horizontally to a greater extent, and bears pruning as well as any covert plant I know of. Cuttings inserted in the usual way produce roots quite freely, and the young plants soon gain strength and vigour, and become dense bushes by the third or fourth year, at which period they are fitted for planting out permanently. I do not think that the Colchic Laurel is by any means fastidious about soil, for here it is growing in dry and damp, stiff and free, loamy and peaty, and with but little appreciable difference. As to situation, it is likewise totally indifferent, for a break planted with



An old tree of *P. Cembra*.

produced from a photograph sent by Mr. Otto Forster. The spot illustrated is in the Zemmergrund Tyrol, where Mr. Forster says one rarely sees a specimen tree, all being weather-beaten, old, rugged, and most picturesque. He says that the largest tree in this region does not exceed 80 feet high, and one with a diameter of 6 feet is probably a thousand years old.

Tree Ivies.—There is not half enough use made of Tree Ivies; one may go into a dozen gardens and not see one. Their special value is for planting for winter effect, for then, on account of being different from every other Evergreen, they are the more noticeable. They are infinitely better for winter beds than small Conifers or other things usually planted in them, because they never grow too large, are always tidy looking, and their hardiness is never questioned. Specimen Tree Ivies about a yard high and as much through are as handsome Evergreens as one could have in prominent positions on a lawn, and especially if planted so as to form an irregular group rising from a groundwork of creeping Ivy. Tree Ivies are, of course, nothing more than the common Ivy, tree-like instead of creeping, and now we have them of various sorts, some golden-leaved, others gold and silver edged, so that one can vary their effect. They are

these in our home nursery and with a northern aspect are just as healthy and vigorous in growth as those planted under what would be considered more advantageous circumstances.—A. D. WEBSTER.

Cryptomeria elegans in winter.—One or two specimens of this Conifer planted about a lawn are capable of producing a colour-effect such as no other tree can, and for that reason it has a peculiar value. Just now every tree of it glows with a reddish coppery hue, which it begins to put on as early as August, intensifying every month until in mid-winter the colour is very rich. It afterwards gradually loses the coppery hue, and by about April the foliage has quite reverted to its original green. If associated with the darkest Evergreens, the coppery hue is intensified, but the *Cryptomeria* should be made to stand out with the green as a background. The elegant feathery growth of the tree, with the branches always drooping, gives it a different aspect from other Conifers, and it is not so rigidly formal in outline as most others. It is a hardy, free growing tree, not particular as to soil, rarely refuses to thrive in any conditions, but of course growing best in a good, free soil and a sheltered spot. There is a dwarf variety of it (*nana*) which is useful to plant in certain spots where the other would be too big.

The golden-leaved Chestnut is a neat little evergreen bush that many would like to have in their gardens. It is so unlike its relative, the common Sweet Chestnut, that there is no comparison between the two. *Castanea chrysophylla* is a native of California, in parts of which State it forms a dense undergrowth of from 4 feet to 6 feet high, and is often found in company with the Monterey Pine (*Pinus insignis*), but in other States, Oregon, for instance, it grows to a height of 30 feet. As we know it in European gardens it is rarely more than a dwarf, dense bush, having leaves somewhat similar to those of the Bay, but smaller. They are deep green above, while the under-surfaces are covered with a golden tint, hence the name *chrysophylla*. It is perfectly hardy, never affected by our hardest winters, and may be grown perfectly well in Scotland—indeed, some of the best plants of it exist in and about Edinburgh. The largest cultivated specimen is supposed to be that at Totterworth Court, in Gloucestershire, and has been planted nearly thirty years. Even when only 2 feet or 3 feet in height, this Chestnut produces fruit freely, and these are miniatures of the spiny Sweet Chestnut fruits. In bold rock gardens or in masses of dwarf shrubs are the places in which to plant this shrub. It thrives best in a deep moist loam.

Abies brachyphylla.—No one need hesitate to plant this Japanese Silver Fir, which may still be called new, seeing that it was only introduced in 1870. In the "Manual of Conifere" it is described as "one of the hardiest and handsomest of the Silver Firs," and a truer description could not be given of it. Every year it seems to improve, although the largest plants in this country are scarcely beyond the nursery or sapling stage. It is likely to outgrow all the other Silver Firs, not even excepting *A. Nordmanniana*, which bears such a high reputation among tree planters. The young trees I have seen of it in the various English nurseries and gardens all indicate a sturdy and robust growth. The stem grows perfectly erect, and is rarely seen without a good leader. The branches spring at regular intervals, so as to form a symmetrical cone-like tree. The leaves are short (as the specific name implies), and almost as dark a green as in *Nordmann's* Fir, but instead of lying in two flat rows on the branches, they are more irregular, thus giving the tree a different appearance. Every specimen I have seen was feathered to the ground with branches, and the bottommost did not show any signs of losing foliage, as so many of the other Firs do. There is no doubt but that we have in *A. brachyphylla* a valuable tree for ornamental planting, if not, indeed, for timber. It is said to grow in Japan and Saghalien (it being a native of both islands) to a height of 120 feet. In Veitch's "Manual" it is stated that this Fir stands the Danish winter uninjured.—W. G.

Malus Halleana. In answer to "G." (p. 83), I may say that the origin of this is unknown to me, but it has much the habit of *Malus floribunda*, from

which it differs in the leaves being narrower; the leaf-stalks are more flushed with red and the flowers deeper in colour, thereby rendering it more conspicuous than even that well-known and much-appreciated shrub. My plants were obtained from Messrs. Transon, of Orleans, in France, who describe it as "a new distinct Japanese sort with narrow leaves and pink flowers." Such a handsome shrub will, no doubt, soon be grown by our English nurserymen.—A. P.

Gordonia pubescens.—This very beautiful shrub or small tree I have grown for many years. With me it grows vigorously in a deep alluvial soil, which is rather moist, but not wet, and it flowers fully three months, i. e., during July, August, and September. It is a native of our Southern States, and this is about its northern limit where it can be grown. The flowers, which are large, are of the purest white, and produced in great profusion. In England I should say this plant would succeed in the American border, but it should have a warm position. What English cultivators should aim at with all our shrubs and trees, especially from the Southern States, is to get the wood thoroughly matured. There is no degree of cold experienced in England greater than that which they will withstand in this latitude, where we have the thermometer frequently 10° below zero, and I have known it much lower than that without plants being injured in the least. The *Maclura*, a southern tree, fully illustrates this; young plants of it in England grow with great vigour, and the young growth is killed back in winter. Though a southern tree, this stands well in the Northern States and ripens its wood to the tips. Thus, where matured, even a temperature of 20° below zero does not injure it. Cultivators may take it, as a rule, that all the trees, shrubs, and plants of North America are hardy in Great Britain—that is, they will endure the lowest temperature known there, provided their wood is well matured.—JOHN SAUL, Washington.

Magnolia Halleana—"W." (p. 84) speaks of this *Magnolia* as though it has not been distributed, but surely a thoroughly hardy bush which has been for some years recommended by nurserymen must by this time be fairly well known. If it is not, permit me to inform all lovers of good things that they should lose no time in securing plants of it, as I believe it will be found to be perfectly hardy in the shrubbery border, and being so dwarf, so compact and complete in all its parts, and so early, the day should not be far distant when it will form a new feature in the foreing house and greenhouse. By far the finest collection of hardy *Magnolias* I have met with is in the grounds at Hatfield, the seat of Dr. Henry, near this place. They were planted most likely by the late Donald Beaton, who lived there when a young man, and occupying as they do a warm sandstone bank, sloping to the south, backed and flanked by grand Conifers, they are worth a day's journey to see. There, striving, and not in vain, with *Abies Douglasi*, the stately *M. acuminata* has formed a splendid tree, the smaller varieties including *M. conspicua*, *M. Soulangeana*, *M. glauca*, and others graduating down to the margin of the lawn. *M. Halleana*, if not already planted, will, I have no doubt, soon complete this fine group, of which the owner is so justly proud. When I state that Mr. Gordon, Mr. Beaton's employer, and a great experimentalist, succeeded in fruiting the Japanese Medlar or Loquat against a wall within a few hundred feet of the *Magnolias*, your readers will gather that the situation is exceptionally favourable; but this fact need not deter them from planting any of the deciduous varieties and species, as all will grow and produce their lovely foliage if they do not flower so freely in much colder places.—W. COLEMAN.

SHORT NOTES.—TREES AND SHRUBS.

Choisya ternata.—This has suffered a good deal this winter from the cold; where planted in the open in various gardens about London it has been sadly injured, and even against one of the walls at Kew a large bush of it has the tips of the shoots killed. It is not a reliable hardy shrub about London and north of it.—G.

Butcher's Broom under trees.—In many instances the ground under trees is bare and unsightly, and an idea prevails that it is impossible to get anything to grow in such a position; but that is a mistake, as there are several plants which grow under the shade and drip of trees, and amongst these *Butcher's Broom* may be placed at the top. It grows wild in the lower parts of Glamorganshire, and I know of many cases in Wales in which it forms a dark verdant mass under dense shade; indeed, I never knew it to fail under trees; it not only exists under such conditions, but grows rapidly, and, although it may not become very tall, it spreads out freely. I can therefore confidently recommend it to all who require a plant that will succeed admirably under trees.—J. MUIR, *Margam, Port Talbot*.

The Laurel-leaved Phillyrea (*P. Vilmoriniana*).—This is unquestionably the best hardy evergreen shrub that has been introduced to this country of late years. After the severe weather we have had, which nipped Laurels and other hardy shrubs, this *Phillyrea* bears no trace of injury; there is not a leaf browned or spotted, and this extreme hardness, combined with its rapid growth, neat habit, and handsome foliage, makes it an invaluable winter shrub. It is a good deal like a narrow-leaved Laurel, hence the name *laurifolia*, by which it is known in some nurseries and gardens, and on account of its neat growth it has been also named *decora*; but *P. Vilmoriniana* is the name the botanist Boissier gave it in his "Flora Orientalis." It is said to grow as high as 10 feet, but the specimens at Kew are not more than 4 feet. The leaves are thick, leathery, of a deep shining green, and in shape like those of the Caucasian Laurel. It bears a profusion of small, sweet-scented flowers in May, which are succeeded by small black fruits in autumn. But the flowers and fruit are not worth taking into account; its value lies in its foliage, and it is not too much to predict that it will in time prove to be one of the very best of Evergreens. It is already grown in tree nurseries, where its value is recognised, and it is being largely propagated. It is a native of the mountain region of the Caucasus.

The winter in South Wales.—This has been so far the most severe winter experienced in South Wales for these last ten years at least. In previous winters the thermometer has been lower at times, but we have not had so long a continuance of frost and snow as we have experienced lately. We have had frost almost weekly since the end of October; snow has fallen often, and the weather has been altogether most wintry. At present we have a keen black frost, with a piercing north east wind, and vegetation has a very sickly appearance. Wind always does more harm than a still frost, and I am greatly afraid that many of our trees and shrubs have been injured. We had quite a hurricane in November which scorched every Evergreen with which it came in contact. Pines are browned more than ever I have seen them, and evergreen bushes, such as Laurels, *Arbutus*, Sweet Bays, *Rhododendrons*, *Laurustinus*, &c., are quite scorched. Had the storm come earlier and caught the wood before it was matured it would have been much more serious; as it is, I believe that many of the younger growths will die back. In such cases it is a good plan to defer cutting back or pruning very much until it is seen what wood has perished. The different varieties of *Euonymus*, which I have often recommended as being specially hardy, are the only bushes which have withstood the weather without blemish. These pretty Evergreens cannot be too extensively used in exposed places or in ungenial atmospheres.—J. MUIR, *Port Talbot, S. Wales*.

January flowers.—Owing to snow-falls, frost, and a continued low temperature, we have had fewer January flowers than usual. Amongst shrubs, *Chimonanthus fragrans* and *Jasminum nudiflorum* have blossomed as usual; the last named less freely than in previous years. But *Garrya elliptica* is so far quite destitute of flowers. The first Snowdrop opened on the 24th, and a solitary *Primrose* may be found in warm nooks, but the winter *Acquite* is conspicuous by its absence. *Tussilago fragrans* has been fairly plentiful. *Erica carnea*, which in some seasons begins to show a little colour at the end of January, is still wanting

its winter garb. Altogether, the number of out-of-door flowers is few for the west of England at the time of year.
J. C. C.

FLOWER GARDEN.

BRUGMANSIAS OUT OF DOORS.

WE use both the double white Brugmansia and also the single one in the sub-tropical garden in summer, and in a hot, dry season here in the south they do admirably. The double variety with us blooms much the most freely, and in the evening the perfume from its blossoms scents the whole neighbourhood in which it is growing, but during the day there is not much scent emitted by it. The single variety is more delicate in perfume, and it is emitted throughout the day as well as during the night. When planted in the beds, which they should not be before the first week in June, an open spot sheltered from the south-west and east winds should be selected for them, but they should have abundance of sunlight. With the ordinary soil in the bed work in some partly decayed manure, and if at all dry after planting and during the following months water copiously both at the roots and overhead in the evening after a hot day. If this be neglected and the plants are allowed to become dry at the roots, the leaves soon assume a sickly hue and become attacked by red spider, which quickly checks free growth and spoils the blooms. Free growth without being too luxuriant is what is required, and in order that both foliage and flowers may be developed in the best possible manner an occasional dose of liquid manure may be given. Early in October and before any signs of frost have appeared they should be lifted; having previously cut around the roots with a spade, place them in pots sufficiently large to hold their roots and some soil. Place them in a cool vinery, and if under a Vine all the better, as the shade of its leaves will prevent them from flagging too much. Syringe them overhead at times in order to assist them to start afresh, when they will throw out blossoms and continue to bloom up to and sometimes after Christmas, such flowers being very sweet particularly at that season both on the plant or in a cut state. After blooming is over gradually withhold water from the roots, and keep the plants in a cool house free from frost. In spring, just before growth commences if the plants are getting too large, prune the shoots in freely; young growths will start from below the places to which they have been cut back, and by planting-out time in summer the plants will be in good condition for that purpose. Another way in which they can be wintered is to pack them away, placing soil around the roots, in a cool house under the stage and keep them rather dry during winter. In such a position they may stay until the time has arrived for planting them out again in the beds. The quickest way in which to increase the stock is to take off the young shoots or offsets which sometimes spring from the base of young plants with roots attached to them. Pot and keep them close for a time and they will quickly make nice plants. Pieces of half-ripened shoots, too, inserted singly in small pots in spring and plunged in a brisk bottom heat soon emit roots, and if potted on and kept growing in a temperature of about 60° they soon make good plants, which, if kept in pots during the summer, will often bloom the following spring and be useful for the ornamentation of rooms. When three or four years old they get leggy, and are then used for flower beds. The latter may be carpeted with *Sedum glaucum*, dotted here and there with *Perilla* or *Iresine Lindenii* or some other dwarf dark-coloured plant. The Brugmansias should be planted singly in small beds, or at considerable distances apart in larger beds where they can have free development for both flowers and foliage. Thus treated they are far more satisfactory than when huddled closely together, where neither the beauty of their leaves nor flowers can be seen to advantage. When planted closely, too, the growths

made are weak and spindly, and the flowers produced are in consequence few and poor in quality.
E. M.

White Trumpet Daffodils.—I have read carefully and with interest all the correspondence that has taken place on this subject, and as Mr. Burbidge has suggested that I might give my opinion in reference to Chiswick as a trial ground, I will try to do so. I must confess, however, that I have not succeeded so well with the white varieties of Daffodils as I have done with the other varieties, but my soil is not the Chiswick soil, and I can see no reason why white Daffodils should not do well there. The fact remains, however, that there is a feeling against Chiswick as a trial ground, for, although bulbs were promised and growers were all invited to send them there, not one bulb arrived at the trial ground last autumn. Such is the difficulty with which the Daffodil committee has to deal. Though I have said I see no reason why white Daffodils should not do well at Chiswick, yet if I were asked if I would prefer Kew to Chiswick, I would say, "Yes." The soil at Kew is light, and there is no fear of stagnant water; there is also there any amount of tree roots, and no lack of skill to manage the bulbs. I feel sure, too, that the Kew folks would find a situation suitable for the trial if contributors would indicate the sort of tree roots with which the bulbs love to be associated. In their various stages of growth they could be seen by the whole staff; and, therefore, no sub-committee would be required. Some may say we could not claim a report from Kew, but I believe, nevertheless, that a report would be forthcoming when required. Let us hope that the committee, when it meets this spring, will be able to decide this matter. J. WALKER.

Helleborus altifolius.—With reference to the discussion about this plant now carried on in THE GARDEN, allow me to state that *H. niger* inhabits the northern, and *H. altifolius* the southern declivities of the Austrian Alps. The line of demarcation of their respective areas is very well defined, and they do not mix with each other. I am of opinion that Mr. Engleheart's plant is the true *altifolius*, and if it does not agree with the *altifolius* of English gardens, I am not at all surprised, because *H. altifolius* of English gardens is, horticulturally at least, a very different plant from the true *altifolius*. The English plant appears to have changed its original character in a very marked way; by what may be called cultural evolution it has become a stout, early-flowering plant, whilst the type is slender, and has—prevented by snow and ice from starting early—retained its natural habit of flowering in March, while the *altifolius* of English gardens is now at its best. Typical *altifolius* has not a cup shaped, but rather a flattish flower of a very pleasing tint, viz., a pinkish or rosy white, more or less, even if kept under glass. I wonder why any value is placed on a pink or green stigma, which is only produced by climatal influence, especially by often changing temperatures, which cause the flowers to become moist and dry alternately, according to circumstances. If it would be worth while, and I had time to spare, I would engage to produce *niger* with pink stamens, and *altifolius* of English gardens with green ones. I was glad to observe attention directed in THE GARDEN to *H. niger* *præcox*, which, though its flowers are small, is valuable on account of its flowering early. A big plant of it here began to blossom about the middle of October, and there are still some flowers on it; the smallness of the blooms we shall soon change, by raising seedlings upon seedlings, which, if treated rationally, flower the very first year after germination.—MAX LEICHTLIN, *Bahen-Bahen*.

Effects of the late snowstorm.—On looking round Oakwood garden to see what damage had been done by the late snowstorm, I found that we had escaped more easily than could have been expected. Some time back I recommended a fence made of rabbit wire, 6 feet high in one piece; we have a quantity of this which is sufficiently supported for any ordinary strain, but

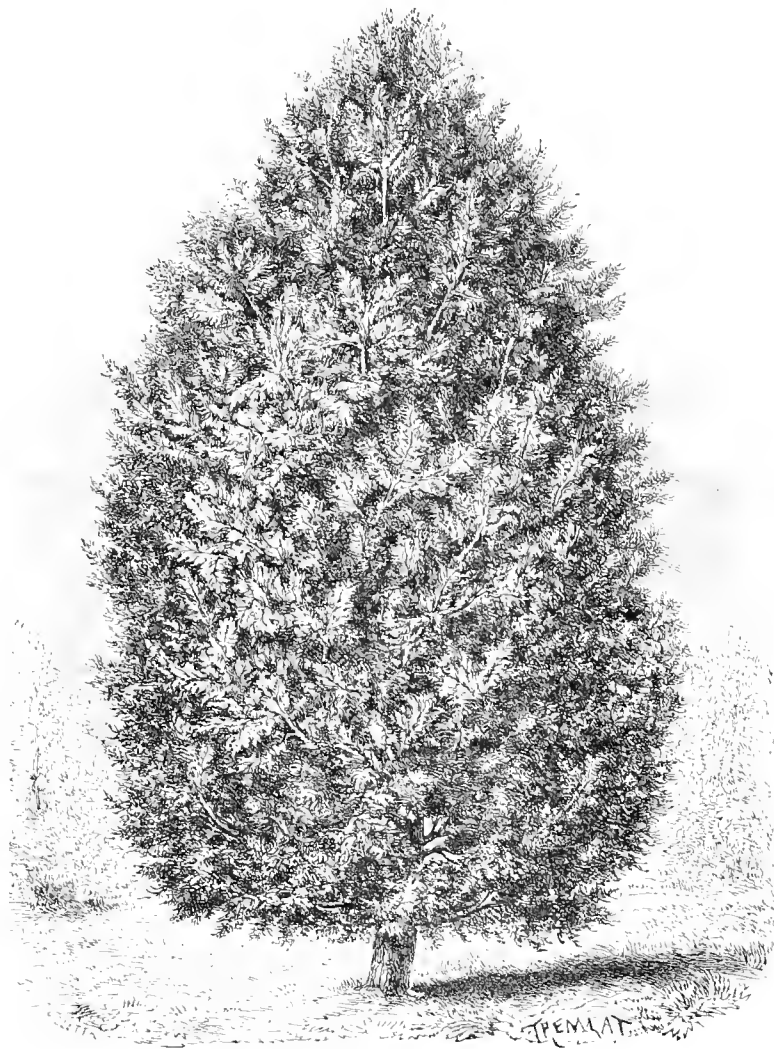
above 70 yards was blown over, the snow having filled the meshes and so given the wind purchase; therefore it seems desirable, when this fence is used, to add to the supports by wires fastened to any trees on the line. Our large *Camellia* has only one or two small branches broken, but my man beat much of the snow off. A fine head of *Andromeda japonica*, covered with buds, was broken off, and a large *Choisya ternata* had some branches broken, but a large *Photinia serrulata* close by is uninjured. Our big *Rhododendrons* in the wood have hardly any branches broken; *Meconopsis Walliichi*, unprotected, looks perfectly fresh and green; seedlings of *Sikkim Rhododendron*, not above an inch high, do not seem to have felt the cold; *Ilex latifolius* is very little touched. The effect of the snow was shown along the road to the garden by the great numbers of branches on the ground at the edge of the Fir woods. A friend with a beautiful garden at Chiselhurst gave a most saddening account of breakages of a great number of his trees and shrubs. So far our coops, with Braeken interlaced, seem efficacious as protection for tender plants. GEORGE F. WILSON, *Heatherbank, Weybridge Heath*.

Mr. Wm. Goldring, long on the staff of THE GARDEN, who has for some time paid some attention to landscape-gardening, now proposes to devote himself to it as a profession. Landscape-gardening hitherto has always suffered from a want of knowledge of our rich stores of plants and trees on the part of its professors, so that they have been tempted too often to fall back on the absurd or the bizarre in lieu of what a lover of Nature would expect in a garden in our own time. We need only mention the coloured gravel phase of gardening, now happily vanishing. Mr. Goldring's knowledge of our garden flora, obtained at Kew and elsewhere, should save him from the need of ever seeking any embellishments for a garden but those of Nature's ample giving. No doubt even this kind of plant-knowledge may be overdone, and we can imagine no worse prospect for our private gardens than the emergence of a body of landscape-gardeners, trained in botanic gardens with that stiffness supposed to be needed by science. But eight years spent by Mr. Goldring in visiting the gardens and country seats of England for THE GARDEN have shown him how much beauty these possess, where quiet, simple, English ways are followed, and where natural beauty is not shut out by Paxtonian or Nesfieldian excess or formality. It would be well for English gardening if competent young men of this sort, absolutely untrammelled by trade influence of every kind, should devote themselves to the design and planting of our gardens. Mr. Goldring has lately gone to live at Kew, where his address is 52, Gloucester Road.

Annual Chrysanthemums.—These form a very interesting group of summer and autumn flowering plants. They are very showy in the garden and well adapted for cutting purposes, and they are also easily grown, as the seeds can be sown in the open ground, and the plants will do well in any good garden soil. *C. coronarium* is the oldest in point of time, as it was introduced from Sicily as far back as 1629. It is also known as the Garland Chrysanthemum. Originally a single yellow form, of late years English gardeners have grown two selected double forms, one yellow and one white, and more recently the last has developed into a variety with quilled petals. A few years ago I saw advertised an Austrian Daisy, and having obtained some seed, found it to be the single yellow form of *C. coronarium*, in all probability not much changed from what it was when first introduced to this country. Two fine selections with double flowers have been made from this, viz., *Aurora*, yellow, and *The Bride*, white, and when the flowers are produced full and of the best symmetrical form they are charming in the extreme. When a good type of each is obtained it would, perhaps, be best to propagate it by means of cuttings. *C. carinatum* or *tricolor*, the keeled Chrysanthemum, came from Barbary about 1796. This is of diverse colours, but several

fine forms have been selected and named, such as Burridgeanum, crimson, white, and yellow; atrococcineum, deep red-crimson; Eclipse, in the way of Burridgeanum, but with more scarlet in the colour; W. E. Gladstone, crimson; Lord Beaconsfield, crimson, variegated; Sultan, maroon; purpureum, purple; and, latest of all, Golden Feather or Cloth of Gold, a form of Burridgeanum with golden foliage. Then there are two double forms of it known as Dunnett's Double Yellow and Double White. It is right it should be stated that all the before-mentioned forms are more or less sportive and vary considerably at times, but all are very attractive. To this list may be added the common Corn Chrysanthemum, *C. segetum*. This is a charming annual variety also, and, like

ing these flowers. The varieties I have are Cloth of Gold, two varieties of a double magenta Croussi fl.-pl., the old double white and double lilac, the early double sulphur, a double black named King Theodore, a double red, which came to me from Ireland, named Pampadour, a magnificent Primrose, quite the gem of my collection. With the exception of Croussi fl.-pl., all the other varieties mentioned are on the north side of my rockery, and get no sun all the year round, being sheltered from it by the rocks; this suits them exactly. My experience is that the sun is fatal to the growth of double Primroses, as indeed it is to most of the single varieties. Planted on the north side of a rockery, where the sun cannot reach them, in deep loam and peat, I find all Primroses, double or single, to flourish and bloom profusely.—H. A. W.



Young tree of *P. Cembra*. (See p. 104.)

all the foregoing, very free. I think that very fine specimens of the *C. coronarium* group might be grown in pots for conservatory decoration, but they should be plants raised from cuttings to ensure good varieties. The plants should be struck as early in the spring as possible, and then grown on into size, stopping freely at times so as to encourage a bushy and free-branching habit, and when they have made fine specimens and become well established in pots be allowed to flower. The experiment is worth trying, and the result would, I think, amply reward the trouble that would be expended in cultivating them in this wise.—R. D.

Double Primroses.—"R. D." (p. 65) invites readers of *THE GARDEN* to give their experience touch-

The New Zealand Veronicas have been put to the test of our climate during the past few weeks, and in gardens where they have been left unprotected one can see, now the frost is gone, which are the hardy and the tender. The hardiest of all is without question the now well-known *V. Traversi*, which has come through the frost perfectly uninjured, looking now as fresh and green as in summer, so that it may fairly be placed among hardy Evergreens. The broad-leaved species, such as *V. speciosa*, *mixta*, and others, have been punished severely; in some cases they are quite killed, and beautiful though they are, they are unsuitable for planting about London and northwards except against a wall, and even then they need some sort of protection in order to

preserve their foliage uninjured. The pretty little Privet-leaved species, *V. ligustrifolia*, shows signs of injury at Kew, the leaves being browned and otherwise disfigured; but in a garden at Ascot on a light peaty soil I noticed that the frost has done it no harm, but nevertheless it must be classed among the doubtfully hardy kinds. The singular-looking *V. maritima* lately introduced, which looks less like a shrubby Veronica than the others, is quite unharmed at Kew. It is a mere pigmy in growth, but very neat and compact, just the plant, in fact, that a gardener would select for an edging or design. The little *V. pinguifolia*, now common, is unharmed, and its glaucous white foliage has a telling effect in winter on the rockery, for that is its place, as in such a position its trailing growth is best seen. These are a few instances I have noticed as regards the effect of the winter on these New Zealand Veronicas, but now that there are so many in various gardens, others may be found that have passed the winter uninjured. Perhaps Mr. Lindsay will tell us about their behaviour in the Edinburgh Botanic Garden, where I remember I saw a large collection of species—in fact, I believe most of those in southern gardens were distributed from Edinburgh.—W. G.

CANNAS FROM SEED.

CANNAS are so easily raised from seed, that I would rather start with a young seedling plant than an off-set, or a one-year-old plant that had been grown in a small pot. But to be thoroughly successful with seedlings one requires a rather high temperature and to sow early in February; a hotbed answers better than a forcing house, for Cannas not only like the bottom-heat which it affords, but revel in the moist heat, which, in the case of a hotbed, is heavily charged with ammonia—in fact, there is no comparison between plants treated by the two methods. The luxuriance of those grown in a hotbed far exceeds that of those grown in any other way. The seed should be soaked in water for twenty-four hours before it is sown, and the vessel in which it is placed should be set in a warm house if the frame is not ready, so as to keep the water warm. They do not require a hotbed until the seedlings have grown an inch in height, so that if there is a stove or a heated vinery at command the plants may be raised in them. In the meantime, the hotbed must be prepared to receive them, and as the bed will be required to maintain a brisk heat for at least three months, it must be carefully made up. The fermenting material must be well prepared; three parts stable manure and one part Oak leaves are best. The manure must be laid in a heap for a fortnight, and turned over twice in that time to let the strong heat pass out of it. In forming the bed it should be 1 foot larger every way than the frame. It should be 4 feet high at the back and 3 feet in front. After it has been made up about five days, 3 inches of soil should be placed over the surface, to keep down the rank steam, and then the frame will be ready to receive the plants. The seeds should be sown singly in 3 inch pots, and as soon as they have filled these with roots, they must be transferred to 5 inch ones. I should remark that a thoroughly rich soil is necessary; half turfy loam and half well-rotted hotbed manure, to which a sprinkle of sand should be added, is none too strong. I may also mention that the leaves under the hotbed system of culture do not afford a correct idea as to the condition of the roots, for the leaves will rise and unfold themselves much faster than the roots fill up the pot. It appears that the close heated air of a hotbed frame is the best possible imitation of the conditions under which they grow naturally. However that may be, I have been surprised at the size of the leaves and the height of the plants when I have turned them out of the pot, and found, comparatively speaking, so few roots. What roots they do make are fleshy and white, and quickly find their way to the sides and bottom. But it is not desirable to let them

remain in small pots until they get so matted together as to require disentangling. They may in a general way be allowed to grow to a height of 1 foot before they are put into pots 7 inches in diameter. If the plants are required for bedding out they will not want larger pots, and if properly treated they will be 2 feet high by the end of May. Respecting other cultural details, they want a fair supply of root moisture; the water which they have should be warm; this may be obtained by keeping a watering-pot full at all times in the frame. Should the heat in the bed decline too much, which it will probably do by the middle of April, a lining of hot manure should be put all round it, and fresh material should be added to it to keep the height up half way up the frame. To prevent the leaves from scorching, a thin shado must be placed on the glass in very bright weather. If the plants are wanted out of doors, they must be taken to a cold pit at the end of May to be hardened off, and not placed in the open air until the end of the first week in June.

J. C. C.

Culture of Gaillardias.—On turning over the pages of THE GARDEN of July 25, 1885, I note a suggestion which I overlooked at the time to the effect that I should furnish a few hints on the culture of the Gaillardia, a plant which we grow most successfully. If plants established in pots be planted in the open ground in April, 2 feet apart each way, in well cultivated soil enriched with ordinary decayed manure, they will bloom well the same year. A collection consisting of about 1000 plants, which we plant out in the manner just described, has borne the drought of the last five years better than any other herbaceous plant which we grow, and has stood the winters so well without the slightest protection, that we have not lost 3 per cent. of them. Gaillardias are fine plants for exhibition and for cut blooms generally; they are also most useful for bedding; if planted about a foot apart and pegged down they make a brilliant and continuous display, lasting in bloom as they do well into December. The autumn frost does not injure the buds of the Gaillardia nearly so much as those of other herbaceous plants. If grown in pots they make good plants for balconies and verandahs, and also fine specimen plants for exhibition. The following are a few of the best for general purposes, viz.:—

Bethair, crimson, edged with gold, quilled and tasselled	Ormonde, crimson, edged with yellow
Canova, yellow, base of petals light red	Stains, gold, with a slight copper ring around the centre
Fimbriata, yellow, fringed	Temenis, light chocolate, tinged with bronze
Galopin, orange, quilled	Victory, yellow, with a crimson base, and quilled
Josephine, bronze, gold edged	Xenophon, in moon, edged with gold
Larinas, bronze	
Mars, gold, with a scarlet ring	
Roselle, yellow	

—WILLIAM KELWAY, *Lanyport*.

Primula imperialis.—Until a comparatively recent period this remarkable species of Primula was supposed to occur only on the summit of the volcanic peak Manellawangie, in the island of Java, where it was discovered by Dr. Junghuhn, nearly forty years since, at an elevation of 9300 feet, and whence it never descends lower than 9000 feet. It is, however, now believed to be identical with the *P. prolifera* of Wallich, which is found on the Khasyan Hills, in the north of India, and may probably occur in other parts of the Himalayan range, though the Javan plant is said to be superior to the Indian form in point of vigour. The general habit of the plant is that of the well-known *P. japonica*, from which indeed it has been supposed to differ chiefly in its colour, but it is even more robust than that species, reaching, according to Dr. Junghuhn, a height of 2½ feet to 3 feet. The flowers are arranged in from two to four whorls each, bearing from ten to twelve or more flowers, which, to judge from the published figure, are tubularly campanulate in form, and resemble more those of the wild yellow *P. auricula* than those of the Japanese plant, though the yellow colour is deeper than in the *Auricula*. Many attempts have been made to introduce this fine species to European gardens, but, so far as the Javan plant is concerned, hitherto without results, though there appears no sufficient ground for doubting of ultimate success. The chief requisites would

appear to be a moist atmosphere and soil, the plant being found on the margins of the rivulets which meander through the vegetable soil or humus, covering the decomposed lava of the summit. The elevation at which it occurs being 1½ miles above the sea level, it is hardly necessary to remark that the plant flourishes literally above the clouds, and therefore enjoys a serener atmosphere and larger amount of sunshine than the plants growing at a lower altitude. Ice frequently forms at night upon the summit of the mountain alluded to, and the mean daily temperature does not exceed 50° Fah., but the species is unlikely to endure full exposure to our variable winter climate. I am indebted for my small supply of seed of this Primrose to the kindness of Mr. Lynch, of the Botanic Gardens, Cambridge.—W. THOMPSON, *Ipswich*.

Saxifraga granulata.—The single-flowered form of this plant is very common in our meadows, though rarely met with in gardens, and yet the flowers surpass in purity the majority of those of the mossy, or hypnoid, section of Saxifrages. It forms interesting little tufts, sending up in early summer an abundance of large, pure white flowers, which more than repay the trouble of collecting plants of this Saxifrage, which everyone can do, particularly if they reside in the midland counties. The double-flowered form—really a handsome plant—is only to be met with in gardens, and it is undoubtedly the best of the class of Saxifrages to which it belongs. It does well on the rockery, where it blooms beautifully nearly all the summer, and it also makes a charming little plant for the front of the mixed border. It is, perhaps, the easiest of all these Saxifrages to propagate. The roots consist of little grains or tubers, which can be divided to almost any extent. It likes plenty of sunshine and a light sandy soil.—K.

Erinus alpinus.—No difficulty is experienced with this little gem when once it gets hold of an old brick or other wall. It seeds freely enough, and scatters its tiny little seedlings far and near; indeed, in such a place as that just indicated, we commenced its culture a few years ago with a single plant, and now the wall is entirely covered with this pretty alpine. If allowed to have its own way, it gives far better results than when meddled with, and seedlings will be found to have taken hold of every presentable opening all over the wall where a little nourishment can be found. All through the summer months the tufts of leaves are quite hidden, so great is the profusion of its lovely purple flowers. It goes well along with *Linaria alpina*, *Saxifraga stellaris*, and many other of these charming wall-loving alpine, all of which will give good results much in the same way if allowed to grow undisturbed.—K.

Lathyrus Drummondii.—I am glad to be enabled to inform "J. C. B." and all others interested in the growth of this pretty Everlasting Pea that patience in the matter of seed-germination has been well rewarded. As I have already mentioned in THE GARDEN, I sowed the seed soon after it was ripe, I think in last September, in a pan, and placed it in a cool house. It has taken four months to germinate, but at length young plants are coming up well. Possibly a gentle warmth might have been helpful, but, in any case, evidence is afforded that so far from keeping the seed in moist soil all the winter proving injurious, it seems to be the only means whereby at length it can be induced to germinate. I think this remark applies to all hard-coated seeds, and immediate sowing is doubtless better than arbitrary soaking.—A. D.

Tree Flax (Linum arboreum).—The value of this old plant for ornamenting rockwork can hardly be over-estimated; even during very early spring, if the weather has been at all favourable, it is ever ready to push forth its shining golden flowers, a succession of which is kept up until early autumn. In exposed places, however, it sometimes gets partly destroyed in severe weather, but where it can get shelter from cold east and north-east winds, it stands well, and never loses a leaf. In the course of a few years, if planted in a favourable situation, it becomes quite a bush, and the hundreds of flowers which it produces glistening in the sun make a pleasing effect. It was introduced, we are told, by Dr. Sibthorp about 1788

from the Levant, and soon after flowered in the Oxford Botanic Garden. Though quite distinct, it is often confounded with *L. flavum* or *luteum*, as it is often called. The latter, however, is a herbaceous perennial, which, like other herbaceous plants, dies down in winter, reappears in spring, and flowers about midsummer. It is a valuable plant, but not so attractive as *L. arboreum*. It seeds freely, and may be raised in the open ground. In flowers and foliage *L. campanulatum* is not unlike *L. flavum*. It is more slender, however, and is rarely seen in collections.—K.

FLOWERS AND GARDENS.

At the Litton Hall, Leeson Park, Dublin, an interesting lecture on this subject was delivered the other evening by Mr. F. W. Burbidge. The Rev. Dr. Maurice Neligan presided. In the course of his remarks, Mr. Burbidge said one of the best of lessons to instil into the minds of young people is that all flowers are beautiful, for it is flowers that our greatest poets have most delighted to honour. Daisies, Bluebells, Primroses, Daffodils, Snowdrops, and Violets, wild Roses and Woodbine have all been woven into song and story from the time of Chaucer to the days of Tennyson. The one great charm which lingers round our garden blossoms is their beautiful reality. They are essentially genuine. In art and literature generally the poor man must put up with a makeshift, but a Lily, an Iris, or a Pansy in a cottage garden is as real and as beautiful as if grown in the garden of a queen. When we come to consider the early history of flowers, as used for decoration or personal uses, we find that the wild or native flowers were first employed. Of course, all plants are wild somewhere or other in the world, and the most showy of these were at first selected for decorative uses. The Jasmine, Nymphaea, and Orchids of various kinds were so used in India from the earliest times, while in the western tropics the most beautiful of the native wild flowers were also employed long, long before the wood-painted, skin-clad Briton saw ought to admire in a wild Rose bud, or in the flowers of Honeysuckle or of Hawthorn. It is probable that the first plants ever cultivated were grown for use as food or for their medicinal virtues rather than for their beauty; but in the herbarium of the museum at Cairo, and also at Kew and the British Museum, may be seen to-day the mummy wreaths of Egyptian flowers culled by hands and woven by fingers that tingled with the love, warmth, and life-blood of four or five thousand years ago. The oldest of dried flowers in herbaria—that is, of flowers specially prepared for scientific purposes—do not date back farther than the middle of the sixteenth century, and yet we find that flowers were used in Egyptian ceremonies some three or four thousand years ago. About sixty distinct kinds of plants and flowers have been identified, and by placing these in warm water, Dr. Schweinfurth, of Cairo, has succeeded in preparing a series of specimens gathered four thousand years ago. The blue Water Lily, or Lotus, the Poppy, the Larkspur, Flax, Charlock, Knapweed, and other flowers are perfectly preserved, the garlands being woven together with strips of the Nile Reed, or Papyrus of the ancients. I should like to see a garden of not less than a quarter of an acre around every country cottage or dwelling-house, and more especially is it to be desired that a garden should be attached to all country and suburban public schools. In France, Germany, and even in Sweden this is, to some extent, done already with the best results; and I can only hope the day is not far distant when the same may be said of our own public and national schools. Ireland being so peculiarly dependent on land culture for her revenue, I am convinced that elementary horticulture should be more generally made use of as an educational subject of the highest practical or technical value. Nor is this love for cultivated plants and gardens confined to our own country alone, for whoever visits Paris cannot fail to notice the rich profusion of Palms, Dracænas, Ferns, and Daisy bushes or Marguerites with which the windows and apartments there are most tastefully decorated. In Germany, Russia, and also in America the love for beautiful plants and

fragrant window flowers is rapidly increasing. Indeed, the knowledge essential to their successful culture is so easily obtained by observation, that we can only wonder why every window and balcony is not gay with ornamental plants and flowers for a considerable portion of the year. Sweet-smelling things, such as Lavender, Wallflowers, Thyme, Carnations, Rosemary, and Mignonette, should be around every country house; and it is possible that in years to come some part of every town dwelling will be constructed expressly for the culture of plants and flowers within it. A small conservatory, or, at least, window cases, as fixtures, will be considered as essential as a good kitchen-range or a bath-room.

At the present time we have a few roof conservatories and gardens, and, doubtless, in time these and other appliances will become universal, especially in towns, where space is valuable. The best evergreen plant for a room is *Aspidistra luida*, of which there are green and variegated varieties. A specimen here has been grown in a shady window in the Haddington Road for the last four years, and when first brought into the house it had six small leaves only, and it has never been repotted or manured during that time. No other plant I know does better, and it is an especial favourite in France and Holland, where fresh and healthy evergreen room plants are highly appreciated. The India-rubber (*Ficus*) is another good room plant, as is also the graceful *Grevillea robusta*. Several kinds of green-leaved *Drazenas* are thoroughly reliable, as also are small plants of the Australian Blue Gum, or Fever tree. I have seen a fine plant of this in the window of a drawing-room in Clare Street for the past three or four years. Some small Palms grow well in warm rooms, and none better than the *Corypha australis*. Another favourite, especially at this season, is the Arm Lily, while the Scarborough Lily (*Vallota*) is very attractive when it throws up its cluster of scarlet Lily-like flowers in the autumn months, just before the *Chrysanthemum* comes into bloom. Temperance and good gardening generally go hand in hand. Some, at least, among the audience here to-night will have observed those cosy Fuchsia-clad cottages which nestle here and there on the Powerscourt domain, and from which the occupants get ample supplies of good vegetables and small fruits, as well as flowers. Such gardens must prove great counter-attractions to the public-house or shebeen. Another large landed proprietor told me quite recently that his own experience in the building of cottages had proved to him that the addition of a piece of garden ground had a most beneficial influence on the social, moral, and religious life and welfare of the inmates. Of all modern writers, it is Ruskin, I believe, who sums up the whole substance of our knowledge of plants with one dip of his pen. This is his estimate of them—"Timber for the builder's yard, corn for the granary or the baker's oven, flowers for the bride's chamber, and Moss for the grave." In a word, food, shelter, and beauty for all of us is really the sum total of the world's vegetation.

NEW AURICULA SOCIETY.

SCOTTISH florists, with commendable tact, seem to have chosen this year for the inauguration of a Scottish Auricula society. They will, I am sure, have the hearty sympathy of a large body of growers south of the Tweed. If not too late, I would suggest that the name of the society be amplified, and that it be designated "The Scottish Auricula and Primula Society." The national societies in England have for many years offered prizes for Primulas of all kinds, as well as for Auriculas, and it has been decided that both the northern and southern sections should add the name Primula to their schedules, &c. There is a wide field for the hybridist to work in, even if he should restrict his operations to the alpine section of Primulas, to say nothing of the equally large and important range of the Himalayan section. The wonderful development of the Auricula during the present century is a constant reminder to us of the yet undeveloped wonders which we may expect to come from other alpine species under the hands of the hybridist and the skilful culti-

Early in February the numerous varieties of the garden Auricula start into rapid growth, and at that time it used to be an almost universal custom to top dress the plants. This was done by clearing off a considerable portion of the surface soil with a pointed stick, and replacing it with some rich compost. For many years I followed in the same track, and spent several days of the first or second week in February over this operation, but we have now discontinued the practice, as it was found to be quite unnecessary. Mr. Horner in a note written to me two years ago stated that he also had given up surface-dressing his Auriculas for the same reason. This annual dressing was (and by some is still) thought to be an essential part of the culture of the Auricula. Those who sowed seeds of Auriculas when they were ripe in July would obtain a few plants which will now be of good size. They will, therefore, require to be again potted off, but if the seed pots or pans were left undisturbed, a larger number of seedlings will appear now; they will grow quite freely if the weather continues mild, and they should be pricked off as soon as the first real leaf is formed on the plants. Offsets taken off now, planted in small pots, and placed under handlights, will do better than at any other season of the year. Scarcely a single one of them will fail. If seeds have not yet been sown, now would be a good time to do so. The seeds vegetate more freely in a pit from which frost is excluded than they do in an ordinary cold frame at this season. J. DOUGLAS.

GARDEN DESTROYERS.

G. S. SAUNDERS.

Springtail insects.—How can I get rid of some troublesome little insect (one or two of which I send) that infests all my plants, not only in the stove, but also in cooler houses, and even plants that have been out all summer? I take it for thrips, but most books that I have read say that thrips live on the under-sides of the leaves, and can be got rid of by syringing or fumigating; some of my plants get that thrips on the leaf, but they are at once sponged off, and are never allowed to spread, but as these other insects live in the earth and shingle, smoking has no effect on them; they only "wait till the clouds roll by" to renew their depredations. All plants suffer, but *Gloxinias* and *Begonias* are quite ruined by them. I see that steaming has been recommended as a remedy; will you, therefore, kindly tell me to what temperature a house might be raised by steam without doing harm to such plants as *Adiantum farleyense*, &c.; also, if the tobacco-water used is only tobacco boiled in water, or the tobacco juice which is sold, mixed with water? By giving me this information you will confer a great favour, as it is quite disheartening to look at my plants.—W. W.

You have sent us a regular collection of insects—beetles, gnats, flies, and springtails. Only the last-named are, however, hurtful to plants. The springtails are very difficult to destroy, on account of their habit, which you have noticed, of living a great deal among earth, &c.; their great powers of jumping render the task of "putting salt on their tails" all the more difficult. I should recommend taking the plants off the stages and syringing them over a tank with tobacco water and soft soap. The springtails will probably jump off the plants and fall into the tank, where they may be easily, I should think, destroyed; any that remain on the plants will be killed by the insecticide. Before replacing the plants, water the hinge on the stage, and, if necessary, the floor, too, with boiling water from a watering-can with a rose nozzle. As regards steaming greenhouses, there is no need to consider the temperature if it is the steam, or rather vapour, of tobacco-juice which is to be used. M. Godefroy-Lebeuf, who first ventilated this subject in *THE GARDEN*, says he has a number of braziers filled with live coal; on each he puts an old saucenpan containing a pint of tobacco water: "this is quickly vaporised, and

the atmosphere is saturated with this moisture-laden vapour, which becomes condensed on everything with which it comes in contact, leaves, bulbs, flowers, shelves, &c. When the consistency of the contents of the saucenpans is reduced to the thickness of thick soup, a pint of water is added to each, and the vaporisation goes on as before. I consider a pint of tobacco juice sufficient for a house of 2000 cubic feet." The tobacco juice M. G. Lebeuf uses is what he calls 14°. Mr. McIntosh recommends a paraffin stove for supplying the heat to vaporise the tobacco juice, and says, "if the tobacco juice is as good as it should be, it will require an equal part of water added to it to prevent it boiling over." So long as this juice is of the right strength it cannot matter whether it be home made or bought. The tenderest plants do not seem injured by this process.

MARKET GARDEN NOTES.

THE wintry weather that has prevailed for some time has greatly checked work in market gardens. Nothing in the way of sowing or planting can be done until we get more genial weather. Pruning, cleaning, and manuring, however, can be done, and this work too frequently gets put off altogether unless the weather precludes the possibility of getting on with other work. That orchards have been sadly neglected few can deny, but I find that many of them are being renovated, and also new ones planted. Pruning old trees, especially if long neglected, needs great care; if a large quantity of wood is removed at one time the tree gets a serious check, and is frequently more injured than improved. I would never cut any large limbs from fruit trees of any kind, as they leave wounds that induce decay. In pruning standard trees get into the centre with a small hand-saw and strong pruning-knife and cut away all the small spray-like growth that does not get direct sunlight, leaving the main branches quite clear; the outer bearing branches may be left moderately thick. After that is done a dressing with fresh slaked lime if the branches are Moss-covered will soon dry the Moss up, while paraffin will clear the American blight or scale off and leave the branches bright and clear. Carting and wheeling manure on the land has lately been pushed forward, hard frost having made the recently saturated soil in good condition for such work. Under the orchard trees here are growing bush fruits or vegetables, so that owing to the double cropping a good deal of manure is needed to keep the trees healthy. The good prices realised for Apples during the past year have induced growers to pay more attention to manuring their trees than formerly; indeed, there can be no doubt that the great proportion of orchard trees are starved. Night soil and town sewage soon make a marvellous change in orchard trees; the vigour thus infused into them seems to enable them to throw off insect pests, and, indeed, all other ailments. Forcing Rhabarb, Seakale, and Asparagus is now being pushed forward; old tubs are put over the Rhabarb crowns and then they are covered with manure. This is the plan most largely followed here; Seakale and Asparagus are both lifted and forced in frames on hot beds. All spare pits and frames are being cleaned and got ready for work, and seeds of Cucumbers, Tomatoes, and other early crops are being sown in heat so as to have a plentiful supply of plants as soon as the time for planting out has arrived.—J. G., *Hants*.

Names of plants—*D. C. (Stourhead)*.—A form of *Clematis angustifolia*.—*Snow*.—1, *Echeveria retusa*; 2, *Begonia*, apparently *ranunculacea*; 3, flowers shrivelled.—*W. S. (Dorchester)*.—1, *Adiantum emarginatum*; 2, *Nephrolepis*, probably *pectinata*, specimen bad; 3, *Polypodium semilicium*.—*H. M. (Shallice)*.—1, *Holmoptila Gleditschii*, other numbers loose; plant with red berries, *Rivina humilis*; banded leaf, *Tillandsia aculis-zebra*; Orchid, *Oncidium ornithorychium*; small blue flower specimen insufficient; cannot name fruit from single specimen.—*J. H. (Clackville)*.—*Adiantum tenerum*—*B. W. (Kob)*.—1, *Sclaguetella viridis*; 2, *S. Walliichi*; 3, *Schizaea dichotoma*.—*F. M. (York)*.—1, *Obolotoglossum Rossi majus*; 2, *O. obovatum*; 3, *Ledia albida*.—*J. Jones*.—1, *Eranthemum pulchellum*; 2, *Euphorbia jaequinoides*.

Names of fruits—*J. S. (Dover)*. The single Apple you sent is insufficient for identification.

WOODS & FORESTS.

A GRAND OLD AMERICAN ELM.

I CAME across a magnificent specimen of this Elm the other day. It is, perhaps, one of the largest and oldest trees of this kind now growing in this country. It is about 100 feet in height, having a spread of 100 feet over a superficial area of nearly 8000 feet. The diameter of the trunk, 3 feet from the ground, is about 8 feet. It is solid for about 15 feet from the ground, where the tree separates into numerous huge branches, several of which are large enough in themselves for the stems of good sized trees of this genus. Each of these secondary stems spreads in turn into hundreds of smaller branches with unusual regularity and uniformity, making the whole one of the most symmetrical and graceful specimens of arborescent growth, for its size, to be found on the Atlantic slope. Drooping from some of the lower branches are many long, pendulous streamers, some of which nearly touch the ground. These, as they sway to and fro in the summer breeze, together with the rustlingsymphony of dense leafage from the immense top towering far above, present a truly pleasing and majestic aspect to any beholder. No one can stand beneath this grand old tree and look aloft amid its maze of branches without reverential respect. As to its age, I am left mainly to conjecture; but that it is already well along in its second century seems certain. And yet, strange to say, there is no sign of decay or decline in vigour to be found in it.

This massive and beautiful Elm, true to its nature, stands in a rich alluvial meadow bottom almost in the shadow of the Catskill Mountains, and not many rods from the versatile margin of a reckless and wayward mountain stream, that begins its career calmly and modestly enough away back amid the rocks and roots of a wild, craggy region, well up towards the sky, where the speckled trout disports itself in its quiet pools, and the shaggy black bear slakes his thirst from its crystal waters. But after leaving the mountain range, and supplying a reservoir for a large city, the stream winds its tortuous way through a fertile region of farms to the Hudson River, and so eventually finds the Atlantic Ocean. In times of freshet it becomes a raging torrent in a few hours, recognising no law, except that of gravitation, which it demonstrates to the consternation of dwellers and property-owners for miles along its borders. A million streamlets tumbling into it from every mountain-side, each with a new incentive, rush for the river, seem to madden it anew, and down go the bridges, the railroads, the houses, the barns, and the crops. It is at these carnival seasons of this innocent creek that this beautiful Elm is saluted by its turbid waters and permitted to bathe its muddy feet therein. This occurs on an average once or twice each year, and I have seen the tree surrounded by a vast expanse of water many times. But just how many hundred such freshets it has witnessed I shall not undertake to say. That it had already attained considerable size in 1777, when the old colonial town of Kingston (now a city of 23,000 inhabitants, in which the tree stands) was burned by the forces under General Vaughan, is an undoubted fact. That it was growing in 1676, when what has since been known as the old senate house of the State of New York, a quaint old stone structure still standing almost beneath the shadow of this majestic Elm, was being erected, is not so certain, though not impossible.

There are several other specimens of this Elm in the same meadow, especially on the edge of

the creek, but none so large and symmetrical as this. A railroad track runs quite near this old historic tree. It is that of the Ulster and Delaware Railway, the main line of approach to the picturesque Catskill Mountains. Every day in summer, hundreds, and sometimes thousands, of visitors and tourists from all lands pass up this road, and this magnificent Elm is admired by all. It is quite possible that it may be remembered by some of THE GARDEN readers.

Kingston, N.Y.

H. HENDRICKS.

SUPPLIES FOR THE WOOD-YARD.

THE stock of unsawn timber in the wood yard should be overhauled at least once during the year, and, with the exception of Oak, as to which there is no special reason why it should be looked to just now, there can hardly be a better time than the present for the purpose. The fellings of most kinds of wood are well advanced, and sales are in full swing. Before, therefore, the cuttings have been disposed of too closely, it will repay those concerned to fix as nearly as may be the requirements for the coming year. There are few places in which Oak is not wanted at some time during the year. This is not always wanted of the largest size, and the thinnings of Oak woods when the trees reach, say, a foot in diameter at half their height are very useful for very many estate purposes. The best and straightest, as a rule, may be allotted for field-gate rails. Experience will teach foresters that with coppice Oak of moderate dimensions this will be one of the most difficult things to get. The shorter pieces, such as hanging and faling styles, will be readily enough found. With posts, again, there is not the trouble, *i.e.*, posts for ordinary gates and fences, as the length to which straight lines are essential is not great. Another purpose for which a supply of clear coppice Oak should be kept in reserve is for cleft pales. To make the best of the wood, trees straight in the butt and with as little sap as possible should be selected for this purpose. The Elm is another tree which is almost indispensable upon an estate, but more for buildings than for field work. The actual working up of the timber may be a little beyond the forester's duties, but still he should have an appreciation of the uses to which it was likely to be put in order to guide him in choosing the supply. A generation or two ago the Elm was very largely used for outside boarding, and for divisions between cattle-yards and the like. There is nothing more suitable for such purposes where hard wear-and-tear are common. The toughness and the difficulty there is in splitting this wood are two of its chief recommendations. There are other hard woods which are used to a considerable extent in the estate yard, but the Oak and the Elm are the chief. With respect to resinous woods, Larches and Scotch and Spruce Fir each come in to a considerable extent, and the present is the season in which the supplies should be replenished. On the Scotch and Spruce a minimum of labour should be expended. I am aware that the Spruce especially is thought but little of in regard to durability, and that it fetches scarcely more than a nominal figure when sold. But if such woods can be used where it is necessary to go to but little, not only in regard to them, there seems to be no sufficient reason why they should not be grown. For fencing and rough buildings which are only required for a few years, such woods may be made to do duty at an infinitesimal cost, as well as anything better, and therefore a proportion of them should always be included in the annual replenishment of the wood-yard.

D. J. Y.

SHORT NOTES—WOODS AND FORESTS.

Pruning trees.—Trees ought to be pruned when set out. How much to cut away from the top depends somewhat on what has been lost in roots during the lifting of the tree. The rule for most trees is to cut away about one-third of the last season's growth, to shorten to a little my very long roots, and cut off enough the ends of such as have been bruised or broken in digging.

The wooden parts of tools, such as the stock of planes and handles of chisels, are often made to have a nice appearance by French polishing; but this adds nothing to

their durability. A much better plan is to let them soak in linseed oil for a week, and rub them with a new cloth for a few minutes every day for a week or two. This produces a beautiful surface, and at the same time exerts a solidifying and preservative action on the wood.

SHELTER-BELTS AND HEDGE SCREENS.

WHAT to plant is a question that some may desire to have answered. The very wealth of material before us greatly enhances the difficulty of making a response. We have deciduous trees that are bare in winter, when shelter is most needed, and we have also Evergreens in great variety, that retain their refreshing verdure all through the year, and provide the most perfect shelter. For the wind-breaks of the field, and even for groves about buildings, the leafless trees have much value, and their judicious disposition will greatly check the cutting storms; the wind, after sifting through the branches, is left of half its power for evil; nor is its force restored for some distance. The majority of wind breaks are composed of deciduous trees, and usually of the commonest species—anything that will rapidly grow into a tree, or that can be most cheaply procured. This practice need not, however, prevent us from using any of the more valuable hardwood, and other trees, in making shelters, but in some instances our impatience may prevail over our judgment as to the more valuable species and induce us to plant only those of rapid growth to ensure a speedy result. As to the use of Evergreens in outside shelter-belts, though more expensive at first, a smaller number and a narrower surface devoted to the wind-break will prove so much more effective than a wider strip of deciduous trees, as to justify the increased outlay. Sometimes even a single row of Norway Spruce, or of hardy Pines, like the Scotch or the Norway Spruce, or even of the common Red Cedar or Arbor-vita will make an admirable wind-break. Plant any of the many trees at your command, and plant them where they will produce the desired protection. Whether you select the so-called cheap trees, such as white Willows, Poplars, soft Maples, &c., or whether you choose Oaks, hard Maples, the white Ash, the Elm, the wild Cherry, the Tulip, the Walnut, and Hickories, or hardy Evergreens, do not neglect the planting of these invaluable aids to good culture. When we come to a selection of the plants best suited to the protection of our houses and their surroundings we again find abundant material from which to make choice. For trees and for tall screens the favourite with many will be the Norway Spruce, which grows rapidly, is easily transplanted and managed, and which presents a welcome tint of green that is always persistent and full. The other Spruces are also desirable, particularly the white and the black. They all bear the knife and shears very well, and may easily be kept within due bounds when used as hedges for shelter. The native Hemlock is particularly commended standing alone, but it is also one of the very best species for forming a screen or shelter hedge, as it may be clipped to a perfect plane, and, when necessary, it can be confined within narrow limits. In the case of trees to be planted about buildings, we should consider their beauty, and with this character in view we should select, among Evergreens, the Hemlock, the White Pine, perhaps also the Red Pine, or Norway, but not the Scotch Fir, nor the Austrian. There we may also place the American Arbor-vita, but the especial function of this species is the formation of shelter-screens and hedges, for which it is particularly well adapted, except in very dry soil; nothing can be prettier than a well trimmed hedge of Arbor-vita, unless it be one of Hemlock, as the latter preserves its deep green hue unimpaired all winter. Some of the dwarf Pines may also find a place in front or at the sides of the house, but they never attain sufficient size to make much shelter. The same is true of the beautiful Retinosporas from Japan, which answer well for low screens, and are highly ornamental. The common Red Cedar is, after all, a most useful plant. It has been called the Poor Man's Evergreen, on account of the facility with which it may be produced in all parts of the country, as well as the certainty and rapidity of its growth. Though not of so fine a colour as some others, this tree makes dense foliage

when set as a shelter-belt and wind-break. It also makes a close hedge to screen pathways.

The ground for the wind-breaks should be well prepared. A strip of one rod in width will be needed if it is proposed to plant but a single row, and several rods wide must be prepared if it be designed to plant a good wind-break of many rows, which is the better plan. After harrowing the ground a furrow is struck for every row of trees, and these furrows may be 4 feet apart, for then the plants may be set every 4 feet. This requires very little labour, unless large trees are selected, and if these be large Evergreens they need not be so close, but more care will be required in planting. Yearlings and two-year-old plants of most deciduous kinds, or stout cuttings of Willows and Poplars, will be the cheapest and best. The young trees, when planted with reasonable care and well fixed in the soil by pressure of the foot, will be sure to grow; but so will weeds, and the plantation must be cultivated for about two seasons, so as to keep down all intruders. With this treatment their growth is greatly enhanced, and they will the sooner shade the ground, when they will suppress the weeds and take care of themselves. They must, however, be protected from the inroads of stock of all kinds. This is an absolute necessity. When to plant, though an important question, need not detain us long. Plant when you get ready, autumn or spring, but be sure to have the soil ready for the reception of your trees before bringing them on to the ground; let it be dry enough to crumble; never plant when it is wet and clammy. Deciduous trees may be set out in autumn, when we have leisure to do the work, and when the soil is dry and warm.—*Rural New Yorker.*

ROOT-CHOKING OF DRAINS.

DEEP as drainage may be laid, it is never altogether free from the possibility of being put out of order by the roots of trees, or of certain kinds of crops which may penetrate the drains, and form a hindrance to the free passage of the water through them. The roots of the Elm, Ash, Willow and other trees are known to enter the pipes, and even pass through the ground for several yards to reach them, as if they were attracted by the moisture and air which they find in the pipes, and by the nourishment afforded them there. To obviate this difficulty it is advisable, where it occurs or is apprehended, to use socket-pipes jointed with cement, or to lay the pipes as far as possible from the trees. I have found that imbedding the pipes in lime, mortar, or concrete has prevented them from being choked, although close to trees which it was impossible to avoid, and has kept them clear for some years. The roots of some crops, if they should penetrate the pipes, die away when the crops are removed, and are frequently washed out at the mouths of the drains by the strong flow of water through them. Other substances give the drafter a vast amount of trouble in obstructing pipes. Ochreous water, depositing oxide of iron, is a common source of obstruction. It appears to harden and consolidate as it receives air through the pipes, and ultimately chokes them. I have found it best to get at the source of the spring or springs, and conduct the water away by large pipes independent of the general system. Confervæ and parasitic plants will also get into the pipes, grow, and ultimately stop the flow of water through them. Another source of trouble is the percolation of sand into the pipes, which necessitates patience and care in taking them up frequently after being first laid and relaid, until all the water has run out of the bed, and then laying them in straw and on strips of wood. P.

Appearance of good timber.—There are certain appearances which are characteristic of strong and durable timber, to what class soever it belongs. In the same species of timber that specimen will in general be the strongest and the most durable which has grown the slowest, as shown by the narrowness of the annual rings. The cellular tissue as seen in the medullary rays (when visible) should be hard and compact. The vascular or fibrous tissue should adhere firmly together, and should show no woolliness at a freshly-cut surface, nor should it clog the teeth of the saw with loose fibres. If the wood is coloured,

darkness of colour is in general a sign of strength and durability. The freshly-cut surface of the wood should be firm and shining, and should have somewhat of a translucent appearance. A dull, chalky appearance is a sign of bad timber. In wood of a given species, the heavier specimens are in general the stronger and the more lasting. Among resinous woods, those which have least resin in their pores, and amongst non-resinous woods, those which have least sap or gum in them, are in general the strongest and most lasting. It is stated by some that in Pine-wood, that which has most sap-wood, is the most durable; but the universality of this law is doubtful. —A. N.

THE GEAN, OR WILD CHERRY.

In a low-lying and rather damp piece of woodland near the junction of the Conway and Carnarvon roads may be seen some of the finest specimens of the Gean, or wild Cherry, to be found in this country. The soil in which these trees are growing may best be described as gravelly loam lying upon slate rock, with an alluvial surface from time to time deposited by the Ogwen River during floods. As will be seen from the following figures, several of these trees have attained large dimensions, and are still in a very healthy, thriving condition. No. 1: height, 70 feet; girth of stem at 3 feet and 5 feet, 6 feet 4 inches and 6 feet 3 inches respectively. No. 2: height, 70 feet; girth of stem at 3 feet, 6 feet 1 inch, and at 5 feet, 5 feet 10 inches. The boles are remarkably clean and straight and with a very gradual taper.

When thinning the patch of woodland in which these trees occur we had occasion to remove several, the timber of which was of excellent quality and remarkable for the large size of its medullary processes, which gave the longitudinal section a bright satiny lustre and rendered it well suited for ornamental cabinet-work.

As an ornamental as well as a valuable timber tree the wild Cherry is but too little known, at least in this country. Many points in favour of it might be adduced, such as immunity from disease, rapidity of growth when planted in suitable soil, closeness with which it can be advantageously planted, and last, but by no means least, value of the timber obtained.

As an ornamental tree the wild Cherry is also valuable, for during early summer, when laden with its pure white flowers, or again in autumn when myriads of the shining black fruit hang in clusters from its branches, it will be readily admitted that few woodland trees have a more lovely or conspicuous appearance. In Scotland, on the banks of the Firth of Forth, and in Devon, many fine examples of the wild Cherry may be seen, ranging in height from 30 feet to 43 feet, and girthing at 3 feet about 7 feet in circumference of stem. This is, however, about the largest size to which they attain in that district, although in many other parts of Scotland much finer specimens may be seen.

Nearly allied to the Gean is the Bird Cherry (*Cerasus Padus*), which also occurs rather plentifully in various parts of Britain, notably the north of Scotland. It is a very ornamental tree, rather more leafy than the Gean, and produces a valuable timber much sought after by cabinet-makers on the Continent. The following measurements of Bird Cherries growing at Darnaway, near Forres, have been kindly furnished to me by Mr. Scott, the wood manager there, and represent the largest trees now growing. No. 1: height fully 40 feet; girth of stem at 1 foot and 4 feet respectively, 5 feet 2 inches and 5 feet. No. 2: from 38 feet to 40 feet in height, and girthing at 1 foot and 4 feet, 4 feet 6 inches and 3 feet 6 inches respectively. No. 3: girth 6 feet 2 inches at 1 foot up (no height given). No. 4: 36 feet in height and 5 feet 8 inches in girth at 4 feet up.

These measurements represent very fine trees indeed, and almost equal to the wild Cherry alongside which they are growing. The Bird Cherry on this estate is, comparatively speaking, a rare tree, in most cases only attaining shrub height. One very fine specimen which I had measured last week is 30 feet in height, girths at 3 feet 4 feet 1 inch, and at 5 feet, 3 feet 9 inches in circumference of stem. This tree

is growing at a considerable elevation above sea level, and in rather damp ground adjoining a mountain rivulet. The exposed situation has told somewhat severely upon it, for many fine limbs have been torn off by the force of the wild mountain blast, which at times sweeps along the valley with terrific fury. It is, however, still an object of veneration, and attracts, by its dilapidated and weather-beaten appearance, the few travellers who pass over the primitive Welsh bridge near which it grows. A. D. W.

SEASONING OF TIMBER.

SEASONING timber consists in expelling, as far as possible, the moisture which is contained in its pores. Natural seasoning is performed simply by exposing the timber freely to the air in a dry place, sheltered, if possible, from sunshine and high winds. The seasoning yard should be well drained, and the timber so supported as to admit of a free circulation of air all round it. Natural seasoning to fit timber for carpenters' work usually occupies about two years; for joiners' work, about four years; but much longer periods are sometimes employed. The best method of artificial seasoning consists in exposing the timber in a chamber to a current of hot air. In one process the current of air is impelled by a fan at the rate of about 100 feet per second; and the fan, air-passages, and chamber are so proportioned that one-third of the volume of air in the chamber is blown through it per minute. The best temperature for the hot air varies with the kind and dimensions of the timber; thus, for Pine woods, in thick pieces, it should be about 120°, and for thin boards of Pine wood, from 180° to 200°; while for Cedar, in boards 1 inch thick, a temperature of from 280° to 300° might be employed. In this way, pieces of timber of 1, 2, 3, 4, 6, and 8 inches in thickness require, respectively, one, two, three, four, seven, and ten weeks to become dry, the current of hot air being kept up for twelve hours per day only. The drying of timber by hot air from a furnace has also been practised successfully in a brick chamber, through which a current is produced by the draught of a chimney. The equable distribution of the hot air amongst the pieces of timber is ensured by introducing the hot air close to the roof of the chamber, and drawing it off through holes in the floor with an underground flue. The hot air on entering, being more rare than that already in the chamber, which is partially cooled, spreads into a thin stratum close under the roof, and gradually descends amongst the pieces of wood to the floor. The air is introduced at the temperature of 240° Fahr. The expenditure of fuel in this method has been found to be at the rate of 1 lb of coke for every 3 lbs. of moisture evaporated. A. NILSON.

How to prevent splitting in the ends of timber.—The cause of timber splitting at the ends is correctly stated in THE GARDEN (p. 88). I have found a piece of brown paper pasted over the ends of a board or plank sufficient to prevent the occurrence of this mischief; but if any signs of splitting have already appeared, it is necessary to cut the paper wide enough to cover not only the end, but also the sides of the plank a few inches on either side a little distance beyond the crack.—B. S.

Tree-growth.—The following figures may interest those of your readers who have paid attention to the growth of trees. I have carefully measured these seven trees annually, and give you the sum of ten years' growth:—

	Jan. 1878.	Jan. 1887.
	Ft. In.	Ft. In.
A Sycamore	7 0½	7 7½
A cut-leaved Alder	8 0	9 0½
An Oak	10 0	10 7½
A Cryptomeria japonica	2 3¾	4 2
A Spanish Chestnut that has been pollarded	13 10	15 5
The above trees are in the garden, the two following in the park:—		
A Spanish Chestnut	12 7	13 7
Another	8 8	9 5

It will be seen that the Spanish Chestnuts grow faster than the other trees, and the pollard the fastest of all. The trees are measured at 4 feet from the ground.—WM. WICKHAM, *Binsted-Wyck, Alton.*

"This is an Art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—*Shakespeare.*

FRUIT GARDEN.

W. COLEMAN.

GRAFTING VINES.

ALTHOUGH the Grape Vine was introduced into this country about the beginning of the Christian era, and thousands of pages have been written upon its culture, it is questionable if twenty per cent. of the growers of the present day would undertake the grafting of a set of Hamburgs and guarantee success. And yet, be they owners of only half-a-dozen Vines, how few there are who at some period of their lives have not felt that they would like to try to graft, but have been deterred by the generally-admitted fact that a sure hit is extremely uncertain. Such being the case, and, judging from the number of questions which reach me privately, a few words upon this interesting subject just now may not be out of place. If Vines, like Apples, Pears, and other close-grained fruit trees, could be operated upon with certainty through the months of March and April, there would be no difficulty whatever, as the operator would only have to watch for the rising of the sap when the operation, purely mechanical, could be performed by any handy manipulator. This course, however, would not ensure success, for the Vine being very porous, and having such a powerful flow of sap when growth first sets in, it is more than probable the stock would bleed to death and the scion would be destroyed by flooding. If, on the other hand, the operation is performed when the Vines are at rest, if Vines ever do rest, and the scion, also in a dormant state, is fitted in the most scientific manner, the pores of the wood having become dry and sealed, failure would be equally certain. From these remarks the uninitiated will gather that the great stumbling-block is undue haste, and the chief difficulty rests, not with the operator, but with the director, for it is easy enough to fit cambium to cambium, when, provided stock and scion are in proper condition, the union will take place in a fortnight. If whip-grafting—decidedly the best method—is adopted, the stock may be considerably reduced at any time after the leaves fall in the autumn; but nothing is gained by cutting the Vines down, as it is necessary to get rid of the first flush of sap before the graft is put on, and if a few spurs or shoots can be retained for a time, flooding afterwards may often be prevented.

Assuming, then, that the Vines have started into growth, and the young shoots are several inches in length with fully developed leaves, heading back may be performed, always, be it understood, to a spur in advance of the place fixed upon for uniting the graft. To the tyro whose experience does not extend beyond the Apple orchard, this allowing a Vine to get into full leaf may appear novel, but he must accept the fact—nay, more, he must exercise a great amount of patience—and the better to while away his time he must pay attention to his grafts. The first thing to be considered in the selection of the wood for grafting, as for propagating, is ripeness, and the better to secure this a good stock of prunings from early or mid-season Vines should be inserted in pots of soil, or laid in under a north wall where they can be retarded until quite late in the spring. If the vinery in

which the work is to be performed is a late one, the buds will most likely be on the move by the time they are wanted; if early, it may be necessary to place the scions in heat for a few days, and when the buds begin to swell freely they may be considered in proper condition for working. The stock having made several leaves on each of its young shoots, and the sap in the scion being also on the move, cut the first back to a convenient place for fitting the second, leaving one or more growing shoots above the point of union for the twofold purpose of carrying off superabundant sap and supplying nourishment to the scion until the terminal bud breaks into growth. If the stock is very young, the joining of the inner bark of the one to that of the other will not be difficult, but when the stock is old and rough some care will be necessary, otherwise the two will not meet, but overlap, when perfect union may be doubtful. When the scion is properly fixed it must be tightly bound with bast matting, great care being observed in the protection of the young shoots opposite or beyond, as the loss of these safety-valves will lead to certain failure. This stage reached, a covering of some kind must be applied for excluding wet and air and keeping in moisture. Good grafting clay is often used for this purpose, but the moisture which it contains and receives sometimes induces the formation of roots, and as these are objectionable, if not injurious, nurserymen's grafting wax by many is considered preferable. If the stock shoots are rather long, the points may be pinched as soon as the graft is fitted, otherwise they may be allowed to grow until it begins to push, when they must be checked by gradual shortening. A fortnight will show whether the operation has been successful, and by the end of a month the removal of the wax and slackening of the ligature should be attended with safety. It will not, however, be wise to do away with the ligature altogether, as vigorous stocks force vigorous growths, which after being tied to the trellis, sometimes throw themselves off before the newly formed matter is strong enough to hold them. Although cleft-grafting is not generally approved, I lately saw a house of Vines that were so treated more than forty years ago, and so perfect was the union, that had I not seen the operation performed, I should have doubted the assertion that they had been grafted.

Young gardeners who have not been fortunate enough to see whip or cleft-grafting performed should obtain their employers' permission to try their prentice hands. There are few gardens of any note in which surplus rods are not cut out every year, and these will answer admirably for experimental purposes. If failure follows, they may try again; if success, let them note every detail in their diary, and although the Vines operated upon may be of no value, the experience and confidence gained may be found useful in days yet to come.

BOTTLE-GRAFTING.—This method, although sometimes practised by grafters of Camellias and other hard-wooded greenhouse plants, is, I believe, comparatively new to the Grape grower. It is, nevertheless, an excellent plan, and by many preferred, success being almost a dead certainty. The preparations are in every way similar to those recommended for whip-grafting, only instead of uniting a small scion, a piece of well-ripened wood a foot or more in length is attached to the stock with a long heel for insertion in a bottle of water. When stock and scion are ready take a thick slice 4 inches or 5 inches in length off one side of the graft near the middle, commencing just below the second bud from the top, and leaving 4 inches to 6 inches below for extending into the bottle. Then take a correspond-

ing slice off the stock, notch the two together, as in whip-grafting, bind very tightly with strong string, and apply the grafting-wax. Fill a clear glass bottle with soft water and suspend it with the lower part of the graft inside the neck, which must be kept constantly and regularly filled up to the top. When the Vines intended for bottle-grafting are large and strong, some allow them to burst into full leaf and keep the grafts in the house for a fortnight before they operate. Others, notably Mr. Nash, of Badminton, the most successful bottle-grafter I have met with, put them on at any time after the turn of the winter, and failure is the exception to the rule. Indeed, so successful is Mr. Nash, that I have seen rods of great strength 20 feet to 30 feet in length made in one season, and where two buds were left at the apex of the graft the lower one has made a lateral and borne a bunch of Grapes. By this mode grafts can be attached to any part of a Vine without destroying it, as the bottles, which must be kept full of water—the great secret—can be suspended from any part of the trellis; but the finest rods are secured when one of the main stems is cut down and worked near the ground line.

NEGLECTED GRAPES.

GRAPE MRS. PEARSON.—Although early white Grapes are fairly plentiful, a really good keeper that will hang on the Vines till Christmas and then take its place in the Grape room is worthy of general cultivation. The Muscat of Alexandria to all intents and purposes is a late variety; moreover, it is a host in itself, and many who grow it will say they do not wish anything better, or, if they do, I question if they will ever get it; but no matter how well the Muscat is finished, how rarely do we meet with it fresh and plump after the early part of January. A Grape that is a worthy companion to the Muscat at all times, and can be kept in first-rate condition after that variety is past its best, should be acceptable to growers of late Grapes generally, to exhibitors particularly, and this, I venture to say, will be found in the hitherto neglected Mrs. Pearson. But why is it neglected, when Mr. Barron, in his excellent and exhaustive work on the Vine, gives it a very high character? but, speaking of its merits, says it "requires too much time to ripen." Possibly this short sentence may have deterred some from planting or working it, but then, no matter how precocious a variety may be, it is simply impossible to secure more than one crop in a year, and when Mrs. Pearson, started with Lady Downes, which requires Muscat treatment, is ripe by September, surely this trait is of minor importance, and may be got over by starting early and giving it superior cultivation. The Vine in question was raised by the late Mr. Pearson from the Black Alicante crossed with Ferdinand de Lesseps, and received the Royal Horticultural Society's first-class certificate in 1874. It is a strong and vigorous grower, with thick leathery leaves, which are deeply lobed and toothed. The bunches, above medium size, are tapering, and sometimes carry one shoulder, but generally they resemble an extra fine cluster of White Frontignan, and, having very stout footstalks, contour and build, favour long keeping. The bunches are produced in profusion, and the berries, which set freely without artificial aid, are nearly round from young Vines on own roots, but assume an oval shape when taken from spurs. The skin is rather thick, deep green at first, but takes a rich amber colour when quite ripe, and the flesh, which is firm and juicy, has a strong Muscat flavour.

I have been led to the introduction of these remarks by the examination of some bunches cut from a Lady Downes house at Christmas, and these, as usual, are still fresh in the footstalk, plump in the berry, and look like hanging until April. The Vine from which they were taken is grafted on a Gros Colmar, not perhaps the best

hastening stock for a late white Grape, but the wood is ripe and the Grapes are good—two facts which go far to prove that Vines of opposite character are more accommodating to each other than many people imagine. Mrs. Pearson, having a first-rate constitution, is, however, quite capable of taking care of herself without the aid of the grafter, and requiring, as I am willing to admit, a long season and plenty of heat, would suggest Muscat or Gros Colmar treatment. W. C.

MANURE FOR FRUIT TREES.

ONE of your correspondents inquires if sulphate of ammonia is a good manure for Vines, Peaches, and pot plants generally. Sulphate of ammonia is a very valuable ingredient of a manure for general use, supplying the nitrogen which is indispensable to plant growth; but other ingredients are equally necessary, generally potash, phosphorus, and lime; the most important of these for the Vine is potash; the ashes of the Vine contain 63 per cent. of this salt. Georges Ville, the eminent French agricultural chemist, who has probably devoted more attention than anyone else to the subject of chemical manures, gives the following formula for Vines and fruit trees:—

Calcic superphosphate (dissolved bones)	12 parts
Potassic nitrate (saltpetre)	10 "
Calcic sulphate (gypsum)	8 "

It will be noticed that sulphate of ammonia does not appear in this formula, as the requisite nitrogen is afforded by the nitric acid in the saltpetre, but seven parts of ammonic sulphate and ten parts of potassic chloride, a purified form of kainit, a natural salt which is imported in large quantities from Prussia for use as a chemical manure, may be substituted for the saltpetre, as the two combined produce the same effect; the compound should be used at the rate of about a quarter of a pound to each square yard. This manure is equally valuable for Pear, Plum, and Cherry trees, as the ashes of the fruit of each of them contain more than 50 per cent. of potash, but as the ash of the fruit of the Apple besides 35 per cent. of potash contains 26 per cent. of soda, a proper manure for it should contain soda in some form; nitrate of soda, or even common salt, which is sodic chloride, will answer the purpose. Probably the best formula for plants generally is what Ville calls his normal manure.

Calcic superphosphate	8 parts
Potassic nitrate	4 "
Ammonic sulphate	5 "
Calcic sulphate	7 "

to be used at the same rate of a quarter of a pound to the square yard.—EDWARD TONKS, *Packwood, Knowle.*

—That manure is beneficial to old fruit trees there can be no question, provided they are sound. It should be applied by digging down to the roots, and there depositing a liberal supply of it. But fruit trees too frequently get such food just when they do not require it, viz., when first planted; with youth and vigour on their side they are sure to grow strongly enough in fairly good soil to be fruitful without the aid of such rich manures, as should only be given to worn-out trees. I find it to be far better at first planting to merely mulch the surface with half decayed litter, that will eventually rot away and become food for the surface roots, and to reserve the rich manure for trees that show signs of exhaustion. It is impossible to prepare the soil so as to provide food for trees up to mature age; far better give annual supplies as may be needed. I hardly find two trees alike even under exactly similar conditions; one will be fruitful from the day it is planted, the next will need all sorts of checks to prevent over-luxuriance. But, as a rule, the supply of manure must be very carefully given during the first few years after planting, while older trees can hardly get too much. Starvation is the primary cause of all the ills that befall our old orchards.—J. G., *Hants.*

The Prune Damson.—"B. C. R." (p. 26) speaks highly of what he styles the Prune Damson, &c., the large Worcestershire Damson. I entirely agree with him in his eulogy of this fruit, but I think it is true that it is not a very fine bearer. I plan'd a dozen trees some twenty years ago

During that time twice or thrice the trees have been so laden with fruit that we have been (notably the past year) afraid they would break down. But in many years the crop has been below an average, and sometimes almost nil. The tree when in full bearing, as was the case last year, is a magnificent sight. The beauty and bloom of the fruit are very pleasing. I do not know anyone else in this neighbourhood who grows this Damson, though all admire my fruit, and this part of Berkshire is a great fruit-growing country, but I have been told that in Covent Garden they prefer the small rough common Damson. There is one advantage in the Prune Damson, that it hangs longer on the tree, and does not ripen and go off so soon as the ordinary Damson. This ought to be a strong recommendation for market purposes.—RICHARD HOOPER, *Upton Rectory, Didcot.*

MARKET FRUIT.

IF in a multitude of counsellors there is wisdom, certainly in an army of correspondents there is chaos—at least, such must be the experience of readers of some of our daily papers, which at this dull season have found matter for discussion incidental to the present state of market fruit culture. It is interesting to learn that orchards, even in fruitful Kent, are being grubbed up, because it is unhappily far too notorious that very many orchards are worn out. But when, upon the fact that some orchards are being destroyed, it is sought to erect a foundation for a national lament over the decadence of home fruit culture, the notion seems too absurd to merit a moment's consideration. For how many years past have there not been exhausted orchards in process of annihilation? There is nothing new in that fact, and, indeed, it is rather cheering than otherwise. Then nothing is said with respect to the considerable amount of planting which goes on every year, and which it is certain far exceeds the depletion. Probably it will be found wherever reliable statistics are obtained as to the area of land under fruit culture in this country, that it increases from year to year appreciably. But whilst the recent discussion in favour of home fruit supply has sprung from the assumed grubbing up of a few Kentish orchards, the numerous writers who have sought to enlighten us upon this topic have all been more concerned with the marketing and market prices of the fruit produce of the orchards which exist than with regard to the small acreage which has been cleared of its fruit trees. All the ground now travelled over in the course of the discussion has been gone over scores of times in previous years, but with no better result. We are such slaves to customs in trading, that neither good nor bad fortune seems able to alter our methods of procedure. We go on growing pretty much the same sorts of fruits under the same conditions. We market them in the same fashion. We are pleased if the returns are good, and are sorely disappointed if they are bad; but as to any drastic change with a view to benefit the grower or improve the quality of the fruit or methods of marketing it, or finding other and more lucrative markets, in all these things we do next to nothing, and whenever glutted fruit markets and depressed sales come we are as helpless as ever. The fruit grower has produce perhaps in abundance, but he may be some twenty, thirty, or forty miles off. Clearly his fruit in that case would be valueless on the ground. To be worth anything it must be brought within reach of the consumer; but to do that himself would be to the grower a matter of some difficulty, and certainly expense. He therefore finds it best to take advantage of the middle trader, and through him eventually the fruit is distributed. Now the cost of distribution is, of necessity, considerable, too often adding 100 per cent. to the prime cost of the article. When, therefore, fruit is very plentiful, it is obvious that whilst the cost of distribution cannot be, under existing conditions, reduced one fraction, the brisk competition on the part of growers gives the trader full command of the market, and he can purchase at his own price. Now, if the grower could get his fruit to the consumer direct he might pocket the trader's profits, assuming that he still sold at the same price retail, but if he did the consumer would gain nothing. On the other hand, it is difficult to see

in what way he could make the cost of distribution to the consumer cheaper than the trader, with his special knowledge and facilities, does; hence, under our present system it is difficult to look for better results. We may plead for more markets, and, not least, for comparatively free markets, where consumer and grower may meet without the intervention of the middleman, but that plan if adopted would ruin the trader, and thus create injury in that quarter. But putting even that contingency aside, existing market monopolies are so strong, that the possibility of getting more markets of a retail kind is gloomy enough. Of course, in such case the grower would be saved some of the cost incidental to retail distribution, and the consumer would expect to pay less for the articles for the same reason. After all, it does not seem as if that plan would result in unmitigated good to the grower, but it is certain that more markets for garden produce is one of the needs of the market trade.

One of the great difficulties incidental to market fruit culture is the variability of our climate and the irregular production of crops. Until we really gather our fruit we can never be assured that we have got it; and if two years out of every three yield only half crops, perhaps less, and even then with no form of consecutiveness, how can it be expected that we should be in a position to utilise a big crop to the utmost when it comes? No wonder we have to speak of such a crop as a glut, because our means for its profitable disposal are of so limited a kind. The difficulty seems inevitable in all cases where the supply is so uncertain and so intermittent. That we may improve the quality of much of our fruit is certain, and in doing so render that which is improved also all the more profitable. But then we must not overlook the fact that we shall only obtain enhanced prices for superior fruits whilst that supply is limited and inferior fruit is still grown. Replace all our poor fruit by superior fruit, and quantity alone will bring down the price to the glut-level, and the grower's case will be little better than before. If in the improvement in quality we can also ensure more regularity in the cropping all will be well, because then we shall have no glut. But gluts of anything must be associated with cheapness. In reference to the Plum, that very erratic and perihable fruit, it is urged that the surplus should be converted into jam, or be dried as the French dry their Plums. But as to the conversion of our surplus Plums into Prunes, we could only perform such transition under artificial heat, and here, again, do we feel the difficulties incidental to the irregularities of the crop. Once in about five years only do we get a big Plum crop; the other four we could do with far more of the fruit for ordinary uses than we have to gather; therefore, the proposal to convert our surplus Plums into Prunes hardly excites enthusiasm. Absolutely no course is more prospectively hopeful than is found in teaching the masses how to appreciate fruit, and, whilst in season, to make it a part of their daily food. Even at the moment of our greatest wealth of fruit, the consumption, and, of course, the demand, ought to be quite doubled. A. D.

Pine-growing at The Hendre, Monmouth.

—Pines are well grown here, some fruits shown from this place at South Kensington in December last being over 9 lbs. in weight. Those grown for winter use are chiefly Smooth Cayennes and Charlotte Rothschilds, and those exhibited were typical of the general stock. When I saw them about that time the plants, one and all, were robust and remarkably healthy, their broad leaves being thickly covered with a dense bloom, which is always indicative of a satisfactory condition in the case of Pines. The largest fruits are produced from plants grown in 12-inch pots. These are carefully drained and good fibry loam is used for potting, a particular point being to make it very firm. Loam alone is chiefly depended on, and manures are avoided, with the exception of frequent applications of guano water when the plants are approaching the fruiting stage and afterwards. Leaves are used for plunging purposes, and the bottom-heat is maintained by the aid of hot water pipes. The plants are properly rested previous to starting into fruit, and failures in this respect are few and far between. During the resting period the

temperature does not exceed 60°, and both atmosphere and soil are kept very dry. When started into growth the bottom heat is raised from 65° to 80° or 90°, and the atmospheric heat to 75°, abundance of moisture being maintained. Queens are the favourites in summer, and these are grown equally well as the winter fruits.—CAMBERIAN.

Two good Figs.—M. Glady strongly recommends Figs Adam and San Pietro to growers of this fruit. The first is a very large Fig, and not new. The tree is vigorous and fertile, the fruit coming in bunches of six or eight at the ends of the branches, ripening in the Gironde about July 15. It would, however, probably ripen at Paris about the beginning of August, and form a succession to the "Three Seasons Fig," the earliest of all, the Figue d'Argenteuil, and the Dauphine. In its greyish tint it has some resemblance to the latter, but is larger than that kind. The flesh is white, very firm, tolerably juicy, and excellent. The tree is of branching habit, but one rarely sees the second crop ripen. The July crop being a heavy one, one can dispense with a second crop. Fig San Pietro originated in Dalmatia, and was introduced to Bordeaux by M. Joubert. It differs totally from the first-named. It is, however, very large, but longer, something like a Beurré Clairgeau Pear. In colour it is greenish grey, flushed with violet; flesh red, juicy, very sweet and delicious. It branches freely, fruits of the second crop having been shown before the Pomological Society of France, and highly commended. It was first described under the name of Saint Dominique, another Fig of second-rate quality. It has also been grown under the name of Meclingea.—J. CORNHILL.

SHORT NOTES.—FRUIT.

Red Currants.—The Ruby Castle variety is vastly superior to the ordinary Red Currant; the bunches are larger and so are the individual fruits.—J. C. C.

The Pommeloe.—This delicious acid fruit is, we think, neglected. It is very rarely that an Orange has so delicate a flavour. It ought to be imported much more largely.

Pear Catillac.—We saw at Gummershury House, the other day, some very fine samples of this excellent stewing Pear. It will remain in good condition until March, and in some seasons perhaps until April.

Grapes.—Among Grapes now to be seen about London, the majority consists of Gros Colmar. This is certainly a very handsome and showy Grape, and one that will always command a good price, but as to flavour, it is in most cases only second-rate.

Preserving Filberts.—If covered with dry sand, Filberts will keep for several months without shrinking. By enclosing them in cases perfectly air-tight and placing them in a cool place, they may also be preserved for a year or more. Or they may be kept in jars in a cool cellar with the husks on.—W. A. E.

Easter Beurré Pears.—These have lately been sold in Covent Garden for 2s. a piece wholesale. We commend the fact to Mr. Harrison Weir and others—who advise Grape growing in the open air in England—with the view of showing that it is attention to our best hardy fruits that will prove most profitable.

The influence of the stock on the scion is well demonstrated in the Cherry house at Gummershury Park, where the same varieties of Cherry may be seen grafted on the Cherry and the Mahaleb. Those grafted on the Mahaleb are bristling with fruit buds, while those on the Cherry have not half the quantity.

Fig Negro Larg.—Anyone growing Figs in pots would do well to include this variety. When planted out it seems to grow too strongly and to make too much wood. In pots the reverse of this is the case, the curbing of the roots seeming to aid to its fertility. It is a great favourite for pot culture at Gummershury Park.

Black Hamburg Grapes.—The other day (Feb. 1) we had an opportunity of tasting some Black Hamburg Grapes—part of a second crop of mine ripened in twelve months. The first crop was out during April, 1886; the Vines were then pruned and allowed to grow away in their own way, when they ultimately yielded a fine second crop of good bunches. On comparing their flavour with that of Lady Downes, the Black Hamburg was found to be the best.

Gooseberry caterpillar.—Perhaps some of the readers of THE GARDEN would like to try my plan for keeping down the Gooseberry caterpillar. It is as follows: Dissolve a handful of alum in hot water, pour it into a large can, which should then be filled with cold water, and the trees affected well syringed with it. I have never known this remedy to fail if properly applied.—W. A. E.

Pear Gilles-o-Gilles.—This little-known Pear ought to be in every collection, being in my belief one of the best stewing Pears we have. The fruit is of a large size, the skin covered with dark russetty spots, stalk very long, flesh firm

and sweet, and when cooked the juice is of a rich claret colour. In season from October to February. It is often spelled Gibzil. It is of French origin. Very fine examples of it were exhibited at the Paris congress.

Figs on the south coast.—It may interest some to know that Figs grown in Sussex near the coast pay well in favourable seasons. Anyone visiting Worthing in summer, and interested in Figs, would do well to walk to West Tarring, a mile distant, to see the old Fig gardens there. About an acre is covered with old trees, and on my last visit Violets were growing underneath the trees, which formed a good winter shelter for them. Perhaps there are few places in England where Figs come so early and excellent in flavour as in that neighbourhood. There one could not go into many cottage gardens without finding Fig trees; and some of their owners make from 20s. to 30s. a year by their Figs. The trees receive very little pruning, with the exception of keeping the lower branches off the ground. If young plants are wanted, the best way is to peg the bottom branches in the ground, and keep them there till rooted. Layers of Figs fruit quicker than plants from cuttings or suckers.—S.

SEASONABLE WORK AMONG FRUITS.

STRAWBERRIES.

THE earliest batches by this time will have declared themselves; if blind or flowerless, no time must be lost in getting them removed, to harden off for planting out in the spring; if satisfactory, take advantage of fine bright days, not only for giving a little extra air, but also for closing early, as good speed can be made under such conditions without running the risk of having the leaves and flower-stems drawn. Where forcing is conducted in Peach houses and vineries, the earliest plants, as they come into flower, should be collected together and placed on a light, airy shelf, or in a well-ventilated pit where a circulation of warm air can be continuously maintained. In the Strawberry house proper this precaution is not necessary, as every plant stands with its foliage close to the glass, when the air admitted at the base passes upwards and prevents condensation of moisture on the petals. As soon as the first batch comes into flower and the pollen is ripe, careful fertilisation with a camel's-hair pencil will be necessary, the middle of the day, or whenever the temperature has reached the maximum, being the most suitable time for the performance of this delicate operation. This stage reached, a somewhat higher and drier temperature, always with air, will be advisable, but the organs of fructification being so tender, great judgment must be brought to bear, not only on the admission of cold air without producing a cutting draught, but also on the introduction of a certain amount of atmospheric moisture, without which they may shrivel before they can properly perform their office. Early morning is the best time to syringe the walls and floors, or to turn the fermenting material; and dryness at the root being fatal, liberal supplies of chilled water must be administered when the ventilators are open. Shallow saucers, at one time greatly in favour, are now seldom met with; and it is well, for, much as the Strawberry luxuriates in moisture, it resents stagnant and impure water, which not only elogs and rots the crock roots, but completely deprives them of the invigorating influence of the ammonia-laden atmosphere. A stench-trap filled with water is all very well in an impure drain, but it is not wanted at the base of a flower pot, from which sweet, wholesome fruit is expected for eating; and this being the aim and object held in view, extra attention to watering will work better than flooding in dirty saucers. The Strawberry being a very excitable plant, the temperature, until the fruit is set, should not exceed 45° on cold nights, 50° when very mild, and 5° to 10° higher by day. Times there will be when solar influence alone will run the mercury up to 65° or more, but then, air in proportion being admitted, the plants will revel in this genial temperature, and repay the patience exercised through the inclement weather. Once properly set, and judiciously thinned, the plants may be well syringed, to make them clean, and placed in the hottest house at

command, to swell off their fruit. A moist Pine stove well furnished with shelves near the roof-tree is generally selected, and the greater the heat and the richer the food, the finer will be the fruit. The plants should not, however, remain in this close, moist heat until the fruit is required for table, otherwise it will be vapid and flavourless; therefore, when fully swelled and fairly coloured, they should be removed to a dry, warm, airy house, where, by a gradual reduction in the supply of water, the flavour and aroma will improve, and the fruit will keep for some time in good condition.

Successional plants, in proportion to the stock and the convenience at command, must now be worked forward once a fortnight. If plunged in the open air it is a good plan to convey them first of all to shallow pits or frames, thence, after the pots have been washed and top-dressed, to intermediate quarters to flower and set. In this way a continuous supply of fruit can be kept up until plants in late houses and pits commence swelling off their crops, when retarding instead of forcing may become necessary.

PEACHES.

By this time the trees in many early houses will be in flower, and in a few the fruit will be set. Recently I stated that freedom from aphids during this period is highly important, as it is simply impossible to avoid the loss of the earliest growths, as well as the crop of fruit where fly is in existence, when the flowers begin to expand. Fly in some seasons, both indoors and out, is more troublesome than in others, but this matters not; the only preventive of mischief in the forcing house is moderate fumigation with tobacco smoke, followed by good syringing just before the flower-buds burst. When in flower a brisk buoyant temperature with plenty of air and a moderate supply of atmospheric moisture must be secured; the first by the maintenance of a continuous circulation in the hot-water pipes, the second by damping all available spaces without actually wetting the blossoms, unless the syringe is used for setting the fruit. Taking it for granted that the roots are satisfactory, the temperature and moisture are favourable, once more I must insist on the circulation of air, even if the temperature is lowered a little for a time. Sometimes during very severe weather or keen, windy nights it may be necessary to close the ventilators to obviate the necessity for hard firing, and then even external conditions will favour rapid circulation through the smallest chinks, but when the atmosphere is calm the ventilators should be more or less open, for as well might we hope to enjoy good health in a warm, stuffy room as expect trees and plants to thrive in a non-ventilated forcing house. Successful growers of East Indian Orchids no longer tolerate double roofs, neither do they look upon the hermetically sealed modern sash as an improvement on the open lapped lights now so seldom met with, but seek a compensating balance by punching holes in the brickwork opposite the hot-water pipes, and treat their plants to a warm, but delicious atmosphere in which human beings are not loth to linger. Conditions favourable to tropical plants are favourable to exotic fruits generally, to excitable subjects like the Peach particularly, hence this digression from the cut-and-dry calendar, as I cannot shut my eyes to the fact that many young men engaged in fruit growing close every ventilator on the approach of a shower and treat the life-sustaining atmosphere as a deadly enemy. The art of fertilising the flowers of the Peach being so well understood, a few words on the important operation of

Disbudding may be of service. A healthy tree trained on extension lines produces probably ten young growths where not more than two, or at most three, are required for furnishing the succeeding year's fruit-bearing wood. If we leave too many, not only are the shoots weak, elongated, and sparsely set with imperfect flower-buds, but the foliage is thin and flabby, and the fruit, from want of sun and air, is pale, vapid, and flavourless. When well grown English hothouse Peaches

cannot be beaten, but this end cannot be attained unless we disbud thoroughly; therefore the first operation after the fruit is set is the removal of all superfluous shoots in order to give those left ample room for free growth without becoming "drawn," and whilst providing for an even spread of foliage over every part of the trellis, not excepting the old branches, which sometimes suffer from sunstroke, each leaf should have plenty of room to move when fully developed. Much, as a matter of course, depends upon winter training, as some make their first mistake by laying in too much wood, but assuming that a clear 8 inches is allowed every fruit-bearing shoot, then the base shoot must be laid in, on the upper side, if practicable, to its fullest extent, also one from the point and another from the centre. All intermediate growths, so often left, may then be removed with a sharp knife, or, with fruit nestling at their base, they may be pinched to two or three leaves for a time, and finally removed where Peaches are not left to swell to maturity. In course of time it is possible the centre shoot may be found interfering with the training of the growth from the base—really the fruit-bearer of the coming year—if so, it must be removed piecemeal as tying in is proceeded with. It is truly distressing to see a number of young gardeners laboriously trying to find room for an unreasonable number of pale green watery shoots when judicious disbudding would enable them to do two days' work in one; the foliage would be broad, deep green, and spreading, and every growth left, studded with silvery triple buds, would ripen up the colour of mahogany. I lately saw a fine Peach tree which had not been disbudded at all. It bore a heavy crop of large colourless fruit, some above, some below the trellis, but the gentleman told me they were used in the kitchen, as they did not think them good enough for table.

Thinning the fruit.—This operation, where a good set has been secured, generally goes hand in hand with disbudding, for just as we remove the shoots by a few at a time so do we reduce triples to single fruit and take off the smallest and worst placed first, always bearing in mind that those pointing upwards to the sun are best situated for colouring to the apex. When trees otherwise healthy start weakly, they generally set an abundance of fruit, which really requires bold thinning before a single shoot is removed; the foliage then takes the lead, and the roots, which may have been sluggish, soon respond, but so long as the young growths remain weak or stationary, not one leaf should be taken off, as this process only aggravates the defect we wish to remedy. Trees, on the other hand, which break boldly and set but a moderate crop of fruit, should be taken in hand as soon as the forthright shoots begin to elongate, thinning being deferred until the strongest have been pinched or removed and the crop generally is swelling freely. As Peaches do not feel the strain of the crop until the stoning period arrives, and some of the fruits never reach that stage, an abundance at the outset should be left, particularly on the lower and best ripened parts of the shoots, as it is from these that the final selection for swelling to maturity should be made.

Atmospheric moisture and water.—In my first paper on starting Peaches I stated that a cold, condensing, sloppy state of the house so conducive to the rotting of the buds might be avoided by the liberal use of fermenting materials placed on the floors and borders. This, in the early house, has done its work, but its retention, if not in the way, will do no harm, as moisture and ammonia can be obtained from it when the weather is too dark and cold for direct syringing. Days, on the other hand, having increased considerably and a fair amount of bright weather being now due, it is reasonable to hope that growth may be accelerated and insects kept in check by giving the trees at least one good bath when the temperature is rising or has reached the maximum. The critical time having passed, clear tepid water free from lime, and occasionally a few gallons of soot water, may be used with great advantage, always,

be it understood, in time for the foliage to become fairly dry before nightfall. The roots of the trees, as a matter of course in internal borders, may have copious supplies of tepid water, as it is a difficult matter to over-water well-drained borders when the young growths are making rapid progress. Indeed, it is questionable if dribblers which never reach the drainage are not the cause of much mischief, for, heavily as I water, I have sometimes discovered, when too late, that another foot spread over the swelling season would have been an advantage, but never took blame for giving too much. If old trees which have been over-cropped started weakly and do not show signs of regaining their strength, they may be regularly supplied with diluted liquid or pure water passed through a good mulch of rotten manure; but young ones must not be so treated, as they almost invariably grow too strong, and not unfrequently cast their fruit when the mildest stimulants are applied before they feel the weight of the crop. To such trees a thin covering of clean stable litter will prove beneficial not only in the absorption and evaporation of moisture, but also in drawing the active young roots to the surface of the border.

Succession houses closed early in January must be regularly syringed now twice a day when the weather is fine, and, as a matter of course, fumigated before the flowers open. If the bloom is likely to be heavy, all the pendent buds may be removed by drawing the finger down the undersides of the shoots, and then there will remain a profusion of flowers for fertilisation. Quantity, it must be borne in mind, does not always secure a good set, as enfeebled trees not unfrequently produce thousands of flower-buds, and the retention of all sometimes jeopardises the crop.

The latest houses, now the weather is mild, cannot be too freely ventilated. Already the buds are swelling fast, and as the fruit from these late structures is expected to shake hands with the supply from open walls, now is the best time to retard. Water, as a matter of ordinary detail, must be given in abundance through the hose where this labour-saving arrangement exists, and, if not already done, a good covering of stable litter may be placed on external borders.

NOTES OF THE WEEK.

Epacris—A collection of these at Kew is now very interesting and pretty. The plants are all arranged in one house (No. 4), and among them are the new varieties sent out by Messrs. Veitch in 1886; also various species. The long-flora type is well shown.

Eupatorium Wendlandi.—This useful winter-flowering plant is grown in quantity at Gunnersbury Park by Mr. Roberts, who finds it very useful, both for conservatory decoration and also in the shape of cut flowers. It has long, erect growths, and bears a great profusion of white flowers. It also stands foraging well.

Thyracanthus rutilans.—Among old-fashioned and now almost forgotten plants, this is one of the best. We lately saw it, at Gunnersbury Park, growing in small pots and profusely flowered, its long scarlet racemes hanging down gracefully, being very effective. Anyone with a moderately warm greenhouse might without difficulty grow this plant.

Early Rhododendrons.—I send along with this blooms of *Rhododendron Nobilemum* grown in the open air here in the American garden. It commenced to open its flowers in January 19, and some of our large specimens are covered with flowers.—Wm. KING, *Arddaraoch Gardens, Gleditsdale, Dundee-shire*.

Very handsome blooms and very early; the fact, indeed, of their blooming so early usually leads to their destruction by frost. A race of high-colored *Rhododendrons* has, however, now been obtained not open to this objection.—E.H.

Hamamelis arborea.—We send for your inspection a spray of this Japanese *Hamamelis* cut from a plant growing in the open border at Coombe Wood, and which is, as you will see, very beautiful just now.—JAMES VEITCH AND SONS.

An interesting spray of this early-blooming deciduous shrub, the flowers of which are very singular, owing to their thread-like yellow petals and claret-colored calyx. They are produced in clusters sufficiently numerous to be effective.—E.H.

The Chinese Iris (*I. fimbriata*) is a greenhouse plant comparatively unknown, yet for winter flowering it is invaluable. It is now carrying an abundance of bloom, and will continue to do so until the spring. Each flower is 4 inches across, with petals of a delicate pale mauve, adorned with a large orange blotch in the centre and prettily fringed at the edges. The

flowers are produced on branching spikes a foot or more in height. The plant is an Evergreen, with long leaves gracefully recurved and bright green. It is a plant of the easiest culture in pots; one of those, in fact, that thrives with little or no attention. It may be grown in any ordinary greenhouse, and is a capital plant for placing on any rocky mound in a light position.

Hibbertia dentata is a beautiful greenhouse climber, and, moreover, it is one of the very few climbers in bloom at this season. It is really a twiner, as its long slender shoots twist and turn in all directions, and in this way cover their supports. There is exquisite harmony of colour in the foliage and flowers of this plant. The leaves are of a sort of metallic green on the upper surface, stained with vinous purple beneath, while the great round flowers are of a clear canary yellow. It is a rapid grower, and yet not untidy; in short, it is one of the very best climbers for winter-flowering that could be named. It is one of the many beautiful Australian plants that are disappearing from our gardens, ousted by more modern plants.

Solomon's Seal forced.—The simple beauty of the *Solomon's Seal* is even more enjoyable now than in May, and we are glad to see that forcing it into bloom in winter is becoming a common practice. In several gardens lately we have seen it in greenhouses intermixed with *Valley Lilies* and Dutch bulbs, and we were much struck with its gracefulness as a pot plant. It is not, we believe, easy to obtain good roots of *Solomon's Seal* for forcing, but if a demand for them springs up they will be grown specially for this use, as the *Lilies of the Valley* are. The illustrations we have published lately of the *Solomon's Seal* as a pot plant have induced many to force it into bloom early for vases and the greenhouse.

Pavonia Makoyana.—This stove shrub is usually seen as a small pot plant with a cluster of flowers at the top of the stem. An example of what this shrub is when it attains full size and allowed to develop unrestrained in any way may be seen in the Palm house at Kew. There is there a large spreading bush, 6 feet or more in height, having tall, wide-spreading shoots, each wreathed on its upper part with flowers. These are about 2 inches long, with the calyx of a rich rose-pink, corolla of the deepest plum-purple, and central tufts of stamens of a bright blue. It is, therefore, an extremely handsome shrub, and a valuable one, inasmuch as it always flowers in mid-winter. Those who have small plants of it should encourage a vigorous growth, so as to get large bushes of it, which are very different from puny stage plants. It is now a common and cheap plant in nurseries. At Kew it is grown under the name of *Guethea Makoyana*, but *Pavonia* is its best-known name. A coloured plate of it appeared in THE GARDEN.

Climbing Epiphyllum.—The most beautiful way of growing the *Epiphyllum* we have seen is that illustrated in the great Cactus house at Kew. Under one of the rafters of the roof are trained the long stems of *Pereskia aculeata*, and upon these the *Epiphyllums* have been grafted together with another *Cactus* (*Cereus flagelliformis*). The *Epiphyllums* are now in full flower, and, owing to the profusion of their brilliant carmine blossoms, make a beautiful feature. This mode of growing the *Epiphyllum* may not be new, but it is most unusual, and certainly worth practising in private gardens, for in this way one could adorn the roof of a warm greenhouse or stove at this season when very few creepers flower naturally. The *Epiphyllum* is a beautiful pot plant, but there is a certain formality of habit about it which some object to, but this mop-headed look is quite avoided by grafting it on the long shoots of the *Pereskia*, which is the usual stock for grafting *Epiphyllums* upon. First of all the *Pereskia* must be grown vigorously, so as to get stout stems 8 feet or 10 feet in length, and on these the *Epiphyllums* may be grafted at intervals of a few inches. It is a mistake to graft any other *Cactus* upon the *Pereskia* besides the *Epiphyllum*, or a muddled effect is produced. The specimen at Kew has been grafted about two seasons, and each year it will improve, although now it is a splendid feature.

GARDEN DESIGN.

TERRACE GARDENS.

The accompanying engraving represents the way in which the terrace garden at Lord Eversley's beautiful country seat at Heckfield, in Hampshire, is embellished in summer. The bed shown is one of a series of what may be termed architectural beds, which make up a geometrical design on a broad terrace garden in front of the mansion. In such an important position, therefore, it is necessary that the beds should be made bright and effective; and to do this well is one of the chief cares of the gardener, Mr. Wildsmith, than whom no one knows better the material with which he has to work. He knows that there are many ways of planting lawn beds besides that of massing together so many Pelargoniums, Calceolarias, and other stock-material of the "bedder-out." The terrace bed shown is, we consider, an excellent example of how to fill a large stone-edged bed so as to look informal and graceful, and bright withal.



Bed of fine-leaved plants and flowers at Heckfield Place. Engraved for THE GARDEN from a photograph sent by Mr. Mason Good.

The principal plants used in this composition are Castor-oil plants, which occupy the centre, giving a stateliness to the whole group. Then come Cannas, Abutilons, Marguerites, and over the sides fall in graceful tufts dwarf Nasturtiums, Petunias, and such-like trailers. Such a mixture is not only out of the ordinary run, but extremely effective, and when several smaller groups are seen on a faultlessly-polished lawn, there is nothing to surpass them in the way of terrace-gardening. The same principle of grouping could be carried out even without the raised stone-edged beds, which, being elaborate and costly, are only in keeping with a noble mansion. A simple raised bed may be made with wood, the most suitable being small Larch poles with the bark on, cut about 3 feet long, and driven into the ground so as to leave about 18 inches above it. Some sort of raised bed is necessary to produce the pretty effect which trailers have when falling over the edges in the manner shown. W. G.

Arum Lilies at Kew.—An example of the advantage of planting out Arum Lilies in summer may be seen at Kew. They are planted out in the summer about May in ridges like Celery, and

thoroughly well watered during the summer. In the autumn, before frost touches them, they are lifted and potted and put in a warm place until established. They may now be seen in splendid condition in the temperate house. Solanums are treated in the same way and do well.

FERNS.

W. H. GOWER.

REPOTTING AND DIVIDING FERNS.

REPOTTING and propagation by division of the crowns or rhizomes should be carried out before the plants begin to grow, as Ferns of all kinds dislike having their roots interfered with when making their top growth. Even the removal of the drainage material from the bottom of the ball, if growth has commenced, generally has the effect of causing the young fronds produced immediately afterwards to come deformed. In the case of plants that are divided with a view to their increase, when they are in a growing state, the injury which they receive from the unavoidable breakage of their roots is still more serious. The time

it. The soil ought to be made moderately firm in the pots, and a good watering should be given as soon as the potting is completed. Where practicable, it is well to raise the temperature a few degrees, so as to help the plants to get established, keeping the house closed for two or three weeks afterwards, with more moisture in the atmosphere than has been used during the time the plants have been at rest. In potting *Gleichenias* and other species of like habit that produce long creeping rhizomes, and which are tender and easily injured, if a good deal of care is not exercised, the points of these creeping shoots suffer so that they will not start again. Such of the *Gymnogrammas* and other kinds that require cool stove heat through the winter, and that need a shift, should also receive attention now. The coolest grown portion of the stock that are kept in an ordinary greenhouse temperature may be left a little longer before being potted. With the exception of the kinds that will not succeed without a moderately high temperature, such as the *Gymnogrammas* above named and a few others, it is a mistake to give Ferns so much heat as often practised, as the plants for whatever purpose required are worse for it, and especially so through the excess of humidity sometimes used in the atmosphere, the joint effect of which is the production of fronds that will not retain a healthy appearance on the plants so long as they should, and when wanted for cutting they wither and look unsightly much sooner than when the growth is made in an atmosphere that is neither too hot nor too moist. When Ferns are grown under conditions such as advised, and with the addition of sufficient light by not shading them to the injurious extent that is often done, they are much less affected by thrips, which insects give much trouble by their persistent attacks when the growth is wanting in solidity.

MAIDEN HAIR FERNS.

Now is an excellent time to increase one's stock of the various kinds of *Adiantum*, such as *A. euneatum*, *A. gracillimum*, *A. farleyense*, *A. scutum*—all useful sorts, either in the shape of plants in pots or in a cut state. When Ferns are required for room ornamentation, they should not be grown in too high a temperature, but in plenty of light, so as to render them stocky and able to withstand draughts, to which they are sometimes exposed. From plants hard-cut or that have suffered through adverse treatment, or, as sometimes happens, through brown scale, all the fronds so affected should be removed, cutting close down to the crown, but taking care not to injure the young undeveloped fronds. Some plants should be divided annually, putting them in smaller pots, in which they are most useful for service indoors. Take, for instance, a plant that has the previous year been growing in a 5-inch pot; cut it into four, and each piece will go nicely into a 3-inch pot. Plants in 6-inch and 8-inch pots are generally grown to produce fronds for cutting. Pots for Ferns should always be well drained, as they like abundance of water at the roots during summer, particularly when grown in small pots.

The soil, except that for *A. farleyense*, should consist of two parts fibry loam, one part peat, one part leaf-soil, and a good sprinkling of coarse silver sand and old lime rubbish from ceilings of old houses, to which the roots of Ferns seem partial. Put firmly, and leave an inch at the top in the larger pots for water, and from half to three quarters of an inch in the smaller pots. As soon as potted, set the plants in a vinery, in which there is a temperature of about 55° at night, with a rise of 10° in the daytime. The moist atmosphere maintained for the Vines just suits the Ferns; as more heat is required for the Vines, the Ferns must be moved to other structures, but if a fernery or other house can be set apart for them where the necessary temperature can be maintained with a rise of 5° during the night and more during the day as the season advances, so much the better; but if no other place but vineries or peach houses are at command, they answer well

by moving the plants about as necessity dictates. In summer, however, cooler quarters must be found for them than will be required for the Vines and where shade can be given them, or their fronds quickly become of a pale colour.

Ferns need not be syringed overhead, but a moist atmosphere should be maintained by sprinkling water on the stage and paths in hot weather. Do not water too freely at the roots immediately after potting, but when growth has fairly commenced it should be applied copiously, with occasional doses of liquid manure, say three times a week. The fronds of *A. cuneatum* and of *A. gracillimum* retain their freshness much longer when cut than they otherwise would do if, before using them, they are immersed in cold water for twelve hours, selecting only such as have black seed spores. Fronds in that condition are harder than younger ones, and stand much longer. *A. farleyense* and *A. scutum* are more useful as plants in a growing state than when fronds only are employed, as the latter have a heavy appearance when associated with cut flowers. For plants of *A. farleyense*, the most useful-sized pots are 5 inch, 6 inch, and 8 inch ones. If healthy plants are obtained at first, thrifty specimens can be had in the sized pots named, which will be found useful for decoration in rooms. This variety is better without peat in the compost than with it. Two parts fibry loam with the fine soil taken out of it, one part coarse leaf-soil, half a part lime rubbish, as recommended for the other varieties, some silver sand, and a thin sprinkling of finely ground bones will be found to suit *A. farleyense* well if firmly potted. Copious supplies of water alternated with liquid manure in summer when the plants are growing freely will greatly benefit this variety. E. M.

Selaginella hortensis.—We grow this beautiful Moss in all sorts of temperatures, and it appears just as much at home in a cold unheated fernery as in an intermediate house or stove. Out of doors, too, I saw it the other day still fresh and green after the bitter weather we have lately experienced. I find it to be most serviceable for edging groups of plants in pots: for this purpose it should be in 3 inch or 4 inch pots and in rich light soil. After being potted and set in a shady position in a genial temperature, it soon forms beautiful plants, which then may be removed to a cool house. This Moss is invaluable dibbled in pots containing Tulips and other bulbs. Thus treated it makes a pretty surface covering, and sets off the bulbs to increased advantage. Large specimen plants in pots or tubs are greatly improved in appearance by covering the soil with this pretty Moss, and for dinner-table decoration, if grown in tin or zinc trays, it may be utilised in a variety of ways, and when flowers are scarce it is doubly valuable, either used by itself or as a setting for cut flowers.—J. G.

SHORT NOTES.—FERNS.

Polypodium suspensum. This Fern is admirably suited for hanging baskets, or for draping the face of rock-work in terraces. Its fronds are from 1 foot to 2 feet in length, pendulous, and simply pinnate; the pinnae, which are in numerous in texture, as well as the stems, are clothed beneath with rusty red hairs.

Osmunda javanica.—This an erect growing plant, bearing thick, leathery fronds from 1 foot to 5 feet in height; the fronds are simply pinnate, the barren segments being some 6 inches long and less than an inch wide, shortly stalked, bluntly toothed at the edges, and bright green. The fertile segments are contracted and shorter than the infertile ones; they are made up of numerous oblong clusters, resembling single branches of the fertile portion of the English Royal Fern; they occur mostly in pairs about the middle of the frond. It is a distinct, bold growing, and effective species belonging to the Malay Islands.

Polybotrya Lechleriana. This has a stout, woolly rhizome. It is well adapted for scrambling over rough rocks, climbing upon the stems of Tree Ferns, or in any smaller situation where large and elegant Ferns are required. The fronds are of two kinds—a usual occurrence in this family. The barren or infertile ones, which are very elegant and persistent, are about four times divided, these divisions being much finer and deeper than those in any other member of the genus with which we are acquainted. The texture, too, is firm and hard, and the colour a bright lively green. The

fertile fronds are contracted, and wholly covered with brown soil, which rapidly decay and fall off. It comes from Fern.

STOVE AND GREENHOUSE.

T. BAINES.

CALADIUMS AND THEIR CULTURE.

THESE handsome Aroids have the reputation of being easily grown, and they are, for it takes a considerable amount of indifferent treatment to kill them. But, in common with many things that get the character of being easy to manage, they are often met with in a condition that renders them of comparatively little use outside the stove in which they are grown, from the fact that if they are moved, even in summer, to a place where there is less heat, accompanied with a drier atmosphere than that of the house in which they have been grown, the foliage flags so as to make them anything but ornamental. Leaving out of the question their near allies, the Alocasias, which by common consent are now separated from them, the Caladiums are proverbially thin, soft-leaved plants, especially the newer varieties of Continental origin. Yet despite the natural delicate texture of their leaves, much may be done by judicious cultivation to give them more substance, and thereby enable them to be moved for a time in summer to a conservatory that is kept moderately close, and where when in good condition they are always welcome. The way in which some of the Covent Garden growers who cultivate these plants for market bring them out, especially the beautiful *C. argyrites*, proves what can be accomplished by tight management. Such sorts as *C. Wighti*, that have more green in their leaves than some of the newer kinds, are the best to grow for ordinary purposes. Indigenous to hot countries as the species of Caladiums are from whence the varieties now in existence have sprung, they, of course, require a considerable amount of heat to grow them, but to counteract the effect of this and the naturally soft texture of their foliage, they should be grown in light houses or pits, and stood as near the glass as possible all through the time their growth is being made. It is not enough, as it would seem to be sometimes supposed, to give the plants a fair amount of light after a considerable part of their season's growth has been made, and under conditions that are wanting in this most important point; they must from the first of their beginning to move be kept near the glass, with not too much humidity in the atmosphere. When plants that require stove heat are so placed early in the season, it makes up for the limited amount of air which the time of the year and the state of the weather permit to be given.

The best way of wintering these plants is to allow them to remain through the season of rest in the pots in which they have been grown, in a warm house, with, as a matter of course, the soil quite dry. It is now time to start them, previous to which they should be re-potted in new soil. They are not particular as to the nature of the material in which they are grown—peat or loam—provided it is of a moderately free, open character, and made fairly rich by the addition of rotten manure, such as is procurable from an old hotbed, or that has done duty in the Mushroom house. In common with other quick-growing, free-rooting plants, they require a fair amount of root room, and should have pots proportionate in size to the strength and size the roots have attained. In the case of large tubers that will push up a quantity of young shoots it is well to thin these out moderately when a few inches long, the effect of which will be to throw more substance into the leaves of those that are

retained, at the same time preventing the head of foliage getting overcrowded. The coolest end of a warm stove is the best place for these plants, as it is here that whatever air is given during the early months of the year should be admitted. Thin-leaved subjects like Caladiums cannot bear full exposure to the sun after it gets powerful, as if it does not actually scorch them it destroys much of the fresh-looking appearance that is an essential feature in the foliage. But no more shade should be given than is absolutely required. Caladiums are little troubled with insects, unless red spider happens to attack them, which it often does if the atmosphere of the house is kept too dry. If this little pest is allowed even for ever so short a time to hold possession, it spoils the colour of the leaves so far that nothing can be done to set them right for the season. A regular application of the syringe, which should be used daily, will prevent this insect gaining a footing.

Grown in the way just alluded to, Caladiums are much more useful than when treated in a manner that results in their flagging immediately they are moved from the stove, the oppressive atmosphere of which makes it not the most inviting place in which to see them. When grown so as to give a maximum amount of solidity and endurance to the foliage, few things have a more telling effect than three or four leaves of a medium-sized variety placed loosely along with a few tall spikes of flowers in a large vase; so arranged in water they will last for several days.

Sta'ice Suwarowi.—When well grown this is an interesting plant, and being of easy culture it is just one of those annual flowers that all who have a greenhouse can grow. Some have failed with it through sowing too early; it should not be sown until the beginning of April, and as it dislikes much disturbance at the roots, a few seeds should be sown in a 4-inch pot, and as soon as the plants are large enough to handle, all but one should be pulled out. When this has filled the pot with roots, it should be shifted into another 2 inches larger, in which it may be allowed to flower. The front shelf of a greenhouse suits it admirably; in such a position it gets both light and air, and its long spikes of dark rose coloured flowers are then very interesting. Being hardy, it may also be grown in the open, but I find when so treated, that rain and wind spoil its beauty.—J. C. C.

Italian Bellflowers.—With reference to the note of "D. K." on Italian Bellflowers (p. 8) we wish to direct the attention of your readers to a few more of them, which decidedly deserve to be grown more largely than they are, viz., *Campanula dichotoma*, one of the prettiest of annuals, and of the easiest culture; its flowers appear very early after sowing and are a charming sight, especially when in groups. It grows wild near Sorrento, where it covers the walls with its blue flowers. The white form of *C. dichotoma* which we raised in our grounds is decidedly the most beautiful. It becomes covered with masses of flowers, which have the characteristic peculiarity of standing erect during the daytime, but droop at night. We may add that the flowers are larger than those of the blue kind, and that the plant is not at all delicate as is usually the case with forms of different colours. "D. K." mentions *C. fragilis*, which is abundant between Castellemare and Sorrento up to the mountain Sant Angelo. But there is another very pretty variety limited to the opposite side of the peninsula, and growing exclusively on the mountain Garganus, viz., *C. garganica*, of a decidedly alpine character; this stands somewhat near *C. fragilis*, and has equally dark blue and erect flowers. *C. Tenorei* is also remarkable; it grows on the rocks in the Terra d'Otranto (exactly at the heel of the "boot"). Its stems grow erect, its leaves are oval and heart-

shaped, and the flowers are a fine dark blue. *C. pyramidalis* was once very much grown, but it seems to have nearly disappeared from gardens, and also its white form, which is found on the rocky shores of the Adriatic Sea, but which grows wild also here clinging to walls. This plant with its long spikes attains with us near the sea a height of 6 feet or 7 feet.—DAMMANN & Co., *Hdly.*

EUPATORIUM CANDOLLEANUM.

This *Eupatorium* is one of the most useful of winter-blooming plants. It forms compact little bushes from 1 foot to 2 feet high and as much through, covered with white flowers during January and February. We treat it as follows: Early in March short shoots that have not previously bloomed are selected for cuttings and inserted four or five in a 3 inch pot in sandy soil. When put in we plunge them in a gentle bottom-heat in a hot-bed or under a handglass in the propagating house. As soon as they have emitted roots, we pinch off the points to increase the number of shoots; then pot all off singly in small pots and keep them close until growth again takes place; they are then removed to cooler quarters. An ordinary greenhouse temperature suits them well, and they should be placed on a shelf close to the glass, where they have abundance of light and air to induce stocky growth. Shift into larger pots as may be required: 6-inch and 7-inch ones are good sizes in which to bloom them.

Loam and leaf-mould, rather more of the former than of the latter, and a dash of sand answer well for the first two shifts, but for the final potting the compost should consist of two parts of loam, one each of leaves and material from a spent Mushroom bed, and a sprinkling of finely ground bones. Pot firmly to induce stocky growth. The shoots should be pinched altogether about three times, say up to the beginning of August, after which time they must be allowed to grow as they like. Gradually harden the plants off until they can be removed from the cold frames to an open, sunny position out of doors, where they should be plunged in ashes, thus keeping the roots cool during the summer. While out of doors they must be watered regularly, and occasionally with liquid manure; neglect in this respect soon renders the foliage sickly and disfigures the plants. Towards the end of September or early in October remove them into a cool house, giving them an abundance of air, and if in December they can have a temperature of, say, from 45° to 50° at night and a corresponding rise during the day, flowers will be more quickly developed. Manure water freely given when the flower-spikes show themselves is very beneficial to them. A few light stakes to the strongest shoots are all the support necessary in order to keep the branches and flowers in position.—E. M.

* * * This beautiful Brazilian plant is just now in flower in various suburban gardens, and is especially valuable when white flowers are in great demand. It is a dwarf, compact, much-branched plant, with opposite pale green leaves, and large corymbose heads of *Ageratum*-like flowers, which last a long time upon the plant, and also in a cut state. It is a useful greenhouse plant, and even sufficiently hardy for room decoration. It is more elegant in every way than any other member of the family that has as yet come under our notice.—E. D.

Violets.—I quite agree with all that Mr. Allan says in THE GARDEN (p. 89) in favour of the three varieties of Violet which he names, viz., Marie Louise, Neapolitan, and Comte Brazza. Plants of these here, as with him, are masses of bloom and buds in all stages of development, notwithstanding the fact that we have been gathering from the first-mentioned variety large quantities of blooms since the middle of September last, and shall probably be doing so until the middle of April. Considering the small amount of attention that these Violets require, and that of the simplest kind, it is surprising that one should so frequently be

asked such a question as the following, viz.: "How is it that my Violets only give me an occasional bloom or two; they were put into a frame in October?" In replying to this question, I usually ask another, viz.: "Were your plants bristling with buds when they were put into your frame?" If not, the frame will have no effect as regards making them produce blooms. The protection of the frame assists the development of the buds with which the plants should be furnished previous to their being transferred to their winter quarters. It is essential that young plants should be grown every year, and therefore runners must be taken about the middle of April, when there is usually plenty to be had with a root or two attached to them. Care should, however, be taken to have runners and not divisions of the old plant. The runners should be pricked out about a foot apart in a partially shaded border which has been well worked, and dressed with manure from an old hotbed, in which a considerable quantity of leaves has been used. They will be found to quickly establish themselves, and will in a short time grow into fine plants. All that is required through the summer is to keep them clean by giving them a frequent hoeing, and to go through them two or three times and cut off new runners, which they will throw out rather freely. If these attentions are annually given them, the result will be, as Mr. Allan observes, a prodigious harvest of blooms for eight months of the year. I treat that fine Violet *The Czar* in the same way, as I find young plants not only bloom more abundantly than old ones, but also produce much finer blooms. This variety flowers more or less in the open through the autumn and winter, according to the state of the weather, and in great abundance in spring.—D. UPHILL, *Moriton, Dorchester.*

BEGONIAS IN BLOOM.

At no period of the year are *Begonias* without flowers. In summer the tuberos rooted varieties produce a grand display, and in winter other sorts are scarcely less showy. Amongst the varieties which we have now in bloom are the following, viz., *B. ascotensis*, a free-growing kind, with drooping flowers of a very pretty shade of pink; the sprays of this are very useful in a cut state. *B. insignis*, another pleasing pink-flowered variety, has flowers of a lighter hue than those of the last. *B. Lynchiana*, which has clusters of coral-red blossoms, is among the most showy of all the winter bloomers, the only objection that can be taken to it is its inclination to run up rather naked at the bottom; even if stopped when young it seldom breaks out in a satisfactory manner. I have had seedlings form more bushy specimens, but my experience of raising this species from seed is, that even if taken from the best and deepest coloured form, few, if any, are in this respect equal to the parent. Between this kind and the perpetual blooming *B. semperflorens* some hybrids have been raised, but though sent out under different names there is so little difference amongst them, that not more than one kind is required. Those known as *semperflorens gigantea rosea* and *carminata* are very like *Lynchiana*, but rather more inclined to assume a bushy habit than that sort does. Another under the name of *semperflorens elegans* partakes rather more of the characters of *semperflorens*, the parent plant. The good old *B. fuchsoides* with its bright coloured blooms is one that must not be omitted, and another of this class which is, like the last, thoroughly at home when treated as a pillar plant is *Ingrami*. Of white-flowered kinds, one of the handsomest is *Carrierei*, especially when grown in the shape of little bushes.

A variety sent last year from the Continent under the name of *Carrierei villosa* in many respects resembles the last, but the whole plant is covered with hairs, and it is besides remarkably free as regards growth, forming as it does quite a little bush. The old *B. nitida*, with its clusters of white flowers, is a well-known, but very useful kind; while in *B. socotrana* we have a species totally distinct from any of the others, and one that

should find a place in every garden. A near relative of the well-known *B. weltoniensis* is *hybrida eoccinea*, whose pretty little red blooms belong more particularly to the early winter than to the present season, though there are still a good number of flowers remaining on plants of it. A useful variety that is just now unfolding its first crop of blooms is *Gloire de Sceaux*, a kind which, under favourable conditions, will flower till spring is well advanced. It is said to be the result of a cross between *B. socotrana* and *B. subpeltata*. The habit is stout and vigorous, and it naturally forms a compact, pyramidal-shaped specimen, densely clothed with foliage. The leaves are of a dark, metallic green tint. The flowers are large, borne freely in good-sized clusters, and of a very pleasing shade of pink. The *Begonias* just named constitute a good and representative selection of winter flowerers. One circumstance that tends to make *Begonias* popular, apart from the beauty of their blossoms and the season at which they are produced, is the fact that they are of easy culture, and in a general way suffer but little from insect pests. H. P.

Diosmas.—These old-fashioned hard-wooded greenhouse plants have unfortunately been elbowed out of many gardens by new introductions, which in some respects are not so good as the plants which they have replaced. *Diosmas* were to be found in most gardens a quarter of a century ago, and generally in the shape of plants of rather large size, from which greenery could be cut in quantity, and it was always acceptable, for not only is the foliage of many *Diosmas* delightfully fragrant, but the branches are so graceful, and last in such good condition so long when cut, that I know of no plants of like character that can take their place. Their slender shoots associate well with the choicest of flowers. As flowering plants I cannot say much in favour of *Diosmas*, but as the blossoms are pure white and thickly set upon the branches, they are not altogether unattractive. Half-ripened shoots strike readily in gentle bottom-heat, and as regards soil, loam, leaf-soil, and a sprinkle of sand are all they require. I may add that if the roots are well cared for, the plants may be cut from as much as desired, but it is during winter, when the growth is hard and the leaves fully grown, that they are the sweetest and last the longest in a cut state.—J. C. C.

Hybridising Primulas.—In the case of this class of plants the skill of the hybridist, rightly directed, may in a few years effect wonders. Even wild forms raised from seeds and grown in gardens produce many variations. The tendency of purplish coloured species when crossed with each other is to produce yellow varieties, and I have a notion that if a yellow or primrose coloured Chinese *Primula* is to be produced, it may be through the bluish coloured varieties, with or without the agency of a yellow-coloured distinct species. Crossing of *Primulas* is a much more delicate operation than crossing *Orchids*, because of the smallness of the parts employed, and the liability of the flowers to become self-fertilised before foreign pollen can be applied. I have crossed many varieties of *Primulas* and *Auriculas*, and it is interesting to trace the resemblance of both parents in the seedlings. In order to be sure of the flowers not being self-fertilised it is necessary to remove the stamens before the pollen bursts from the cases, and this should be done before the flowers open. A pair of very sharp-pointed scissors is necessary to open the flower-bud, and, if the plant is in a pot, hold it in an inverted position, and the stamens will fall out when cut off. If the plant is in its natural position they fall down the tube, and may thus reach the stigma. Sometimes the stigma protrudes from the mouth of the tube, and in that case is easily reached, but in other flowers it does not rise higher than half up the tube. Both parents should be in the same state of forwardness when cross-fertilisation is being attempted, and the right time is about two days after the flowers have been fully open. I have never covered the plants in any way to keep insects from them. If the pollen has been effective the petals will speedily fade. If the flowers are fertilised in March

or April the seeds will be ripe in June or July, and may be sown at once. That is Nature's method of dealing with them. Not all the seeds, nor even the largest portion of them, will vegetate, but some of them will do so in the course of a few weeks; the remainder will rest in the ground until the following spring, when they will vegetate freely. Those who hybridise say that seedlings have a tendency to produce flowers having the appearance of the pollen parent, while the plants, in their general character, resemble more nearly the seed-bearing parent. This is, however, not always the case.—J. DOUGLAS.

Neja gracilis.—It is to be regretted that this graceful little plant is not hardy in the open air; we have left it out several seasons, and have even given it the protection of a handlight, but it has always succumbed to the cold. It makes up for all this, however, by flowering freely at this season when treated as a cool greenhouse plant; indeed, it flowers more or less all through the winter months if kept from the cold; and as it is easily increased by cuttings, there is no fear of its being lost. The generic name *Neja*, about the derivation of which there has always been so much mystery, has been superseded now by *Hysterionica*, a name that will be harder to go down with gardeners than the other. *H. falcata* is another species nearly allied to the above, more robust, however, and without the hairs so prominent on *gracilis*; the flowers are larger, are orange-yellow, as in the other, but not so freely produced. It may be propagated freely by cuttings.—K.

Diseased Tree Carnations.—I send for your inspection some shoots of Tree Carnations which appear to be diseased. At first the foliage becomes spotted, and afterwards the stem, and in a short time the plant dies. Some two years ago a few named sorts were purchased from a nursery, and on their arrival some had an appearance similar to what I describe. Since that time some of my other plants which had previously done well gradually dwindled and died. The plants have received every attention, and, except during the very hottest weather, have been growing in a light, cool greenhouse. Any suggestion as to eradicating the evil would be thankfully received.—J. C., *Seecooaks*.

* * * The decay of the leaves in your case is not exactly a disease, but is caused by bad management. Try to obtain good cuttings now, and strike them in a forcing house. When rooted pot off the plants singly in small pots, and keep them growing on gently in a warm greenhouse on a shelf near the glass. About April they will be strong enough to be placed in a cold frame, and as the roots fill the pots they may be shifted into larger ones. Whenever the weather is fine admit air freely. When all danger of frost is over the plants may be placed in an open position out of doors, where they will succeed well—better, indeed, until the end of September than in any position under glass. By that time they may be placed in 5-inch, 6-inch, or 7-inch pots, according to their size and vigour. They should also be placed in an airy greenhouse, and they will flower well in October, November, and December, but the temperature should be kept up to 50° or 55° as a minimum. The old plants had better be thrown away when sufficient young stock has been obtained.—J. DOUGLAS.

SHORT NOTES.—STOVE AND GREENHOUSE.

Tree Carnations.—We saw the other day at Gnummersbury Park a fine Tree Carnation named Mrs. Keen. It is the darkest Tree Carnation we have seen and very dwarf.

Chinese Primulas.—Among the many forms of Chinese Primula now common in gardens, we lately saw one which is both distinct and pretty, viz., Cottage Maid. Its flowers are large, of good form, and irregularly blotched with red.

Cyclamens.—Of these there is a fine collection at Gnummersbury Park, where they make just now an imposing display in one of the houses. Their colours vary from pure white to intense purple. The individual flowers, too, are very large and of great substance.

Habrothamnus elegans.—This, flowering as it does at this season, is very useful, as it yields its bright pink blossoms in such quantities as to be thoroughly effective. The treatment which seems to suit it best is to cut it close back about July, and let it rest for a little time; then water it, and the result will be a rich harvest of bloom during winter and early spring.

Urceolus pendula.—This plant, better known as *U. aurea*, has lately been flowering freely at Gnummersbury House. Its usual time of flowering is in summer, but by starting it into growth at different periods it may be brought into flower at any time. During the growing season it must be kept in a moderate heat and have plenty of water given it. When at rest the temperature must be lowered and water withheld.

SEASONABLE WORK IN PLANT HOUSES.

CAMELIAS FOR EARLY BLOOMING.—With a sufficient stock of these plants, and the requisite attention to see that they are started into growth at different times, there is little difficulty in having a succession of flowers from autumn until spring is far advanced. Where some of the plants are wanted to come in another year earlier than they have previously been, all that is necessary is to keep them in a growing temperature for a longer period than they have been hitherto subjected to, so as to get their flower-buds further advanced. With this object in view, any plants that have now done flowering should be at once placed in a house where a genial growing temperature is kept up; something like 55° in the night will answer for them. Camellias when strong and healthy have an abundance of roots, which are in an active state during the time top-growth is going on; these require the soil to be plentifully supplied with water; the plants should also be frequently syringed overhead. Where, on the other hand, the plants are deficient in vigour, the roots are correspondingly weak, in which case water must be given more sparingly, or it will be likely to do harm.

GLOXINIAS.—The tubers of those plants that were dried off last autumn should now be started, shaking away all the old material, and re-potting in new soil that is moderately light in texture, and not poor. Give pots proportionate in size to that of the tubers. Large old roots make a fine display, but must not be pinched for pot-room, or the duration of their flowering will be short. Moderate stove heat wherein to start and grow the plants will suffice, keeping them well up to the glass as soon as the tops begin to move. Some *Gloxinia* seed should now be sown; when put in thus early the young plants will flower nicely towards autumn, at which time they will come in useful to succeed the older stock. So much improvement has been effected in *Gloxinias* in recent times, that seed of a good strain may be depended on to produce flowers much in advance of the best-named varieties that used to be considered alone worth growing.

ACHIMENES.—When well managed, few plants are so effective as *Achimenes*, especially when grown in hanging baskets, to which method of cultivation they are better adapted than most free-blooming subjects. For warm conservatory decoration when grown in this manner and associated with baskets of Ferns they have a charming effect. To do justice to the plants, the baskets should be large enough to hold a sufficient quantity of soil to support the growth in a way that will preserve the foliage in a healthy condition. The brown, rusty-looking leaves of these plants when the root room and sustenance are deficient, so far detract from the appearance of the flowers as to make them of little worth. To give a succession of bloom, some of the stock should now be started in pots as well as baskets, being careful to avoid crowding too many of the tubers together. Soil such as advised for *Gloxinias* will answer for them.

GREENHOUSE.—Heaths and other hard-wooded plants that are at all liable to the attacks of mildew should now be carefully looked over; the use of fire-heat and the confined atmosphere of the houses rendered necessary by the severe weather we have experienced will have set this parasite into activity wherever a trace of it has existed. Syringing overhead with water impregnated with sulphur, or some of the various preparations of sulphur now available, or the old remedy of dusting the affected plants with flowers of sulphur will destroy mildew. Where sulphur is applied, it is necessary to take means to prevent any remaining on the surface of the soil, or it will get washed down to the roots, where its effects would

be most injurious, if it did not kill the plants outright. If the plants are syringed with sulphur-water, it is equally necessary to keep it from reaching the soil, or like results will follow. As the different varieties of late autumn and winter Heaths complete their flowering, they should be cut back, removing about three-fourths of the length of growth the principal shoots made last summer. If less than this of the previous season's growth is left, the chances are that the plants will die, as even the freest-growing kinds of Heaths are impatient of their growth being too much reduced. After cutting in, keep the plants a little warm, which will encourage them to break, at the same time being sparing of water until some young growth is made.

ORCHIDS.

W. H. GOWER.

BOLLEAS.

THIS genus is now botanically united to that of *Zygopetalum*, but, however correct this union may be from a scientific point of view, there still remains certain differences both in foliage and in flower which enable the cultivator to distinguish them. Their flowers possess remarkable shades both of blue and purple; their structure, too, is peculiar, and so also are the requirements of the plants; in fact, the wants of *Bolleas* and *Pescatoreas*, and those of their near allies, the *Batemannias*, *Warszewiczellas*, and *Huntleyas*, do not seem to be thoroughly understood. Too much is generally expected from them. Growers of them are not satisfied if they do not retain their leaves for an indefinite period, and also produce an abundant supply of bloom, conditions under which they do not appear to exist in a wild state, large leafy masses of them being seldom found in New Grenada. "*Bolleas*," says a resident there, "have a long season of rest, during which they become very much shrivelled and lose quantities of their leaves entirely, but at the proper season they produce an immense number of beautiful blooms. I think the reason why Orchid growers in England fail to bloom these plants properly is because they do not give them sufficient rest." So much for *Bolleas* at home, but their value here is estimated by the amount of healthy, vigorous leaves which they possess. If many turn yellow and fall off during the resting period, however such a condition may conduce to the general health and floriferousness of the plant, its appearance is thereby by no means improved. What we want to learn, therefore, is how to treat *Bolleas* and allied genera so that we may enjoy the rich green of their foliage, and at the same time have abundance of flowers. A grower who has been tolerably successful with these plants says: "I have always found *Bolleas* and *Pescatoreas* rather difficult to manage, and although we are told that they are mountain Orchids, they will not succeed side by side with *Odontoglossum crispum*. They appear to enjoy plenty of shade and moisture, and a situation where the temperature does not fall lower than 60°. Peat, Sphagnum, and charcoal are our potting materials. If their roots are disturbed they are apt to die off, and the leaves suffer in consequence." Another who has been tolerably successful with these plants says: "Our *Bolleas* thrive best in baskets and on blocks; those tried in pots have not been by any means satisfactory for any length of time; they succeed well upon old stems of Tree Ferns, and do not appear to like having their roots covered. Of course, the extra labour needed in dipping and syringing them during the growing period is considerable, and the care required during the resting season to keep them just sufficiently moist to prevent the leaves falling off is very great."

The experience of others goes to prove that they like a fair share of heat and moisture. *Bolles* and *Pescatoreas* both dislike being exposed for any length of time to a lower and dryer atmosphere than that in which they have been grown. Although there may be no shrivelling, they speedily lose their leaves. Our own experience convinces us that these plants enjoy an abundance of light, but yet not very strong sunlight. They like a quiet, humid atmosphere, and if upon blocks, an almost continual dripping or running of water over their roots; the temperature of the warm end of the *Cattleya* house suits them in summer, and it should not fall lower than 60° at any time during winter. The shrivelling system we have not tried. Concerning *B. celestis*, a glance at the annexed illustration will give a better idea of the general appearance of these plants than a volume of words. The photograph from which the woodcut was prepared was sent to us by Mr. G. Fowler, Quarry Bank, Malton, and certainly represents a finely grown and well-flowered specimen. The leaves, which are from

sepals and petals are rosy pink of various shades; and the lip, which is small, is yellow and ribbed in front. *B. Lawrenceana* is a smaller plant than the last. Its flowers are about 4 inches across; the ground colour is white, suffused with violet or violet-mauve, and the lip is rich purple in front, bright yellow towards the base, and bordered with white. The column is large, and white in colour.

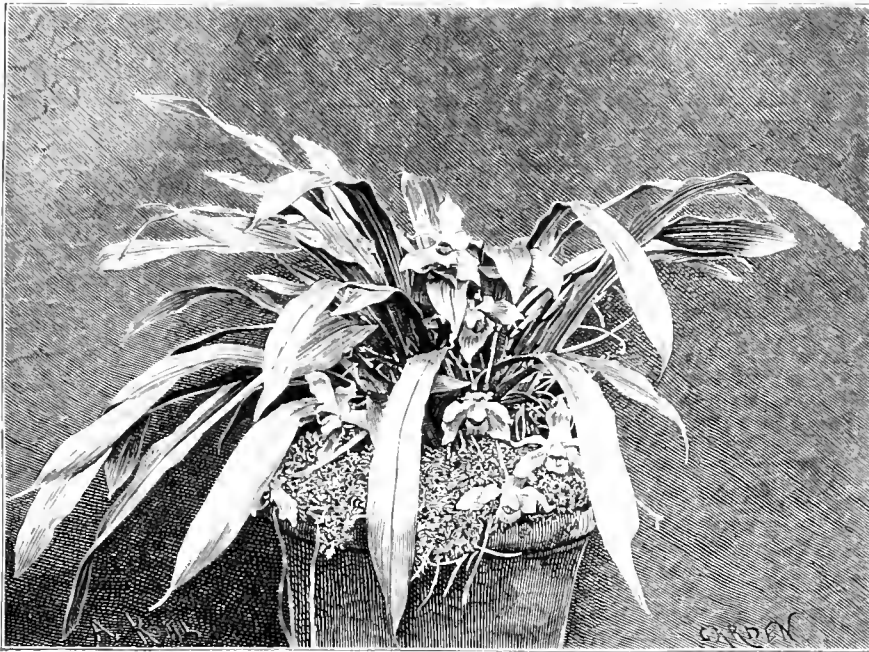
ORCHID CULTURE.

J. DUNESAY Mr. De Crawshay and "J. D." are as good general authorities on Orchid culture as could be found, but Mr. De Crawshay evades the question at issue. It was not concerning "Orchids bought, grown, and sold judiciously" that I wrote; indeed, I specially excepted these, and referred to Orchids as generally bought, grown, and disposed of in private places, and as he does not take up this point at all, I need say no more in reply to him, except that my authorities for stating that Orchid culture is on the wane are those who have never done anything else but bought, grown, and sold

now worth? what the cost of culture is? and what is the value of the returns? This information about a collection that paid would settle the question in regard to those that did not, and we wait a reply on the subject. What I desired to point out was that where results are looked to in the shape of flowers in sufficient abundance and the expenditure allowed is limited, it is well worth any proprietor considering whether he had best spend his means on the numerous fine hardy and greenhouse plants of easy culture and cheap, or upon a few that will cost much more, and the culture and returns of which are so very doubtful.—W.

— There can be no doubt that Orchid blossoms possess the richest colours, the most singular shapes, and the most delicate fragrance of any flowers produced by plants that we cultivate. They are also equally floriferous, if not more so, and their flowers last as long in beauty as those of any plants with which I am acquainted. At the same time, I may say that Orchids cannot be grown by such numbers of people as can grow many other plants—Roses, for example. If, however, we take a garden in which a general collection of stove and greenhouse plants is cultivated, no one can gainsay the fact that a well-grown *Vanda*, even when destitute of flowers, is not as effective and graceful in appearance as the majority of other plants, whilst *Cattleyas*, *Cypripediums*, *Oncidium*s, and *Odontoglossum*s are quite as presentable when out of flower as *Heaths*, *Ixoras*, *Dipladenias*, and such plants under similar conditions, always assuming that their particular requirements are studied, careful attention being just as necessary in the case of Orchids as in that of other plants, but not more so. Difficulty of culture, therefore, should not be pleaded as an excuse for banishing Orchids from our gardens. That the demand for Orchids is diminishing is not confirmed by every-day experience. The fact is, Orchids have to be imported at a great outlay and good kinds are dear; therefore a sufficient number of new growers may not start up to keep trade in them as brisk as in the case of plants which are raised at home by thousands from seeds or cuttings. Lovers of Orchids are, nevertheless, continually on the outlook for novelties just as eagerly as those whose tastes lead them to cultivate *Auriculas*, *Carnations*, *Dahlias*, *Chrysanthemums*, *Primulas*, *Cyclamens*, or any of the numerous forms of plants which embellish our greenhouses and conservatories. The difficulty and expense attending the importation of new Orchids naturally, as I have said, make them high-priced, and thus the demand for them is somewhat restricted; but anyone beginning to form a collection can purchase good, showy, free-growing Orchids almost as cheaply as they could a corresponding number of good greenhouse flowering plants, and they will be able to cultivate them with even greater ease than they would a *Heath*, for example. As to profit, private growers do not look for that in Orchids any more than they would in *Heaths* or similar plants; ornamental gardening does not admit of being looked at from that point of view. It is a luxury, and therefore is never expected to yield a profit.—H. G. W.

— All growers of Orchids will be glad to see that the sweeping condemnation of Orchids and their culture which "W." so undeservedly gave these beautiful flowers was met so plainly and fairly by "G. H.'s" reply (p. 90), "What can equal in grace and beauty a fine spray of *Odontoglossum Alexandre?*" Are not flowers that can be had in bloom all the year round most valuable, and with the many species in cultivation one is never without some bloom? And then, too, the lasting qualities of many species is another very strong point in their favour. The long continued pleasure that the richly perfumed blooms of a *Cattleya citrina* or the *Hyacinth*-scented *Zygotepalum Mackayi* give for so many weeks is not equalled by that of any stove or greenhouse plant. I should like to know which are the ten varieties "W." considers worth growing. I have been growing ninety, species chiefly, and varieties, and recently found that I needed a few more to add to my list. Now one word as to the cost of producing them. With such large importations as



Bolles celestis. Engraved for THE GARDEN from a photograph.

6 inches to 12 inches long and 2 inches broad, have a broad, sheathing base, and are bright pale green. The flowers, which are some 4 inches across, have violet-purple sepals and petals, tipped with white, more or less intense in the case of different plants, as the species appears to vary considerably. The lip, which is very peculiar, has a recurved margin, and is rich, deep violet beyond the middle, with a yellow disc; the front portion is plaited, and the large column is deep violet. These flowers last several weeks in perfection, and their rare colour renders them most desirable additions to summer-blooming Orchids. *B. Lalindei* in habit of growth resembles the last-named species. Each peduncle bears one flower, about 3 inches in diameter. Its sepals and petals are lilac at the base, passing into pale rose and tipped with pale yellow; the lip is golden yellow; the column rose colour, but in some forms the lilac becomes violet, and the lip orange-yellow plaited in front. It blooms about midsummer or early in autumn. *B. Patini* has flowers upwards of 3 inches in diameter; their

them; viz., the trade. I now turn to "J. D.," who says the culture of Orchids is easy enough to one who "knows anything" about plants, a statement which he will get no Orchid grower of experience to endorse, and which is contradicted by every-day examples all over the country. I say, without fear of contradiction, that in ordinary places where the stock is not kept up by the constant introduction of fresh plants, the condition of most collections is wretched in the extreme. "J. D." contradicts himself before he gets to the end of his remarks by stating that no one will be successful in Orchid culture "who does not personally minister to the wants of his plants, or has someone else to do it for him," a statement that conflicts with that just quoted. He has not even "patience," he tells us, with those whom he has often heard remark that Orchids can be grown "without any care or attention bestowed on them."

Neither of your correspondents approach the subject from the right point. Since, however, they have voluntarily taken up the opposite side, will they go further and tell us what their collections of Orchids have cost them? how much they are

are made every month and week, the prices have come down now so as to be within the reach of any grower and buyer of stove and greenhouse plants, and, as "G. H." so plainly puts it, the increase in value of a carefully selected and well-grown collection is a point which to many may be of interest and importance. Instead of Orchids going out of fashion it would seem that the reverse is the case, as in every direction one hears of a considerable interest being awakened amongst growers of these beautiful flowers, and also of many who are now commencing to cultivate for the first time a class of plants interesting from so many points of view.—J. T. P.

SHORT NOTES.—ORCHIDS.

Lycaste Skinneri.—We saw this week one of the finest dark forms of this Lycaste that have yet come under our notice. This variety has flowers about 7 inches across, and is now in bloom at Devonhurst, Chiswick.

Oncidium Cebillei, which is said to be scarce in collections, may now be seen in flower at Devonhurst, Chiswick. The labellum is bright canary-yellow, and the sepals and petals irregularly blotched with chestnut-brown.

Cattleya chocoensis is now finely in flower at Ginnerbury Park. It is a useful winter-flowering Cattleya, and one which should be in all collections. A very fine form of *L. anceps Dawsonii* may also be seen in flower now at Ginnerbury.

White Lycaste (*Lycaste Skinneri alba*).—We recently observed a remarkable form of this plant in Mr. Bull's nursery, the flowers of which are larger and purer in the waxy whiteness of their sepals and petals than those of any other which has previously come under our notice. This white form is very lovely when contrasted with the deep-coloured varieties now so plentiful.

Odontoglossums at Southampton.—From Mr. Bechem's collection come flowers of the beautiful *O. Krameri*, which blooms profusely there; also grand examples of *O. hastifolium*, its zebra-banded sepals and petals and varnished lip rendering it always conspicuous and ornamental, whilst the beautiful waxy snow-white flowers of *Odontoglossum pulchellum*, stained with yellow on the lip, are in great demand for bouquet-making.

Sophrontis grandiflora.—Great numbers of this brilliant scarlet flowered Orchid are now in flower in various places round London, notably in Mr. Bull's nursery at Chelsea; in that of Mr. Laing, at Forest Hill; and at Mr. Southgate's garden at Streatham. It is a plant of easy culture, often thriving admirably in a Wardian case along with Ferns.

Cypripedium norphyreum.—A very good form of this hybrid Lady's Slipper is now in flower in Mr. Bull's nursery at Chelsea. It is the result of a cross between *C. Roezli* and *C. Seidmi*, and somewhat resembles *C. Seidmi*, but is superior to that variety. Its pouch-like lip is deep rich crimson, beautifully shaded with porphyry. The richness of its colours and its being a winter bloomer make this variety a decided acquisition.

Lycaste Skinneri.—Numbers of forms of this fine winter-blooming Orchid are now in flower at Wilton House, Southampton, the residence of Mr. Bechem; their colours range from the purest white, through various shades of rose and rose red to the deepest crimson; scarcely two plants produce flowers exactly alike. This is an easily grown Orchid, succeeding even as a window plant, and it may be depended upon to produce its beautiful, large, waxy flowers about this season of the year under such conditions as would suit a Fern or a Pelargonium.

Cypripedium Amesianum.—This new hybrid Lady's Slipper is flowering in Mr. Williams' nursery, Holloway. It is the result of a cross between *C. insigne* and *C. villosum*; the upper sepal is white, veined and netted with green, and stained towards the base with brown; the petals are large, bright chestnut-brown in the upper part, the lower half being paler; the lip is large, brown, passing into green in front, and the whole flower has the same varnished appearance which is such a conspicuous character in *C. villosum*.

Odontoglossum crispum apiatum.—This, perhaps the most beautiful of all the varied forms of this popular Orchid, is now in flower in Baron Schroeder's collection at The Dell, Egham. Its flowers, which are large, are remarkably round and full, the white sepals being spotted with rich brown, whilst the spots on the petals are very large and of the deepest crimson. The lip, which is pointed in front, is spotted with brown, into which runs the golden yellow of the crests, making altogether a grand flower.

Lady's Slippers at Forest Hill.—Numerous forms of these are just now a conspicuous feature in Mr. Laing's nursery; the most noticeable are *C. villosum*, with its large pale chestnut-brown flowers; *C. Boxalli*, which is nearly allied to it, but differs in having the upper sepal broadly margined with white and spotted with black; *C. Seidmi*, with its rich crimson pouch-like lip, may be justly termed a hybrid perpetual, for it is nearly always in flower; *C. Spicatum*, with its pure white upper petal, is ever beautiful, contrasting well with such kinds as *hastifolium*, *Harrisianum*, and *Muleri*; the flowers, moreover, last a long time in water; some out on New Year's Day are still fresh and bright as ever.

Angreum sesquipedale.—A plant of this *Angreum* at present in bloom here has two blossoms measuring 6 inches across, and the lips are 13 inches in length. I can-

not think that the above dimensions are often exceeded in England, or that in this country the plant ever really merits its designation of sesquipedale (1½ feet).—C. H. F. Strand.

We do not think your measurements unusual, having frequently seen the flowers of this *Angreum* 8 inches and 9 inches across, with the spur 13 inches and 15 inches long; and on a few occasions we have seen the spur 18 inches in length, but we think this length is seldom seen in this country.—LIV.

Odontoglossums.—I have a small house in which I wish to grow *Odontoglossums*, but cannot get the temperature as low as required, as there are two 2-inch hot-water pipes leading through it to a house beyond. The temperature at present keeps at about from 50° to 55° at night, which I find rather too warm for cool Orchids. I have done *O. cirrhosum* and *hastifolium* very well; what other *Odontoglossums* require more warmth than the coolest ones?—OYST.

* We should think *Odontoglossum Roezli*, *Roezli album*, *Kramerii*, *Gerstedii*, *Phalenopsis*, and *vexillarium* would thrive well under the conditions you mention.—E.P.

HYBRIDISING ORCHIDS.

BOTANISTS of the last century had a singular dislike to the work of the hybridist. Lindley said by this art, "All ideas of species and stability of structure in the vegetable kingdom would be shaken to their foundation." The object of the hybridist is to improve the plants or flowers which he manipulates, and he chooses the seed and pollen-bearers accordingly. Orchids, which at one time were thought to be beyond the power of the hybridist, have been found to be amongst the easiest of plants to fertilise. When I first began to cultivate Orchids I was anxious to obtain a plant of *Cypripedium Harrisianum*, at that time the only English raised hybrid in the trade, but it was too expensive for us. Its parents we had. I crossed them both ways, and obtaining seed-pods, which ultimately produced plants; these we now have, and they are very large specimens, which annually produce a plentiful supply of bloom; they are also very varied both in form and colour. All large-flowering Orchids, such as *Cattleyas*, *Cypripediums*, *Cymbidiums*, *Dendrobiums*, &c., are easily hybridised. The pollen masses may be detached with a pointed stick, and can readily be applied to the parts of fructification behind the column. The pollen is attracted by the sticky mass thereon, and it is not necessary to remove the pollen masses from the flowers operated upon. The least difficult part of the work is the production of good-looking seed-pods, which will ripen in various periods of from three to twelve months. If the seeds are good they will vegetate in time, but there are probably only one good seed in thousands; and even if the seeds are good the conditions necessary for their germination may not be quite perfect. It requires patience to wait for the germination of the seeds, and even after the tiny plants have been formed, it is grievous to see the way in which they disappear one after another. As a rule, the best place to sow the seeds is on the surface of the peat or Sphagnum in which the parent plants are growing, and the surface must not be disturbed until the young plants appear. I sowed some seeds two years ago, and the plants were so long in coming up that it was thought they would not vegetate at all. The old plants were therefore potted, but, contrary to expectation, a number of seedlings came up in a few weeks. It may be as well to state that each seed-pod contains thousands of seeds, but only a few plants may be raised from them. In the case of *Phaius irroratus*, one plant only arrived at the flowering stage. When the little plants have once been potted off and established, they are practically safe, and they pass well through the winter in small pots if placed near the glass. Every cultivator of Orchids may be a raiser of seedlings. J. D.

Oncidium andigenum.—We have received from Mr. Osborne, Wilton House, Southampton, a handsome flower, which he describes as his best form of *O. Phalenopsis*, but which appears to be identical with a flower which we received from Mr. Bunneman last year, and which Professor Reichbach had named *O. andigenum*. The sepals and petals, which are creamy white, are profusely, but irregularly dotted with purplish crimson, and the petals are much broader than the sepals. The lip is deeply lobed in front, the side lobes being large, white, heavily blotched and spotted with purple and ma-

gent. The crest is deep yellow, and the column pale purple.

ROSE GARDEN.

T. W. GIRDLESTONE.

STANDARDS AND THE SNOW.

Now that the snow is gone, it is possible to estimate exactly the damage done among the standard Roses by the strangely sudden storm, which must have dashed the hopes of so many intending holiday-makers on Boxing Day. The storm was very similar to the one that occurred last winter, the snow coming after heavy rain, and falling, as it were, in great lumps rather than flakes, adhering thus in half-thawed masses to the wet trees and shrubs, where it was suddenly fixed firmly by a hard frost. The high wind then waving the branches about, laden, as they were, with heavy weights of frozen snow—weights which were all acting on levers of various lengths—naturally enough wrought sad havoc among the trees, especially the Evergreens and Conifers, and trees with wide heads and narrow stems, such as standard *Rhododendrons* and standard *Roses*. Of these last, the ones which came through the ordeal best were those which had been specially staked with a view to their protection in case of snow, and the next best were those which were not staked at all, or had broken away from their supports. The bulk of the damage was done among the standards that were staked in the ordinary way, the chief victims, of course, being those with the largest and handsomest heads, including many specimens of the Tea-scented varieties, whose spreading tops afforded additional lodgment to the snow from having fronds of Bracken twisted in among them. These tops were broken down chiefly near the point of union of stock and scion; but the un-staked standards saved themselves by bending before the storm and burying their heads in the snow, and comic enough they looked in the morning, as if their stems were playing at being croquet-hoops. A few were not pliant enough and broke in the middle, but their discreet humility was the means of preserving the majority intact, and careful binding and staking will, no doubt, restore even the cracked ones.

The special staking above referred to consisted in providing each plant with three stakes, in addition to the one to which the stem was secured in the ordinary way, these three stakes being long enough when inserted firmly in the ground to extend above the top of the head of the standard. They were placed about a foot from the stem, so as to form the three points of an equilateral triangle about the plant, and to them the head was firmly secured. This arrangement was found completely successful in supporting the trees uninjured, in spite of their burden of snow, and was adopted for the preservation of some large-headed Teas which had been damaged by the snowfall of the previous winter. Of course this mode of securing the safety of standards could not be very extensively or generally made use of, but it is always worth while to bear in mind that in the case of standard Teas the loading of the heads with fronds of Bracken as a protection against cold largely increases the danger from wind and snow to which these Roses, owing to their spreading habit of growth, are especially liable; and, considering that some Teas and Noisettes make the most beautiful because the least formal of all standards, it cannot be held that they are not well deserving of a little extra precaution and trouble to preserve them from destruction.

The argument that standards being liable to so many ills should be discarded in favour of

dwarf plants hardly applies in these cases, for though it is undoubtedly desirable that the bulk of a collection of Roses should consist of dwarf plants, still there are in most gardens some positions where standards may be effectively placed, such as at the back of large groups or beds of dwarf Roses, when the standards raise the level of the group behind without their own bare stems being obtrusively conspicuous. If standards thus utilised are broken down and destroyed, their loss cannot be at once made good, for their decorative effect depends upon the development of several years' growth, and consequently, as the larger they grow the greater the risk they run of breakage by wind or snow, it is important that during the winter preventive measures be adopted to ensure the safety of these as it were specimen standards, more especially when they are of Tea-scented varieties or Noisettes.

It is possible, by the selection of compact-growing kinds, to have small-headed standards, which are practically secure against even a combined attack of snow and wind, and which may be very well employed to break the monotony of a flat surface of dwarf plants; and no Roses are more charming for such a purpose than the miniature Hybrid Polyantha. Two years ago a large bed of Moss Roses, in which numerous sorts were grown with their shoots pegged down horizontally all over the surface, was considered to look rather dull, both in spring when the surface appeared too uniform, and in autumn when there were no flowers; the experiment was tried of dropping in irregularly among the Mosses several standard plants of the pretty pink-flowered Polyantha Mignonette (Guillot, 1882), and, as is said to be the case with all patent medicines, "they afforded immediate relief." The bed lay in front of a hedge of common Holly, and the effect of the little bushy heads of clustered rosy flowers, about a couple of feet above the general level of the fresh young growth of the Moss Roses, and backed by the deep green of the Holly, was very pleasing; and as, in spite of being in flower before the Mosses, Mignonette was still furnishing fine trusses at the end of November, the difficulty of a want of autumnal bloom in the bed was also met. Moreover, owing to their compact habit of growth, none of these standards with their heads about a foot high and a foot through, were injured by the snow of the last two winters, and even if in more exposed situations they were in any danger, they might be made perfectly secure by having a stake rather taller than the entire plant, and being tied firmly round the head as well as round the stem.

There are, doubtless, many other Roses more or less fitted by their habit to resist winter damage, which might be named were there any object in multiplying instances; but the above cases will serve to show that it is, at any rate, a possible course, in planting standard Roses where they are not thought worthy of the trouble and means requisite for their efficient protection, to select varieties which are not very liable to be broken down by snow, even if accompanied by a gale of wind.

The Roses after the snow.—Once more after a month's absence our dwarf Roses have reappeared, and, so far as the symptoms go at sight, they are none the worse for their living burial under the snow. Neither have they been idle. Not a few of their buds have advanced from sheer dormancy to the bursting point, and many of the more excitable have even got beyond the latter. It was interesting to note the varying sizes of the thaw lines around the collars, indicating how the heat of the plants had assisted the returning warmth of the air in getting rid of the snow. But the most pleasing fact of the Rose season so far is, that the snow has proved a perfect boon to all the Roses

that it covered. How far that covering over from the light as well as the cold may render the plants more tender and susceptible of future injury is quite a different matter. However, so far nothing could have been more suitable than the weather we have had since the snow has departed for gradually inuring the Roses to light and air, and thus preparing them for any hardships that may be in store for them.

STANDARD ROSES BEST IN TOWNS.

THERE is considerable prospect that as the standards diminish in the country they will increase and multiply in towns. Several causes are at work in this direction. Probably the more potent among these are the annual clearance sales that abound throughout the autumn in most of the more important provincial towns throughout the kingdom. Enormous quantities of standards are offered week after week on every market day from the middle of October to the end of November. The qualities of the consignments vary from the very best to the worst, and prices have a tendency to sink to very low levels—indeed, 1d. per plant being common enough. Such prices prove a powerful temptation to everyone with a garden in the country, or a yard of ground in or near a town to try Roses; the cost is so little, that should they fail it is of little moment. Thus thousands have tried to grow Roses at 1d. or 2d. each that would never have attempted it had they averaged 1s. or 1s. 6d. Thus which has proved a heavy loss to the trade has not seldom brought pleasures new and sweet to town and suburban gardeners, and given a powerful stimulus and a wide extension to the culture of Roses.

Fortunately, too, those much-abused standards that have been almost given away in these provincial markets have proved the most suitable material for those cribbed, cabled, and confined fragments of ground shut in and out from sun and air in the front, back, and side gardens of towns and their suburbs. To plant dwarf Roses in such dark, dank spots is to virtually bury them alive. The air is hot, stagnant, foul; the soil, too, is often dead. The latter may be improved, changed, and the best put in the place of the worst; but the air is unchangeable up to the line of the closely enclosing walls. Above these there may be, there possibly is, soot and dust, but there is also motion. The difference the latter makes is incalculable; in a word, the motion makes all the difference between the life and the death of Roses.

I have lately met with some striking examples of the difference to plant life and health under and above the wall lines of some back court gardens in London. Various shrubs, including Hollies, Lilacs, Aucubas, Laurustinus, and others, were planted. In general terms the whole of these under the wall line are bare at bottom or dead, while above the lines of the many walls, most of these, including a Rose here and there, are alive. But the chief point, and it is on this that I invite the free planting of tall standard Roses in town and suburban gardens, is, that the taller the plants the healthier, as a rule.

In the reticulated network of garden plots under the walls few shrubs but Ivies, Euonymus, Aucubas, Periwinkles, and Virginian Creepers seemed able to survive. Another mode of providing Roses for town and suburban gardens is even more sure and effective than the planting of any number of standards, short or tall, though it is far more costly. This consists in the purchasing of well grown, thoroughly ripened plants of *Maréchal Niel* or other free blooming Roses, and either plunging them over the rims of the pots, or planting them out, and expecting them to bloom but once. They may then be removed, sent back into the country, and grown again into blooming strength and size, or thrown away. By thus treating Roses as annuals, really good blossoms may be had in most town and suburban gardens. And as to the cost, there are few investments that will yield more pleasure in less time than an

annual investment of a few pounds for Roses warranted, from their vigour and maturity, to flower fairly well once under the most unfavourable conditions. D. T. F.

EFFECT OF FROST ON ROSES.

ALREADY it is evident that the late severe frosts have left their mark on standard Roses. Those that were in the best health appear to have escaped uninjured, but all that were weakly have been killed outright. It is the stock that is the first to suffer, and, as far as I am concerned, the days of the Brier stock are numbered; to dwarfs or bushes we must trust for the future. Unfortunately, the *Manetti* is very short-lived with us, many never recovering from the check sustained in their transference from the nurseries. Own-root Roses are what we require, and these are being rapidly increased. We propagate them as we do Gooseberries, &c., take off the cuttings in November, and at once dibble them into the open ground. They strike without any extra trouble being taken with the soil in which they are put, but all the better if a liberal addition of road grit or river sand is mixed with it, and they also move better. Last season fully 90 per cent. of the cuttings made strong plants during the summer. We are now transplanting from three long rows of plants numbering not less than three hundred, or sufficient to fill up all blanks and also to form a fresh bed. The sorts most easily struck are John Hopper, Countess of Oxford, Charles Lefebvre, Gloire de Dijon, Souvenir de la Malmaison, Baron Gonella, Etienne Levet, Cheshunt Hybrid, Dupuy Jamain, Boule de Neige; we have also rooted a good percentage of Francois Levet, Anna Alexieff, Dr. André, Baroness Rothschild, Elie Morel, White Banksian, Alfred Colomb, Marie Baumann, Captain Christy, La France, General Jacqueminot, Charles Darwin, and Dr. Hogg. If given plenty of room the rows being from 12 inches to 15 inches apart, and the cuttings not less than 9 inches a-under in the rows—they make good plants the first summer; many of them indeed flower freely, and they would do still better but for the almost certain prevalence of mildew.

It is now too late to insert cuttings of Roses in the open ground, but they may yet be struck under a north wall, and here let me add that it is from well established dwarf Roses that we obtain the greater portion of suitable cuttings. The preference is given to well-ripened growths, which are shortened to 1-foot lengths and cut to a joint, the lower buds and thorns being trimmed off. They are then at once firmly inserted to half their length, and in the case of the November-made cuttings a mulching of straw manure is all that is further needed. Those put in early in the year frequently do not callus properly before top growth commences, and failure is the inevitable result. Placing them in a cool position materially checks the bursting of the buds, and thereby increases the chance of a good strike. In order, however, to leave nothing to chance, it is advisable to examine some of them directly top growth appears imminent, and if they have not callused all the forward buds should be rubbed out, for it is certain that if the stored-up sap is expended on top growth there will be no roots. Once the roots are started there need be no fear of any delay in the top growth, as all these buds rubbed out will be followed by two others, one on each side, and which probably would not have started had not the more prominent central shoot been rubbed out. It is not to be expected that cuttings put in during January will develop into such strong plants the first year as they would have done had they been inserted in the open during November, but all that strike are hardy and useful own root Roses.

TEA ROSES, if strong, well-ripened cuttings can be obtained, may be struck in a similar manner to the Hybrid Perpetuals; those obtained from strong pot plants or from plants under glass are the best for the purpose. Most of our Teas in the open or planted against walls were obtained from cuttings struck in heat early in the year, and kept growing

freely in pots till the following spring. Strong, healthy plants in pots flower freely during the winter and spring months. Every shoot from which a bloom has been cut is suitable for making into a cutting. This should be done before it has made any fresh growth, and should be shaved off neatly from the old wood—a heel thus obtained being more likely to emit roots than an ordinary cutting. Most of our cuttings are about 3 inches long, and have two or three healthy leaves attached to them. Weakly shoots are of little use, the foliage frequently dropping early, and no roots are the consequence. They strike most readily in 2½ inch pots, filled with gritty loam, one cutting being firmly bedded in the centre of each pot; these are plunged in a gentle bottom-heat, and covered either with a shallow frame or handlight. They must be shaded from sunshine, and should never be allowed to suffer from want of water. In our Cucumber house, plunged in the bed of leaves and stable manure on which the Cucumbers are started, Rose cuttings strike frequently in less than three weeks, and soon fill the pots with clean, healthy roots. They are not allowed to become stunted in small pots, such treatment having caused the loss of thousands of newly-struck Roses; they are gradually shifted into 8-inch, and even larger, pots, and in the spring, after they have perfected a few fine blooms in a light and cool greenhouse, they are planted out in well-prepared soil. That popular Rose *Marchal Niel* may be rapidly increased in the manner just described, none striking root more readily than it does, and when planted against sunny walls it frequently forms extra long and strong growths. These, if carefully supported and given an easy curve, will, the following season, develop wonderful fine blooms at nearly every joint.

W. I.

PROPAGATING.

SHRUBS.—A ready way of increasing many shrubs, and one for which no frames or other appliances are necessary, is when shifting operations are going on to detach any rooted suckers or branches that may have been buried deeply, and thus have formed roots on their own account. The pieces in question must be separated from the parent plant as carefully as possible, and planted in a nursery quarter, or in some spot where they will receive attention till established. Of course this method can only be employed for certain classes of plants; those that do not send up shoots from the base cannot be operated upon in this manner, but such as *Spiræas*, *Cydonias*, *Philadelphus*, *Berberis*, hardy *Heaths*, and many others, will, if carefully examined, yield a greater or lesser number of young plants. Many shrubs that do not send up shoots from the bottom may, however, be induced to root in this way if planted deeper than usual, but this is to a certain extent a modification of layering, which is available in a greater or lesser degree in the case of most trees and shrubs. By means of layering, many subjects that cannot be struck from cuttings are increased, and this method possesses one great advantage, inasmuch as larger branches can be induced to root from layers than by means of cuttings, while a corresponding drawback is the fact that layers take longer to form plants than cuttings. Layering pure and simple can be carried out at any season, the principal requisites being a strong knife, stout hooked pegs, and a spade to loosen up the soil. In selecting a branch to be layered, the principal points to be observed are the readiness with which it may be brought in contact with the earth, the number of plants likely to be obtained from it, and which portion can be operated on without disfiguring the parent plant, that is, provided it is grown for ornament; in nurseries where plants are increased in this way, the parent plants known as stools have all their branches layered in the form of a circle, and by the time they are rooted sufficiently to be detached, other shoots have grown up in the centre to be treated in the same way in succession.

CHOISYA TERNATA, which within the last few years has attracted a good deal of attention, is by no means difficult to strike from cuttings, yet one or two points, as regards the operation, require to be carefully considered. The best cuttings are the young shoots, just as they have attained full dimensions and before they have become woody. In a general way, the entire growth is about 4 inches long, and if that is cut off just at its base, and the bottom leaves removed, the cutting is then ready for insertion. For their reception take some 4-inch or 5-inch pots, fill them to about one-third of their depth with broken crocks, then put in the soil, and press all moderately firm. Space should be left on the top for about a quarter of an inch of silver sand. The soil most suitable for the purpose is about equal parts of loam, peat, and sand, the whole being passed through a sieve with a quarter of an inch mesh. In dibbling in the cuttings care must be taken not to put them in too thickly, and they should be kept as near the edge of the pot as possible, contact therewith accelerating the formation of roots. After being thoroughly watered, they must then be put in a close propagating case or in a close frame on a hotbed, when they will soon root, and may then be hardened off. Two points to be observed are not allowing them to flag, either from want of water, or too much sun or air; and keeping a sharp look out for thrips, which increase rapidly in the close atmosphere of the propagating house. In the case of plants growing in the open ground, the cuttings will not be in a proper state for insertion till much later in the season, but the same instructions will apply to them, except that they will root if protected by a cold frame. However, a great advantage belonging to early propagation is the fact that the cuttings will be struck and well established as young plants before winter sets in.

LUCULIA GRATISSIMA.—This is another plant that, like the *Choisya*, many fail to strike in a satisfactory manner from cuttings, yet I have propagated great numbers of it, and have never experienced any difficulty in the matter. After flowering, if the plants are shortened back slightly and a genial atmosphere maintained, they push forth new shoots freely, and if these are taken when half ripe—that is, after they have lost their succulent character and before they have become woody—no difficulty will be experienced in getting them to root. We have a propagating case arranged in a cool part of the stove, and in it the *Luculia* cuttings are placed and plunged in a gentle bottom-heat. They, if possible, consist of the entire shoot, cut cleanly off just at the base with a sharp knife. However, if the shoots are of a greater length than 4 inches or 5 inches, the cuttings must be made of the upper portion of the shoot, as if too long they seldom produce roots. The soil, which should be of an open character, should consist of about equal parts of peat and sand, with a little admixture of loam. The cuttings are best put singly in 2½-inch pots in the soil just mentioned, finishing off with just a little sand on the top. No more leaves must be taken from the cuttings than is absolutely necessary. After being watered and plunged in the case, the after-treatment consists in shading, watering when necessary, and in taking off the lights every morning to dry up superfluous moisture, removing at the same time any decaying portions. One thing to bear in mind is, that the weaker shoots strike root more readily than the very vigorous ones.

FINE-FOLIAGED STOVE PLANTS of a herbaceous character may now be divided, if need be, for propagation, *i.e.*, such as *Marantas*, *Alocasias*, *Anthuriums*, and similar subjects, some of which have been rested during the winter. The soil must be shaken from their roots, and after division to the extent required, they can be again potted. In the case of any that have little or no roots attached thereto, they are all the better if kept close till root action re-commences. In all cases an open compost, consisting principally of peat, Sphagnum, and sand, is most conducive to the rapid formation of roots. In the case of many of

the *Alocasias* there are often small tuber-like masses attached to the roots, which, if cut off and potted, will in time push up leaves, and finally become established plants. T.

Raising hard-coated seeds.—“A. D.’s” successful experience in the raising of *Lathyrus Drummondii* from seeds proves that all kinds of flower-seeds are easy to get up when one knows the conditions that suit them. The seeds of this *Lathyrus* are, I think, harder than those of any other plant, *Cannas* excepted; and although I gave them the conditions that I have never found to fail in the case of hard-coated seeds generally, I did not get one up. Sowing as soon as ripe seems to be in their case, as it is in that of many hard-coated seeds, such as, for instance, those of the *Christmas Rose*, the secret of success. I have just examined some pots of the white *Everlasting Pea* that I sowed in October, and the surface-soil is, I see, studded with little blade-like growths, which show that it is amenable to this kind of treatment. This *Pea* comes up fairly well in the open ground if sown in March, but the soil must not get dry while the seeds are germinating. By sowing in the autumn, however, one gains several months. Young plants in growth now will, if put into good ground in April, be sure to flower the following year; whereas a second season will be needed if sown in the open ground in spring. I do not think there is any other way of getting up the seeds of tuberous-rooted greenhouse *Tropeolums* except by sowing as soon as ripe. I have raised hundreds in this way, the young plants appearing at the beginning of autumn.—JOHN CORNHILL.

GARDEN FLORA.

PLATE 582.

LEWISIA REDIVIVA AND MICROMERIA PIPERELLA.

(WITH COLOURED ILLUSTRATIONS.*)

AMONGST plants which arouse the curiosity and wonder of the cultivator, perhaps none is more remarkable than the *Lewisia* figured in the accompanying plate. Like many of the fleshy-leaved *Gasterias* and *Aloes*, it seems to protest loudly against being dried and laid aside; indeed, it is on record that specimens of it, after having been preserved in a herbarium for two or more years, have kept sending out fresh crops of leaves. The specimen figured in the *Botanical Magazine* (t. 5395) is said to have been one of many gathered with the view of being preserved. It was immersed in boiling water on account of its well-known tendency to revive, as its name indicates, and even after a lapse of eighteen months it showed signs of growing; one specimen produced flowers at Kew in 1863. Under the name of *Spatulum*, or *Spatlum*, it is used as an article of food among the natives of North-west America. The bark is stripped off and the white portion of the root left is boiled, when it forms a substance somewhat akin to arrowroot. Although in the herbarium it shows an extraordinary tenacity of life, when grown in the open air it requires, during the winter season at least, great care on the part of the cultivator. Under suitable conditions, we have found it hardy enough to withstand severe frosts; but it is very susceptible of damp, and the heavy rains that are so prevalent at that season should be rigidly guarded against. Our plan is to choose a well-sheltered spot exposed to full sunshine, drain it thoroughly, make it porous, and raise it considerably above the surrounding ground. This necessitates more than ordinary care in the way of watering in summer, but a little care bestowed in this way

* DRAWN FOR THE GARDEN IN MESSRS. BACKHOUSE'S NURSERY AT YORK BY THE LATE MR. NOEL HUMPHREYS.



will be fully repaid by a grand display of magnificent flowers. This *Lewisia* seems to prefer limestone; therefore we mix plenty of old lime rubble with the soil, and, thus treated, it never fails to produce an annual crop of blooms. Its summit or crown scarcely rises above the ground, and it is surmounted by numerous round, smooth, glaucous leaves, about an inch or so long. The flowers are produced from the centre of the leaves on short stalks jointed beneath the calyx, and bearing a circle of small imbricated bracts. The flowers, which are from $1\frac{1}{2}$ inches to $2\frac{1}{2}$ inches in diameter, are composed of from twelve to fifteen petals; the calyx, as may be seen, is also singular. It makes a handsome pot plant, each of the flowers lasting two or three days, and a dozen or so are often produced in succession. It blooms in May and June. It comes from Oregon, near the mountains, where it is found on dry prairies, adjacent to rivers. There is also a form with white flowers. *L. brachycalyx* is a new species not yet introduced to our gardens, and perhaps inferior in point of beauty to that which we already have. Its leaves are spatulate or narrow linear, the flower-stems not jointed, and the flowers having only from seven to nine oblong petals. Both are now placed in the Order *Portulacaceae*.

MICROMERIA PIPERELLA.

M. PIPERELLA, or small Peppermint, as it is usually called, belongs to a genus of Labiales containing about fifty species, many of which are undershrubs, but a few of them are annuals, and, with the exception of the above and one or two others, of comparatively little value for our gardens. They are nearly allied to the well-known Thymes, also to summer Savory and Calamint, from which they differ in a few minute particulars almost microscopic. *M. Piperella*, however, we find to be a useful plant for the rock garden, where we find it to be perfectly hardy, and during the autumn months covered with a profusion of purplish pink flowers. It is plentiful in the Maritime Alps, the mountains near Mentone, but never at a lower elevation than 3000 feet above the sea. Early in October about Mentone this small Peppermint may be found at its best, and I am told that it is so plentiful there in some stations, that the effect produced by it is very striking. It seldom attains more than a height of about 6 inches, its flowers being intermixed with its leaves almost to the base of the stem. It is propagated readily by means of cuttings taken off about the beginning of August or later, and kept in a cold frame through the winter. D. K.

Humboldt's Bladder-wort (*Utricularia Humboldtii*).—This fine richly coloured Bladder-wort was first discovered, but not then introduced, some half a century ago, by Schomburgk, on the Roraima Mountain, on the western boundary of British Guiana, at an elevation of between 7000 feet and 8000 feet. It has, however, recently been re-discovered in the same locality, and some plants of it have reached this country in a living state, although weakly. It is to be hoped that some of these plants have found a home in Sir Trevor Lawrence's garden at Burford Lodge, where the other members of this genus succeed so well. From an illustration of it which has been in our possession for some years, we observe that the flowers are produced several together—the introducer says from ten to fourteen—upon an erect spike, and that the individual blossoms measure some 3 inches in diameter, the lower part being plaited. The colour is a rich blue with a lighter centre.—W. H. G.

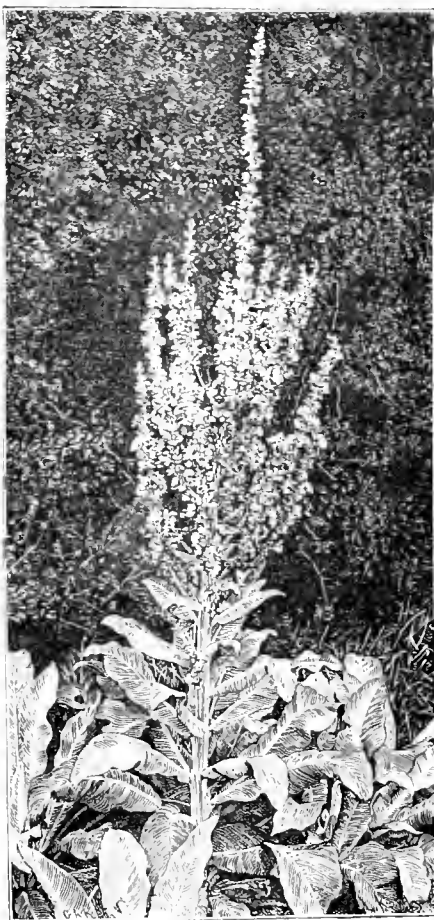
Sulphide of potassium (*Veto*).—Both samples appear genuine—one crushed, the other not.

Decorative purposes.—We should be grateful to writers if they would not use these words, which are so often written instead of simpler ones. We cut them out often, but when they come too thickly, some, alas! creep in.

FLOWER GARDEN.

THE OLYMPIAN MULLEIN.

This great Mullein is one of the largest and stateliest of border plants, commonly 8 feet high, the flowering part alone showing a mass of bloom from 4 feet to 5 feet high and 2 feet across. Though called a biennial, and probably in its southern home completing its term of life in two years, it is generally three years coming to maturity in this country. This is rather a gain than not, as the plant in the unbloomed state, with its symmetrically arranged leaves of pale grey-green velvet, is very handsome. The same whitish, velvety down clothes all its parts, and is a setting to the masses of light yellow flowers,



Verbascum olympicum. Engraved for THE GARDEN from a photograph.

so that the whole has a pale, cloud-like look when seen from a little distance.

Wintering Pansies.—Last winter showed me that if we are to trust to bringing Pansies safely through the coldest months we must afford them, if needful, some protection. Constantly saturated ground for many weeks, followed by keen frosty winds, forms the conditions under which Pansies succumb. The weather of last winter seems to be repeating itself this year, and if we get ten days' brisk wind from the east or north, we shall undoubtedly have heavy losses to deplore among the more tender of hardy plants. Frost alone rarely injures Pansies. It is the keen winds that accompany it that do the mischief. Choice named show kinds appear to be more susceptible of injury than fancy varieties, and if they cannot be wintered in frames, they ought to be planted in autumn where they can have a little litter

thrown over them during a trying time. This would in one way be the better plan to adopt with the general stock whether named or not, but, as every one knows, Pansies bloom best when planted in autumn, so as to get well hold of the ground before winter sets in. I should, however, certainly have more confidence in getting good blooms from plants lifted carefully with good balls about the middle of March than from those put into position in autumn, and which had borne unprotected the brunt of such a trying time as we experienced last winter. In any case, where Pansies are relied on for filling or edging flower beds in conspicuous positions, a reserve of plants should be kept to fill up gaps caused by losses in winter. Pansies kept in pots in frames for conservatory ornamentation will need looking to now; all decayed foliage should be picked off, and the surface of the soil should be cleaned. Air should be given on all favourable occasions, drawing the sashes quite off when there is no cold wind. Seeds for a late summer and autumn display may now be sown in warmth. The young plants must be hardened off gradually, and pricked off into pans; when large enough to handle they may be planted out by the beginning or end of May, and will make a good show from the end of July till late in autumn.—J. C. B.

TREE AND HERBACEOUS PEONIES.

I AM delighted to see the great interest that is being taken in my favourite flower. If Mr. Hole wanted a Gloire de Dijon on his grave, I would be happy if *Peony Elizabeth* were planted on mine. A few years ago it seemed impossible to get any information in this country about growing and propagating these Tree Peonies, and the only collection I ever saw of herbaceous Peonies was at Parker's, Tooting. All this is changed now, and Messrs. Kelway, who always anticipate the future taste, and have the knowledge, wealth, and patience to prepare for the future, have collected 200 varieties of Tree Peonies, which are being propagated in every imaginable way. At Langport, then, can a study be made of their methods of propagation, and I feel privileged in seeing a nursery garden in the winter when the real work is being carried on.

In *Paston's Magazine*, somewhere about the year 1857, there is a valuable translation of a Japanese work on Peonies, herbaceous and tree. Ito Ifui, a great Japanese gardener, hundreds of years ago, gives directions for growing the Tree Peony. After saying how careful you must be not to tread on the soil of your bed of Peonies, as the soil must be kept light and open, he says that you can raise the seed in a pot, and, I think, advises the slight cracking of it—the seed, not the pot. Here, at Langport, there are thousands of seedlings, but the seed does not generally germinate till the second year, and only those plants are going to flower this year for the first time which are about six years old from seed, so it is a slow process, though likely to well repay the raisers. Ito goes on to say that you can graft the Tree Peony on the herbaceous stock (by which he means *edulis* or *sinensis*) either by means of a slip-graft on the root, or by taking the upper root-stock which *sinensis* makes (in opposition to *officinalis*), and grafting, perhaps holding, on that woody substance. He also mentions grafting on the root of the Tree Peony.

So there are several ways of propagating Tree Peonies. Firstly,—You can raise it from a cutting. Ito gives a funny recipe for this. He says, take a *Caladium* root, pierce it with a twig of *Gardenia florida*; put the cutting through, just sticking out at the under side; puste up with clay on both sides of the *Caladium* root, and plant it. It will grow, and the *Caladium* growing keeps it moist till it begins to root. He also says that oil of *Camellia* fruit must be rubbed on the stem of old Tree Peonies to free them from Lichen and Moss. No doubt this is a sensible

way of getting old stems to break, as I once saw a hidebound Rose stock rubbed with oil, much to the benefit of the scion. Unwitting of Ito, who wrote, I believe, 1000 years ago, Messrs. Kelway are practising the same methods. *Paeonia sinensis* or *edulis* is their stock for root-grafting, and eventually the scion is buried, so that it makes its own root above the point of union. The Frenchmen use *officinalis* stock, and that is why so many Tree Paeonies imported from France turn into the common herbaceous *Paeony*, and why it is better to buy a plant from an English nurseryman who has already established in his nursery. This, then, is the second method.

Thirdly.—They are raising it from seed by thousands. The seedlings are now, this spring, coming into bloom, six years old. Perhaps steeping the seed in water, or cracking it, would be a good plan.

Fourthly.—By root-cuttings pulled off the bigger plants. Each of these has an eye close to the main stem, and can easily be detached. So prevalent is this peculiarity to the Tree *Paeony*, that even the roots of cuttings show this dormant eye, and could be pulled off to make young plants.

Fifthly.—There is the grafting on the roots of the Moutan, or Tree *Paeony*, which are long and lanky, and not tuberous at all. The Tree *Paeony* plants I saw at Mr. Gordon's, at Twickenham, fresh from Japan, are grafted on the Moutan root.

Sixthly.—Possibly one could take any bit of root-cutting, lay it in the ground, and it would eventually make a start at the lower end. This remains to be proved of the Moutan or Tree *Paeony*. It is well known that it is the case with all other *Paeonies*.

I know few plants of large size in the whole country, and shall be glad to hear of any, but where they are I have always noticed shelter from morning sun and high ground. The spring frosts of the valley kill the young buds, and the whole plant suffers. Moreover, the soil must be very deep, light and loamy for a plant to grow 10 feet high. The youngest cuttings make roots 2 feet long, and the large ones must have a proportionate amount of soil exactly under their roots. An old gardener told me the parings of his Tree *Paeonies* took root when thrown on a rubbish heap. There are giant plants of the Moutan and *papaveracea* at Highclere. They are rather too much exposed, but the flowers of the single kinds were 9 inches or 10 inches across last summer. Other big plants are at King's Weston, near Bristol, the seat of Mr. Napier Miles, and there is a huge bush of Moutan in Mrs. Abbot's beautiful garden, Abbots Leigh, near Bristol. If that lady would only give us some account of it, of its age and behaviour, I should be grateful. This is, again, on high ground, and I remember my friend, the late Zolok Stevens, telling us of some gigantic plants in his neighbourhood (Trenton) in a high garden exposed to the north. Depend on it, these plants will do well fully exposed to the north, but out of the early spring sun, which thrives their leaves only too quickly. If anyone has a large plant of Elizabeth, I should like to see it. Elizabeth! Elizabeth! will be all the cry now. But greater wonders are yet to be seen, and are growing placidly at Twickenham to astonish the Royal Horticultural Society. Mr. Gordon has there Japanese drawings of most astounding varieties—no yellows, but deep crimsons, maroons, carmines, purples, all but blacks, and single or semi-double whites of such exquisite beauty, that no wonder I have a craze for the plant. Still there are yet in Corea, China, and Japan varieties of which we have pictures

on Japanese screens and fans. These are small-blossomed, but striped, edged, and flaked in a wonderful way, and these small-blossomed varieties seem to grow far taller and lankier, and become almost pendent. Their manner of growth is so peculiarly graceful, that the Japanese have made them a favourite subject for decoration. Corea is probably the home of the Tree *Paeony*, and soon this country will be opened up. In Southern China the Tree *Paeony* will not properly ripen its growth, but every fancier has a large number of varieties brought every spring to the south from Northern China, and sent back at winter time. The probable reason why the very fine varieties of *Iris Kämpferi* and Tree *Paeony* have not been obtained from Japan before is that the finest kinds belonged to certain families, who would not part, just as old gardeners who grow *Pansies* or *Auriculas* in this country will not part with a plant for any money. This custom is being broken down; hence the magnificent collections of Tree *Paeonies* and *Iris Kämpferi* at Twickenham. I remember Maries told me of his great difficulty in getting the finest kinds of this *Iris* out of the Japanese nurseries; and a traveller told me that a Japanese, without a rag to his back or a son in his pocket, will own a sword worth £1000, and sell it for no money. I fancy I was the first to excite in *THE GARDEN* this literature regarding the Tree *Paeony*, which received so much support from Max Leichtlin, who gave us the names of all Siebold's introductions and of Fortune's, and a list of certain varieties which probably still exist in the private garden of the King of Holland.

As for herbaceous *Paeonies*, Messrs. Kelway are at the top of the tree. Mr. Barr has a fine collection, and also of the species; but at Langport there are 2000 named seedlings, double and single. For at last our nurserymen are beginning to understand that the public has taste, or is led by those who have taste, and wants no dictation from so-called florists, who dictate out of their own dogmatism the shape of the *Primrose* and the spots on the *Polyanthus*. Nature and selection are enough for us. Consequently here no seedlings are now discarded, as all the single and semi-double varieties find purchasers. So, too, might Mr. Bennett, of Shepperton, benefit himself and the public who have taste by saving semi-double golden *Roses* among his seedlings.

FRANK MILES.

Sunnyhill, Shirchampton, Bristol.

SHORT NOTES.—FLOWER.

Iresine Herbsti.—A sport from this well-known plant bids fair to become an acquisition for bedding. We saw this week some stock plants of it beautifully coloured. It originated about two years ago, and up to the present has maintained its true character.

Primroses.—Mr. G. E. Wilson, of Heatherbank, Weybridge Heath, sends us a little posy of pairing flowers, comprising several lovely blooms of common *Primroses*, including Scott Wilson, which is the nearest approach to a blue we have yet seen; also *Cydonia* Coma, bright and beautiful.

Variogated double purple Wallflower. This was known to exist in Ireland some years ago, but it is believed to be now lost. I never saw a double purple variety either with or without variegated foliage, but if it is still in existence I feel sure that many would like to possess it.—J. C. C.

Nelumbiums.—Mr. Newberry speaks (p. 65) of a *Nelumbium* having thorns. Of all tender plants I who have grown it, should say that it was the least thorny. *Theophrastus*, or somebody, is making a mistake. Perhaps the *Nelumbiums* grew among thorny plants at the river edge. There are no *Nelumbiums* in Egypt or Syria now. The nearest are on the Caspian, at the delta of the Volga. The sacred *Lotus* of Egypt, as anyone can see by looking at the sculptures and paintings, was *Nymphaea Lotus*.—FRANK MILES.

Two useful Primulas.—*P. obconica* and *P. floribunda* are two of the most serviceable *Primulas* yet introduced, for they are nearly always in flower; our stock, though consisting of quite young plants, has hardly been without flowers all winter; even now a plant of *P. floribunda* has six tiers of flowers on one stem. Seeing that a cool greenhouse and ordinary garden soil suits them, it may be truly said that

they are everybody's plants; both are readily raised from seed and if sown early in spring the young plants will flower in the autumn. J. C. C.

DOUBLE PRIMROSES.

"R. D.," in *THE GARDEN* (p. 65), has earned the thanks of all lovers of old-fashioned garden plants by his instructive notes on these, the very cream of border favourites. Like not a few good things, however, they seem to be becoming more tender and more scarce. Memory recalls them as plentiful here and there twenty years ago. In Scotland and the north of England fat patches of these double *Primroses* in from three to six varieties were often seen in the gardens of amateurs and of cottagers, and in larger gardens they were yet more plentiful. Among these, the Scotch Red, which I believe to be identical with the modern crimson-purple; the pure white, soft *primrose*, double purple, and double lilac were the most common. And in many districts these, and probably some other sorts, seemed almost as hardy as the single *Primroses*. This was especially the case with the lilac, purple, and white. It seems singular that while the common lilac appears to retain its hardiness and its popularity, most of the other varieties have almost disappeared from the open border. Two causes may have contributed to this result—the plants may have become more tender, or more valuable. It may seem strange, and yet true, to add that their enhanced commercial value may have increased their tenderness.

The extreme beauty of these double *Primroses* has started collectors and florists in pursuit of them, and these have potted them up out of the open for purposes of more rapid propagation. But once in pots, their great beauty and unique adaptation for the adornment of window-sills and gardens naturally arrested the attention of amateurs, more especially in towns and the suburbs of towns. Double *Primroses* were new to most of them, and were bought up greedily, and destroyed almost as rapidly, for no plants are less fitted by Nature for being frozen and baked alternately on a window-sill than a double *Primrose*. In this and other methods the pot culture of these charming plants, introduced at first for the double purpose of protecting them from extreme cold and of fostering their more rapid increase, has proved the means of their destruction.

I have nothing to say against pot culture as an aid to increase, and all that "R. D." so well states about the mode of potting, safe modes of storing in cold pits, soils, and methods of procedure will be endorsed by all who are conversant with the character and habits of the plants. But the permanent culture or retention of double *Primroses* in pots is quite a different matter, and is probably largely responsible for their scarcity in our gardens to-day. Their sale as pot plants to those ignorant of their character, habits, and wants seals the death-warrant of thousands of double *Primroses*; while the exciting and semi-forcing expedients employed on the root-stocks to quicken the ratio of increase of young plants to the uttermost, so weaken and demoralise these hardy plants as to disqualify them from standing alone on open beds or borders.

Double *Primroses* have therefore probably lost more than they have gained through elevation into pots. The finest collection ever seen by the writer had never passed through these trying ordeals for so many hardy plants. On the contrary, they were propagated and grown in the coolest part of the garden. A border was formed over a border originally made for Morello Cherries behind a north wall; the base of the border was therefore exceptionally cool and moist. Its constituents for the *Primroses* consisted of two-thirds of good yellow loam, with one-third composed of almost equal quantities of peat, leaf-mould, well-rotted cow manure, and silver sand. A good deal of importance was attributed to the purity of the sand, the purest Reigate silver sand being used, and pit sand with iron being rejected as injurious. One half of the plants were divided

every year for purposes of propagation, so that some of them were two years old. The time of division varied considerably with the season and the varieties, and was regulated by condition. Immediately the flowers faded, the division of those about to be operated upon was set about. The plants were taken up and divided into single pieces, retaining a portion of root-stock to each when practicable. But more importance still was attached to the appearance of young roots among or immediately under the lower leaves. The old roots when present were looked upon as merely bridging over a period of risk and danger till the new roots at the base of the leaves were further developed or strengthened. Deep and firm planting of the roots, crowns, or stem segments were the chief points. The soil was carried right up to the base of the new leaves, and often any excess of foliage and the smaller leaves were thinned off to facilitate deeper planting. Unless the weather was specially dry, no water was given after planting. A little silver sand, however, was placed around the stemlets at planting, and of course the plants were not allowed to wilt for lack of a dewing overhead, if neither rains nor dews came to prevent their flagging. But the chief danger to these plants is an excess of water at this stage; and it must be borne in mind that the plants are on a north border, under a wall 10 feet high. The firmer the soil, if not too wet, is thrust around the collars, almost the sooner as well as stronger will these double Primroses root. The only further attention from this stage is to keep the plants free of weeds and from drought, though the latter seldom injures them on such cool sites and soils as those here described. The best antidote in abnormal seasons is, not water, but a mulch of well-rotted sweet—that is, three or four years old—cow manure. This, with an addition of about a third of silver sand and another third of leaf mould, forms a most stimulating top-dressing for the older half of the plants, applied immediately after the first flowering. A very rich coloured variety of double Primrose, called indifferently the Claret and Port coloured, was grown with the above, and disappeared, so far as my experience goes, when that collection was dispersed a few years since. I have had the pleasure of seeing most, if not all, of "R. D.'s" varieties, and I do not think this claret is included among them, though I am well aware that soil, site, local climate, and culture exert powerful modifying influences on purple, red, and crimson Primroses, double or single. Has "R. D." ever heard of this variety?

HORTS.

Brugmansia suaveolens.—The most effective manner in which I have seen this beautiful and sweetly scented flower used is in Mr. Horrock's garden, at Mascalls, near Paddock Wood, in Kent. The plants are trained to a single stem, much in the manner of a standard Rose. They then form a wide-spreading umbrella-like head, and from this the flowers hang down in profusion. I have seen twenty or thirty in bloom at once. They are planted in a sheltered spot in the shrubbery, and after they have done flowering they are taken up, potted into large pots, placed somewhere where frost cannot reach them, and then turned out again in the spring when all fear of frost is over.—DELTA.

White Everlasting Pea.—I have grown this Pea for years, and have found it to come perfectly true from seed. I consider it to be one of the most lovely of climbers. I had it last year 12 feet high, and a sheet of snowy whiteness. I also have a plant of the white sort growing along with the pink variety, and find the seeds of both to come true. I had one young plant last year which bore only one bunch of bloom, and that was white, striped with pink. I hope it may remain fixed, as I think it may be new. Those I raised from the root were worthless; they gave so little bloom. These Peas are plants that repay liberal treatment.—MARIE, Co. Wicklow.

Narcissus (Ajax) cyclamineus (Haworth).—This quaint little Portuguese species of Narcissus

is now in flower here for the first time, and, although long ago figured in "Jardin du Roi" (1623) and in "Theatrum Floræ" (1637), is even to day very rare as a garden plant. Plant 2-3-leaved, 8 inches to 12 inches high; scape rather shorter than the leaves, 1-flowered; perianth reflexed, the divisions being a trifle shorter than the corona; flower tube very short, say 2 lines or so long; ovary swells rapidly as the flower fades, and is proportionately very large. The bulbs came in October last from Mr. Tait, of Oporto, and I have this day sent a complete flowering plant to Mr. Baker, of Kew, for a full description.—F. W. BRIDGER.

THE PINK STIGMA OF HELLEBORUS NIGER MAXIMUS.

It may perhaps savour of temerity to differ from Herr Max Leichtlin; but in his denial that the pink stigma is a natural characteristic of *H. niger maximus* I think he would find it difficult to maintain his position; and I should be sorry if he could; inasmuch as it is very desirable and convenient to have certain permanent and easily recognised marks to separate one group from another. Herr Max Leichtlin remarks that *H. niger altifolius* of English gardens has changed its original character in substance, time of flowering, shape, and in fact generally; that typical *altifolius* is not stout, but slender; has not a cup-shaped, but rather a flattish flower; that even under glass the flower is pinkish or rose-white, and that the pink colour of the stigma is produced by climatal influence. Now, in contradiction of this we have the evidence of Mr. Engleheart (THE GARDEN, Jan. 8, 1887, p. 22), who states that between Menaggio and Porlezza, in Northern Italy, he found a Hellebore, evidently *H. niger altifolius*, growing in a natural state, "flower large and cupped, pure white, with slight flush of buff-pink, noticeable for its pink stigmata and tufted yellow anthers." We have Mr. Wilks' authority (p. 49) that in the same locality one mountain-side was covered with *H. niger maximus*. He says, "I noticed some with leaf-stalks over 12 inches in height, and leaves like large Horse Chestnut leaves. I brought home two plants, one a bit off the very biggest I saw, flowers pure white touched with pink, and pink stigmata, the other a beautiful clear creamy pink," &c. So much for the plant in its wild state.

Next let us consider it under cultivation. Here, in ordinarily good seasons, it is a pure white flower, cupped, and 4 inches or 5 inches across, with large pink tipped stigma. No doubt, climate, or rather difference of position, shelter, or exposure, drought or rain in summer, frost, rain, and cold winds at flowering time, all have a marked effect on the quantity, quality, and purity of the flowers; this season especially on many plants the flowers are few, and from first to last as pink as, or even more so than, Mr. Ware's *niger ruber*. Last year, and generally, my flowers have been of the purest white, many of them not even tinted with pink on the under side of the sepals; the stigmata pink. I know of none so purely white, unless I compare them with some magnificent blooms of the Riverston variety (4 inches and 4½ inches across) sent to me a short time since by Mr. Hartland. (In passing, I may mention that he sent me also a very beautiful scilling of *H. niger* raised in his garden.) Herr Max Leichtlin goes on to say, "I wonder why any value is placed on a pink or green stigma, which is only produced by climatal influences, especially by often changing temperatures, which cause the flowers to become moist and dry alternately according to circumstances."

Now, no doubt these influences have an effect, but, in my experience, only to the same extent as in the case of the flowers. I have seen, under such influences, that even on the same plant, while the stigma of one flower retained its full pink colour, the stigma of another showed no trace of pink; but, as with the flower, so with the stigma, the change is only temporary; the characteristic is inherent and reappears; next season

the stigma is pink as usual. But may I ask if climatal changes, &c., produce a pink stigma in *H. n. maximus*, why does the same result not occur in *H. niger* type?

Everyone is aware that whatever skill could accomplish Herr Max Leichtlin would achieve, but that he could fulfil his engagement to produce *niger* with pink stigmata, or *altifolius* of English gardens with green ones, I more than hesitate to accept. I assume, of course, that in the trial the two kinds should be kept apart to preclude the possibility of crossing. I know of only four *H. nigres* with pink stigmata: 1, *maximus*; 2, Riverston; 3, Mr. Tymons; 4, Glasnevin. With the exception of *maximus*, we do not know the origin of these varieties, but having pink stigmata they also should be excluded from the trial ground.

South Devon.

T. H. ARCHER-HIND.

IMPORTED CHRISTMAS ROSES.

MANY thousands of the common Christmas Rose are annually imported into this country from their native habitats, and singular as it may seem, a large proportion of them does not survive the first winter in English gardens. The plants are gathered as soon as they have well made their growth; they are sent over in large packages, and being more or less moist they ferment, so that the foliage is blackened, and they become excited by the warmth to positively start into growth by the time they arrive here. Most of these Christmas Roses are more or less set with buds, and the footstalks of them are blanched and drawn out like those of Seakale. This stimulation just when the crowns should be at rest is in itself productive of harm, and when the plants are exposed in the open ground to the vicissitudes of our winter, they are sure, more or less, to suffer. Even if they do not die, they become so crippled as to require several years to bring them into a flowering condition. Having been in the habit of purchasing imported Christmas Roses, and finding the growth of those that survived so unsatisfactory, I afforded them some shelter through the winter, and in this way I have done well with them. As soon as they arrived I trimmed off all the old foliage, and with a sharp knife cut away all bruised portions of the roots, which are mostly reduced in length, owing to the rough manner in which the plants seem to be lifted. They were then laid in, in light soil in a cool house where they remained till the following April. Some of them were put singly into small pots. It was instructive to note how differently these plants behaved from those planted in the open ground; whilst these latter remained quite inert through the winter, showing no signs of life till spring, those laid in under cover threw up flower-buds and began to form new growths just like established plants. At the close of the winter they were full of plump reddish-looking leaf-buds, showing no signs of the ordeal through which they had passed when torn from their native wilds. Another thing I noticed particularly is, that numerous growths formed on the old black rhizomes where apparently no growths had been made for some time. I fancy that the little extra warmth which they enjoyed caused this, for having no frame room to spare, I was obliged to lay them in along the back wall of a house used for late Chrysanthemums, and where fires were of course made in severe weather. Even if none of the plants died when put into the open ground, it is well worth while to give them protection, as this causes a multiplication of growths and preserves the vitality of the crowns and roots, thus enabling them to make a much stronger growth when put eventually into the open ground. J. C. B.

New Zealand Veronicas.—All the species of New Zealand Veronicas may be said to be hardy in some part or other of this country. In favoured districts, such as the west coast of Scotland, the tenderest of the species flourish luxuriantly, and reproduce themselves from self-sown seed. Here, in Edinburgh, however, such is not the case.

Having for several years back experimented with many different species, with the object of testing their hardness, the following kinds have been found to be thoroughly hardy in all exposures, viz. —

- | | |
|----------------|----------------|
| Salicornioides | Glauco-cerulea |
| Cupressoides | Anomala |
| Lycopodioides | Colensis |
| Pinguifolia | Amplexicaulis |
| Canosula | Lævis |

The following species are very nearly hardy : still, in very severe seasons, in fully exposed positions, they are more or less injured, but they always break away again, viz : —

- | | |
|-------------|------------|
| Traversi | Catacraea |
| Vernicosa | Hulkeana |
| Eparidea | Paviflora |
| Pinchioides | Chathamica |
| Lyalli | |

Those which in severe seasons only are killed outright, and which may be termed half-hardy, are : speciosa, Andersoni, salicifolia, macrocarpa, and diosmaefolia. These are the results obtained so far ; a few other species are still on trial. It will be evident from the above that, with a less rigorous test than that applied here, the majority of the species will succeed admirably in most gardens, some slight shelter being given to the more tender kinds. There are few shrubs more worthy of extended cultivation than the New Zealand Veronicas. They are all evergreen, and many have handsome flowers, which are more or less freely produced, independent of which they form naturally trim, shapely bushes, varying in height from a few inches to several feet. Not a few are interesting on account of certain resemblances which they bear to totally different genera, as indicated by their specific names, mimicking, as it were, plants far removed from the family to which they belong so completely as to deceive not only the unwary, but even the most acute observers as to their identity.—ROBERT LINDSAY, *Royal Botanic Garden, Edinburgh.*

TREES AND SHRUBS.

W. GOLDRING.

THE AMERICAN PITCH PINE.

(PINUS RIGIDA)

THIS is one of the common Pines of the Eastern United States, growing abundantly in that tract of country lying between the Atlantic coast and the Alleghany Mountains. It extends over a wide region northwards and southwards, being found as far north as the Penobscot River, in Maine, to the mountains of Carolina. Its growth is influenced in a remarkable way according to the latitude in which it grows. In the north



Terminal bud of *P. rigida*.

it is but a low tree, rarely more than 15 feet high but in the south it is a large tree 100 feet high or more. To the Americans it is a useful tree, and at one time the Pitch Pine forests

yielded vast quantities of resinous products, the wood being highly charged with resin. Its timber, too, is good, though very knotty, on account of the peculiar branching habit of the tree. But we are not concerned about the timber value of the tree, for it was found out a hundred years ago that our native Scotch Pine was superior to any American Pine as regards the timber, and better suited for our climate. But the Pitch Pine is worth consideration for ornamental planting, and I am convinced that its value in this respect has been overlooked. It has never been a "stock" plant in nurseries, and it is in only rich arboreta that one can meet with it. Any lover of trees would at once single out a Pitch Pine in a collection by its singular habit. The absence of that stiff, formal growth that characterises most other Pines is the chief value of *P. rigida* for artistic planting, and, added to this, it is a

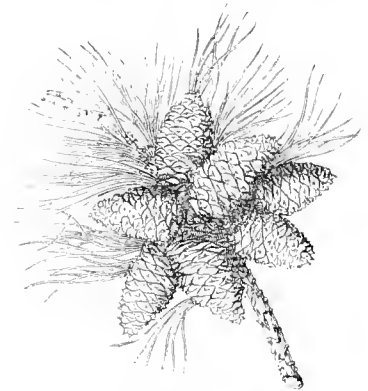


Full-sized cone, leaves, cone scale and seed of *P. rigida*.

rapid and free-growing tree even in the poorest soils and the bleakest situations.

It is, in short, one of those trees to plant in spots where even the hardy Highland Pine will not flourish. Many will agree with me in regarding it as a most picturesque tree, whether they see it 10 feet or 30 feet high. Every tree I have seen always possesses that free informal style of growth, with the branches protruding in no regular way, but generally opposed to each other in direction. The illustration on page 132 shows well what I mean. In this tree some of the branches assume a pendulous growth ; others are horizontal ; while the outline of the tree reminds one more of that of an Elm than a spiral Conifer. The colour of the tree is not very different from that of other Pines, the foliage being of a light green, not glaucous, as in the Scotch Pine ; therefore, when the two Pines are associated with each

other in groups, they give variety of tone. There is a good deal of difference between the various forms of this Pine. Usually the leaves are short and stiff, but sometimes they are long and twisted, and as bright green as those of *Pinus insignis*. The leaves are always produced in



Cluster of cones of *P. rigida*.

three from the sheath, and clustered in a brush-like way at the ends of the shoots. The bark of an old Pitch Pine is always very rough and dark, and from this character alone one may single it out from among others.

The cone of the Pitch Pine is well represented by the accompanying illustration, which shows a full sized cone, but generally they are smaller, especially on trees in dry soils. Each scale of the cone is provided with a sharp-hooked spine, a character by which a Pitch Pine cone may be always known. The cones are produced singly in pairs and threes, but generally in clusters, and these hang on the trees for many years, as in the case of many other Pines. Young trees, when only a few feet high, cone freely and bear perfect seeds. The buds terminating the branches show the resinous nature of the tree as they are always covered more or less with resin.

Enough has been said to show that the American Pitch Pine has its use in ornamental planting in this country, and though it is not a tree to be recommended for planting for the sake of its timber, it could be put to a good purpose as a shelter tree, especially near the seacoast, for it possesses the great advantage of not being injured by salt water. It has been the means of clothing many barren, sandy wastes in the United States, being the best tree that could be found for the purpose. It is recommended to transplant Pitch Pine trees when very young, as they strike root deeply, and are always difficult to transplant successfully when old. This Pine was introduced into England about 130 years ago by one of the Dukes of Bedford, and fine trees of it exist at Woburn, Syon, Pain's Hill, Dropmore, and other places.

Bambusa Castelloni.—This beautiful Japanese Bamboo, known in its native country under the name of Kin-Mei, has recently been introduced into French gardens and has been named as above in compliment to a French nobleman, the Comte de Castelloni, well known for his love of these graceful plants, and who is now engaged on a monograph concerning them, which when published should be of great interest to all growers of Bamboos. *B. Castelloni* is described and illustrated by a well-executed woodcut in a recent number of the *Paris Revue Horticole* by Mons. E. A. Carrière, one of the editors of that publication, and is said to be perfectly hardy. It is one of the curious square-stemmed varieties, and is said to be quite the most distinct and beautiful hardy Bamboo that has yet been introduced to European gardens from Japan. It is of exceedingly tall and vigorous habit

of growth, its stems when they attain their complete development attaining to the splendid height of from 32 feet to 39 feet. It is also remarkable for the beautifully even variegation of its square stems, two sides of which are deep shining green, the other two bright gold colour. The leaves also are prettily veined with yellow. The variegation seems to be unusually even and constant, and to be altogether unaffected by exposure to the sun, which is so often apt to burn and cause to wither the variegated portions of plants when exposed thereto. It is to be hoped that this beautiful Bamboo will soon find its way into English gardens.—W. E. GUMBLETON.

Muhlenbeckia complexa.—This elegant little trailing shrub, from New Zealand, has been sadly injured by the spell of cold, though the plants are probably not killed outright. Those planted among rocks in the rock garden, where the roots are in well-drained soil, are safe, but those on the flat have the branches killed. It is such a pretty trailer that we can ill afford to lose it. Perhaps some readers could tell us how *M. varians* has behaved during the present winter. It appears to be less hardy than *M. complexa*.—W. G.

The Japan Hemlock Spruce.—This Conifer is the Japanese representative of the Canadian Hemlock Spruce, and it is difficult to say which is the most beautiful. Both are extremely elegant in growth, never attaining a great height, but always spreading like a huge bush. They resemble each other very much in foliage, but the Japanese Hemlock is lighter in colour on account of the leaves being glaucous beneath. It is a quick grower in good light soils, and its extreme hardiness adds greatly to its value. As a lawn tree it can only be equalled in gracefulness by its Canadian relative, and, like it, does not form a prim symmetrical pyramid, for it generally possesses a multitude of leaders. To give full effect to its beauty, it should be planted in proximity to a spiral-headed tree, none better than *Abies Albertiana*, which being similar harmonises admirably with it. *Abies Tsuga* (the name of the Japan Hemlock) inhabits the mountain forests of Japan at great elevations, and was introduced about thirty years ago by Dr. Siebold, who named the tree *A. Tsuga*, but subsequently Carrière named it *Tsuga Sieboldi*, under which name it goes in some nurseries and gardens. There is a variety of it called *nana*, a pigmy, never growing more than 4 feet or 5 feet high, whereas the type grows from 25 feet to 30 feet high. Some admirable specimens of the Japan Hemlock may be seen in the Kew arboretum.

The Box-leaved Holly (*Ilex crenata*).—If this little Evergreen was better known it would become one of the most popular shrubs in gardens, large or small, but particularly in those where space is limited. It combines the neatness of a Box without its stiffness, for, though slow in growth and rarely reaching more than 4 feet high, its dense foliage is arranged in pleasing masses. The leaves are very small—not more than an inch long, by a quarter wide—and is therefore so much unlike an ordinary Holly, that one would hardly suspect that there was any affinity between this and other Hollies. There are a few varieties of it; one, called *aureo-variegata*, has the leaves mottled with a bright golden yellow, which, with the green, makes an extremely bright little shrub, especially in winter. Another variegated form has silvery markings. A third variety, named *longifolia*, has longer and narrower leaves than the type; while a fourth variety, named *latifolia*, is distinct from the rest in having leaves almost twice as broad as those of the typical form; hence, has quite a different appearance, and much more like a Box than the other. Every form of this Holly is worth growing, and for making dwarf, compact masses of Evergreens there is nothing to equal them. This Holly is also known under the name of *I. Fortunei*, but in most nursery catalogues the two names are coupled. It is a native of Japan, and is perfectly hardy; the recent severe weather had no effect upon its foliage.

It thrives in most soils, light as well as heavy, the best suited to it being a sandy loam. It makes a capital plant for planting on bold ledges in the rock garden, and for winter beds it is one of the very best shrubs.

IVIES AND THEIR USES.

The common Ivy when growing in an exposed position will often acquire a rich bronzy hue during winter, but in this respect individual plants vary a good deal, the smaller-leaved forms being, as a rule, the richest in colour. The most marked in this respect, and one that from its neat, prettily lobed leaves is well suited for use in the arrangement of button-hole bouquets, sprays, and similar purposes, for which these bronzed Ivies are now so much employed, is the variety named *atropurpurea*, whose distinctive character is far more marked in winter than in summer. It is a matter of surprise that so little attention is paid to the many and beautiful varieties of Ivy now in our gardens, only one or two of the strong growing kinds being as a rule planted, while a large and varied selection might be readily made. Some of them are most beautifully variegated, while the green-leaved kinds show a very great diversity, not only in the shape, but also in the size of the leaves, varying as they do from the huge foliage of *Ragneriana*, *canariensis*, and *amurensis* to the miniature leafage in *caenwoodiana* or *minima*. Besides this, the variety with orange-coloured fruit (*aurantiaca*) should be a welcome addition to berry-bearing shrubs, *i.e.*, if it will fruit freely in this country. As evergreen shrubs, too, the Tree Ivies are very distinct, and withal first-rate town plants. The peculiarly clustered Ivy (*H. conglomerata*), of a low spreading style of growth, is well suited for rockwork. Not the least desirable of the many good qualities possessed by the Ivy is its thorough hardiness.

ALPHA.

Stauntonia latifolia.—This beautiful Indian climbing shrub is perfectly hardy as a wall plant at Sedgwick Park, in Sussex, where it clothes a large part of the stable walls in a luxuriant mass of deep green foliage. The leaflets are broad and of a leathery texture, and remain on the plant for years. In summer it bears a profusion of flowers, which are green and dull purple, and deliciously fragrant, like Violets. For clothing the walls of a house it is a valuable plant. It succeeds best on an east or west wall, full exposure to the south not being suitable for it. It is a native of Nepal.

The Golden Scotch Fir.—“W.” (p. 105) seems to question my remarks very much about this Golden Scotch Fir; what I asserted I still adhere to, and which can be proved by facts, for everyone of whom I have inquired writes me that it is of slower growth than the green Scotch Fir, and is less vigorous. One can understand that “W.’s” chance seedling in a mixed wood would be drawn up with the rest, or it would soon cease to exist. It would naturally keep pace with its neighbours as regards height, but at the same time would perhaps be a wretched tree. Again, being a seedling never transplanted is very different from the Golden Scotch Firs from nurseries, which are grafted plants, so that it is not a case for comparison. It would be interesting to know the present height of the Churchill Scotch Fir, which “W.” presumes “is now standing and must be considerably over 30 feet high.” Perhaps it would be discovered that the Golden Fir had been crowded out by the survival of the fittest, for we all know that golden and variegated plants possess less vitality than green-leaved plants.—W. G.

The Japanese Privet is a valuable shrub for winter, being perfectly hardy, of neat spreading growth, very dwarf, and of a bright lively green colour. Its leaves are broader than those of other Privets, excepting, perhaps, *Ligustrum coriaceum* and *lucidum*, and they are quite smooth and glossy; 3 feet to 5 feet is its usual height, but by pruning it may be kept at 18 inches high, and yet not look formal. After midsummer it bears great spreading clusters of tiny white flowers. A most beautiful

lawn group could be made of the Eastern Privets alone, as they possess such a diversity of habit. For instance, by placing *L. sinense* at the tallest point in the group, one could carry an easy line down to the turf by planting *L. lucidum*, *ovalifolium*, and *japonicum*, while the dwarfest plant would be the singular little *L. coriaceum*, which makes dense tufts of the deepest green foliage. These would make a rich evergreen group, and it could be enlivened by a plant or two of the golden *L. ovalifolium* and other variegated forms. The Japanese Privet (*L. japonicum*) is also known under other names, *L. latifolium* and *Sieboldi* and *spicatum* being the chief synonyms.

Buddleia globosa.—Nowhere, perhaps, does this pretty and distinct-flowering shrub flourish half so well as along the western coast of our island. To see it, as we not unfrequently do, in some of the maritime gardens of Carnarvonshire, when fully a score of feet in height, half as much in spread of branch, and literally covered with its bright orange, honeycombed flowers, is a floral sight that it would be difficult to match. One plant in particular of this *Buddleia* that I could not help noticing the other day measured exactly 15 feet in height, with a well-furnished head of 4 yards in diameter. It was growing in good fine loam, by the side of a large Cypress tree, this, together with an entire circuit of other trees, offering the slight shelter that is so needful for bringing out to perfection the beauties of this Chilean plant. As a wall plant, too, the *Buddleia* is of particular value; indeed, we have always been impressed with the appearance of it when used as such, the globular heads of yellow flowers showing themselves to perfection against the dark-coloured stones, and in conjunction with the long dark green foliage with its distinct silvery tomentum underneath. There is another pretty species, *B. Lindleyana*, but as it cannot survive through even an ordinary English winter, although in warm maritime districts we have seen it doing well out of doors, it is rarely seen. The flowers are purplish red, and produced in terminal racemose spikes. *B. crispata* is another desirable and pretty member of the same family, hailing from the Himalayas, having conspicuously woolly leaves and lilac-brown fragrant flowers. We have propagated the *Buddleias* very successfully from well-ripened cuttings, inserted in sharp, sandy soil, during August and September. When fairly rooted the cuttings grow very rapidly, as much as 3 feet in length being added in one season to those planted in a northern exposure in our nursery grounds. Occasionally the unripened wood gets cut by frost, but this is no loss, as the *Buddleia* is improved by pruning and bears it well.—W.

The White Beam Tree (*Pyrus Aria*).—Most persons will readily admit that on the whole our woods in summer present too monotonous a repetition of varying shades of green, for few indeed are the trees or shrubs whose foliage can be considered as perfectly distinct from the general mass. One or two, such as the plant in question and the white Poplar, are, however, exceptions to this general rule, their foliage affording a very unusual and decided tint of an almost pure white, particularly on the under sides, and which renders them of much value for indiscriminate mixing with our general forest trees along the margins of woods and plantations. For park purposes the White Beam is of great value, and when planted in conspicuous positions on the woodland margins produces an effect that, in my opinion, at least, is quite unapproachable by any other hardy tree or shrub. But not only as a distinct foliaged tree is the White Beam of value, for as a fruit-bearer of the most desirable kind it has certainly few rivals, the big red checked berries being abundantly produced, and imparting to the tree when fully ripe a most pleasing effect, as well as contrasting strangely with the downy white foliage. These berries are by no means unpalatable. Then, again, another point in favour of this tree is that it is very readily raised from seed, for if the berries are collected when fully ripe, placed for a year in sand, and sown in fine sweet loam, the young plants come away rapidly and in

numbers, and in about three years afterwards, if their nursery management has been of the right kind, they are fit for planting out permanently. To see this tree in a shrub state, springing from some of the soilless chinks of the limestone rocks on the Orme's Head, and exposed to the full glare of the noonday sun, is apt to arouse one's suspicions as to how it exists or ekes out the bare necessities of life, for certainly the conditions are anything but what one would consider as favourable for plant growth. Two other rare plants are its companions, viz. *Cotoneaster vulgaris* and that sweet little *Helleboric*, *Epipactis ovalis*.—A. D. W.

The Butcher's Broom under trees.—Mr. Muir's praise of this native Evergreen (p. 106) is not extravagant, and one can picture to themselves the beauty of a dense growth of such a rich Evergreen under the shade of trees, but Mr. Muir does not state under what kind of trees the Butcher's Broom grows so well. Are they deciduous or evergreen, Oaks, Beeches, or what? This is most important to know, as it makes all the difference. It is not uncommon to find a dense undergrowth of Hollies in an Oak wood, but what Evergreen flourishes under Beeches? The only place I have seen the Butcher's Broom growing well under Beeches is in a garden at the foot of Box Hill, in Surrey, on the chalk, but this is a natural growth, and it is doubtful if one could successfully introduce even the Butcher's Broom under Beeches in localities where it is not indigenous. Mr. Muir's assertion that "there are several plants that grow under the shade and drip of trees" is somewhat vague, as my experience is that there are very few Evergreens that thrive under dense-headed trees, particularly Beeches. Perhaps Mr. Muir would kindly give us his list. He is quite right about the Butcher's Broom being a good shade plant, but his experience of it is different from mine when he asserts that it grows rapidly and spreads freely. I should call it a slow grower, and not one of the best plants to establish. It is not only under trees that the Butcher's Broom is a valuable shrub, but as a mass on an open lawn there are not many shrubs to equal it for winter effect, the green being so dark. It makes rather a formal-looking mass, by making it rise out of a growth of Ivy, or by planting near it a group of its relative, *R. Hypoglossum*, the stiffness is relieved. If any one, by the way, thinks of planting the Butcher's Broom, he should see that he gets the right plant, otherwise he will get the dwarf-trailing *R. Hypoglossum*, or double-leaved Butcher's Broom, as this plant was sent to me from a large northern nursery where I was assured it has also been grown and sold for Butcher's Broom, but it is very different and not half so valuable, besides being less hardy.

SHORT NOTES.—TREES AND SHRUBS.

The climbing Hydrangea.—This climbing Japanese shrub introduced a few years ago under the name of *Schizophragma hydrangeoides* has been renamed *Hydrangea volubilis*, as it is found to be strictly a *Hydrangea*, and the specific name *volubilis* is expressive of its climbing growth.

Abies bracteata has been badly injured by frosts this season at Kew. All the plants in the arboretum have their last year's shoots browned, if not killed. It is one of the Californian Silver Firs that are liable to injury from the wet and cold of our winters if planted far inland, but on account of its handsome and remarkable appearance, it is a valuable ornamental Conifer in mild localities.

Euonymus variegatus.—The white variegated *Euonymus* has been particularly bright all the winter. It is indeed the brightest of the family, and the silvery variegation in winter is even clearer than in summer. I have tried to grow it in the form of a bush in the open, and have trained it to walls in different aspects, but nowhere is it so bright as on a low wall with a north aspect. It does not make a handsome bush, owing to its growth being too straggling. This variety must not be confounded with the large-leaved variety with golden and white variegation. —SOMMERSET.

Carpenteria californica (p. 100). I should say that the hardiness of this fine shrub is beyond all doubt. This is the fifth winter in which I have had plants in the open ground, and I have never seen a leaf injured by the frost. My plants are not against a wall, but are in sheltered spots. Last autumn I planted out some young plants in more exposed places, and as yet they seem to be quite uninjured. I should like to know if it has seeded anywhere in England. Last year I had plenty of seed-pods, but not a single perfect

seed was formed.—HENRY N. ELLACOMBE, *Bilboa Vineyard, Gloucestershire.*

I fear I must not accept the credit given me in THE GARDEN (p. 100) for being the first to bloom this beautiful shrub, as I believe both Canon Ellacombe, in Gloucestershire, and Mr. Ewbank, in the Isle of Wight, had it in flower a year sooner. G. JERRELL, *Monstead, Godalming.*

MAGNOLIA GRANDIFLORA AND HALLEANA.

LET me recommend to "W." not only *M. Halleana* (which is a double form of *stellata*, so common in Japanese drawings, and of which there used to be a small plant at Coombe Wood), but *M. parviflora*. The *M. Halleana* was named after a Dr. Hall, who introduced it from Japan into America. I have grown it for years, and a more lovely plant does not exist for spring gardens. Belvoir should be full of it. I am going to surround my little plant (it never grows big) with *Pyrens Maulei*. In spring it is covered with white flowers resembling the double white Poet's *Narcissus*. *M. parviflora* I have introduced from America, but it is originally from Japan, and bears—flowering when quite a tiny plant—a deliciously scented, cream-coloured flower, with a dark centre about 4 inches across. One bloom scented the garden here last June. It is deciduous, and resembles another species, *M. hypoleuca*. *M. tripetala* I also have. It will flower when young, and grows into a big tree. It is American, and deciduous and perfectly hardy and manageable. The flower is about 10 inches across, creamy, like the *grandiflora*, only more spread out. *M. macrophylla* I also have, and it is American, and allied to *tripetala*, but not so easy to grow. The flowers are 1 foot across, and rather more double than *grandiflora*. It is, again, deciduous and summer-blooming, as are *hypoleuca*, *parviflora*, *tripetala*, and *glauca*. *M. Thompsoni* I have lost, having no peat or swamp for it. This is a lovely plant in the right place, and deliciously scented. It was raised at Fulham in 1804 from *glauca*, and I expect is a hybrid. *M. hypoleuca* I have. This is a superb summer-blooming species from the north island of Japan, and therefore quite hardy. Mr. Maries told me he saw forests of it intertwined with *Schizophragma hydrangeoides*. It is deciduous, and has creamy flowers.

Of the early-flowered kinds I have the rare *M. Thurberi*, but not bloomed it yet. *Yulan* and *purpurea* are too well known to want a description, but everyone who can should see the great *Yulan* at Waterer's nursery. It is the whitest variety, and fills the air with its silver cups, and litters the ground with its white wings. People sometimes will not plant these glorious trees because they make such a litter. *Magnolia Lenne* is perhaps the noblest of this class, while *Soulangeana nigra* is the most remarkable and distinct. *Magnolia Campbelli*, the finest of all, has not yet flowered in England, though it has in Ireland. It has proved perfectly hardy. There are still other species to be introduced from Japan, notably a flower with its outer petals deep purple, and its inner ones white. If anyone gets seed of the spring-flowering *Magnolias* I should like to have some. All these *Magnolias* are, as yet, quite small plants.

FRANK MILLS.
Shirchampton, Bristol.

The Sweet Fern shrub (*Comptonia asplenifolia*)—This pretty fragrant bush is only neglected because not known. It combines elegance of growth and sweet perfume in a way that no other shrub does. It grows about a yard high, and grows to perfection even in the poorest soils; in fact, it is a native of the dry hill-sides throughout the Eastern United States, from Georgia to as far south as Carolina. It is a deciduous shrub, the foliage being cut so as to resemble a Fern frond. When young they are of a bright cheerful green but as they get older they get duller. The bark of the shoots, too, changes colour, and when old are of a rich reddish brown. The branches hang gracefully on all sides, and the whole plant gives out a pleasant spicy perfume, especially when the leaves are crushed. It is a plant that

one should have a mass of near the house, in association with other sweet-smelling plants like Lavender, Rosemary, Sweet Brier, Sweet Gale, and the like.—W. G.

KITCHEN GARDEN.

W. WILDSMITH.

ROTATION OF CROPS.

LITTLE scientific knowledge is necessary to a full belief in the importance of repeated changes of ground for kitchen garden crops, but to fully carry out a regular systematic rotation is more difficult than many imagine. For at least eighteen years I have striven to keep to the plan, and for just as many years I have failed, but, in justice to myself, think it right to add that the reason of failure has been that greater supplies have been demanded than the limited extent of ground warranted; consequently, cropping the same ground twice and often thrice in a year has to be done, and thus all our correct notions as to rotation have to be set down as nearly a blank; not quite, as, for instance, on no consideration do we plant Cabbage on a plot where there has been Cabbage or its kindred, the Broccoli, Kales, and Cauliflowers, immediately preceding it; and the same in respect to roots, as, for instance, Carrots never follow Parsnips, and *vice versa*. Onions, Leeks, Celery, and Lettuce are more accommodating, and if the ground is well tilled, these may be kept to the same ground for several successive years without any apparent deterioration. But, for all that, I would always advise their being changed when practicable. In places where there is plenty of ground to meet required supplies, a regular system of rotation cropping is an easy matter, and should be scrupulously adhered to, as being not only the proper method, but economical also, inasmuch as one manuring will on an average serve for two main crops, as, for instance, a good manurial dressing applied for Onions would do well if deeply dug for Carrots, Parsnips, or Beet: or, again, the dressing required for Celery makes the best of all preparation for the main crop of Potatoes the year following. The foregoing notes are the result of a reference to my kitchen garden notes for February of last year, in which there is a note as to the difficulty of finding a more suitable plot of ground for Onions than the one so occupied the year previous, and which, as it happened, had not, contrary to our usual practice, been cropped with Cabbage; having been trenched and manured, it was at once available, and was so cropped, with good results, but not quite up to the usual standard, though, according to the pains taken in the preparation of the ground, the crop ought to have been better, a circumstance that scores a black mark against successive cropping with the same kind of vegetables.

New kinds of Potatoes.—I have raised some really first-class kinds of Potatoes and have good reason to be gratified with my success in that direction. When a writer declares, as "E. T. G." does (p. 57), that there is no Potato which can at all compare with the Regent, what good is it to waste pen and ink in trying to enlighten him? However, for the benefit of others I may say that in my opinion *Harvester*, *The Dean*, *Prime Minister*, *Fidler's Prolific*, *Prizetaker*, *Reading Russet*, *Standwell*, *Early Regent*, *Sutton's Seedling*, *Abundance*, and *Edgecot Seedling* are a few, and but a few, amongst many that are really first-class cooking Potatoes, and generally much better and safer croppers than the Regent.—A. D.

White Elephant Potato.—For some time after *White Elephant* came out, owing to unfavourable reports from people who had grown it, I fought shy of it; but now, after two years' trial on a small scale, I have reason to regard it as a good variety, and intend to grow more of it in future. Our main crop Potatoes for some seasons past have been *Schoolmaster* and *Magnum Bonum*; of these two sorts *Schoolmaster* is decidedly the best in our stiff soil

(near London), and as a cropper it is almost equal to Magnum Bonum. Reading Russet and Vicar of Laleham are sorts well worth a trial. Milsummer Kidney is a handsome early Potato of good quality.—E. B. L.

POTATO CULTURE.

SEED POTATOES.—Hitherto, except among early kinds, there has not been much growth, but since a change in the weather has come Potatoes stored in bulk are pushing rapidly. The best way to manage all seed Potatoes is to place them in shallow trays, or baskets, crown upwards, and, as far as is possible, bring them into the light. Potatoes laid in heaps will ferment, as it is in the nature of all vegetable substances when in bulk to generate heat if left long undisturbed, but if the seed Potatoes, where it is not possible to spread them out in single layers, were turned over weekly with a barn shovel, this tendency to grow out will be materially checked, and when at last growth does come the shoots would be strong and need not be rubbed off.

TABLE POTATOES.—Considering the number of varieties in cultivation, the number of kinds that are good on the table is very limited. No doubt a good deal of this dissatisfaction with some of the popular exhibition kinds arises from cultural conditions. The high-bred varieties want peculiar treatment. They, or at least some of them, are the outcome of special conditions and circumstances, and when these are absent, they are close, waxy and useless. Except on the best Potato lands, I am doubtful if any grower could honestly recommend half a dozen good profitable table Potatoes that are always reliable. The Ashleafs are always good in the early part of the season—the old Ashleaf for first crop succeeded by Myatt's prolific. Earliest of All, a variety sent out by Messrs. Carter, I believe, is a good early kind and produces an excellent crop. After the first and second earlies I cannot find anything to beat the Regents and Schoolmaster, which seems to have some of the good qualities of the Regent, and is at the same time more vigorous and a better cropper, and will keep in usable condition longer. At the present time (January 20) I do not know any kind better for table than Schoolmaster, and it will be in condition for some time longer, and, taking into consideration the reports which I have heard from various districts, that for general use from August till March there is no Potato which has so many good points on all kinds of soil as the Schoolmaster. As regards a very late Potato, I have tried a good many kinds in my anxiety to get hold of a good one. The Magnum Bonum crops well everywhere, but its quality is only good on suitable land. It is a profitable Potato to grow, but I have never seen it so good as Schoolmaster on the table. Reading Hero I have had very good, and I have also had it very inferior. Soil and season affect its condition much. Perhaps, on the whole, there is no better late Potato under all circumstances than the Scotch Champion, but in many districts where it was formerly grown largely it has been discarded, because it did not succeed so well as formerly, and it is evidently on the wane. Frequent change of seed direct from Scotland should be carried out by all who wish to continue its culture.

MANURING POTATOES.—Here, again, the condition of the soil should be taken into consideration, but a well-blended compost made up of such ingredients as wood ashes, charred refuse, old decayed turf, and well decomposed yard manure placed in the drills with the sets will have a good effect upon the crop. I may say in passing, it is worse than useless to plant any but early and second early kinds upon heavy land, though the Schoolmaster succeeds better than any other main crop Potato I am acquainted with in such land. In a general way it pays to use a little artificial manure for Potatoes, either placed in the drills at the rate of 4 cwt. or 5 cwt. per acre, or used as a top-dressing after the Potatoes are up, just before they are moulded up. The manures most com-

monly used in this district are superphosphate, and heavy dressings are sometimes used. For poor land a dressing of guano and nitrate of soda at the rate of 2½ cwt. of each per acre has produced beneficial results. It is best applied as a top-dressing as soon as the plants are up, when it can be hoed in. I would rather plant medium-sized whole sets than cut large Potatoes, though I freely admit that the central eye from a large Potato does produce a strong stem and a good crop of even-sized tubers, but there is a great waste in planting a large Potato for its one strong eye in the crown. Small or inferior sets should not be planted at all, as their continued use has a deteriorating effect upon the stock.

PREPARATION OF THE LAND.—The more the soil is opened up at this season the better condition it will be in, always supposing that frozen soil is not turned in, and that the land should not be worked or trampled when covered with snow or saturated with rain. The planting should take place when the surface is dry and has been mellowed by exposure to the atmosphere. The distance left between the rows, especially for the vigorous growing kinds, is often too small for the best results. I do not think any main crop Potato should have less than 3 feet between the rows, and in the case of the vigorous kinds 4 feet will be better, and it is an advantage to have the rows run north and south, so that the sun may shine on both sides of the ridge with equal power.

E. HUBBAY.

EARLY AND MAIN-CROP PEAS.

WHAT is the earliest Pea? Among the notes I made last summer, the very earliest was one named somewhat appropriately Earliest of All, and it is evidently a precocious selection from the Sangster's No. 1 type. But Sutton's Emerald Gem ran it very closely indeed, and by some it is considered the earlier of the two. Almost equal in point of time was Selected Extra Early, also one of the Sangster's No. 1 type. But anyone who can lay hold of William the Second (not William the First) will have a first class early Pea, bearing freely fine large green pods, and not more than 3 feet in height. I do not know who sent it out, but gardeners should make a note of it. Next in order of time came American Wonder and Maclean's Early Gem—Peas that are of very dwarf growth, and very useful for small gardens, and these are only a very few days behind the others.

Surpass William the First is one of Mr. H. Eckford's Peas, taller in growth and three days earlier than William the First, a rare cropper, and not quite so curved in the pod. A variety called Special Early was one day later than the preceding, and not so good in the pod. One named Extra Early is of tall growth, and may be termed an early *Ne Plus Ultra*, large, handsome pods, and a great cropper—an early exhibition variety that should be noted by those who grow Peas for early shows in July. Day's Early Sunrise is often recommended as a first early, but it is a mistake to say this much of it; it is really a second early variety only, but very useful, as it produces good pods, is a great cropper, and is not more than 3 feet in height. I was much pleased with a dwarf variety named Chelsea Gem, 18 inches to 2 feet, white pods, a good cropper, the pods slightly curved; also a very useful variety for early exhibitions. Dickson's Favourite should be noted as a good market gardener's Pea, because it is such a heavy cropper; but it should have sticks to do it justice. Essex Rival is also a heavy cropper, a good early Pea for amateurs' small gardens; and Gladiator must be mentioned as a very promising second early variety, one that should be grown for early July exhibitions, 2½ feet to 3 feet in height, long pointed, green pods, good, sturdy habit of growth, and a great cropper. John Bull is also a vigorous grower, with a good branching habit, 3 feet, and bears large white pods. President Garfield is a fine robust-growing variety, producing large white pods, a little taller in growth than John Bull, and an excellent cropper. It is a variety well worth attention, and without in any way derogating from its merits, may be taken as representing a very fine selection from Veitch's Perfection. Dr. Hogg has fine white curved pods; it grows

from 3 feet to 4 feet, and as it was fit to gather on June 30 last season, it is a valuable variety for early exhibitions. Like some others of Mr. Laxton's raising, it is of a mixed character, some of the pods being white and some green. That Culverwell's Giant Marrow is a fine-looking Pea, there can be no doubt; it grows to a height of from 4½ feet to 5 feet, and produces large, white, pointed pods, but they do not sometimes fill out so well as could be desired. Sturdy is a capital Pea for small gardens; it grows to a height of 2½ feet; the pods are not large, but they are very freely produced, and it may be set down as an abundant bearer. Unique is a dwarf and somewhat early variety, not getting beyond 12 inches to 18 inches in height, and bears medium-sized white pods that fill well. Marvel is a very robust grower, 2½ feet in height, large, long-pointed pods, white; a good exhibition variety. Another good Pea for small gardens is Magnet, 2 feet, bears whitish green pods, that fill well; an excellent cropper and a capital amateur's and cottager's Pea. Huntingdonian and Champion of England are alike; I have no doubt that originally the former was a selection from the latter, and there is no doubt but that Champion of England, when represented by a fine selected stock, is a capital garden and market variety. Fillbasket is a dwarf Pea, 2½ feet to 3 feet, a great cropper, and bears curved white pods, and it may be taken as representing a fine selection from the old Scimitar, so popular thirty years ago. Telephone, round, and Telegraph, wrinkled, are two Peas that, it is said, came out of the same pod, but the former has white, and the latter green pods, and not quite so large; of the two, Telephone has come to be most grown both for garden and exhibition purposes. It is an excellent variety for early shows in July. Sharp's Triumph grows to a height of 2½ feet, and has long white pods slightly curved; it is also a capital exhibition Pea. A new variety named Cowell's Marrow is rather tall—1½ feet—and bears large, long, white pointed pods; it is an excellent cropper, and in all respects a first-class Pea, and especially so as a table variety. Sensation has large pointed pods, a good cropper, and grows to a height of 4½ feet. Proligity is a tall growing Pea, fully 5 feet, bearing large, green pointed pods, and is a fine and good looking variety, and should, I think, be found an excellent main-crop variety for large gardens. Chancellor is dwarf growing, not more than 2½ feet, and bears large white pods. Wordsley Marrow is a very prolific variety, with small green pods very abundantly produced.

I have no hesitation in naming the following varieties as well adapted for garden culture and show purposes, viz., Surpass William the First, Gladiator, President Garfield, Dr. Hogg, Marvel, Telephone, and Cowell's Marrow. And to have fine exhibition pods, let the Peas be sown thinly—at least a foot apart—in deep rich soil, and when five or six trusses of bloom are produced and have set the pods, the tops should be pinched out, so that the whole vigour of the plant can go to the production of large, handsome, well-filled, and well-finished pods. The plants must be supported, and the pods should not be allowed to drop near the ground, where they are in danger of being splashed by the soil thrown up by heavy rains.

I find great differences among judges of Peas. I have met with some who will pass over all the white-podded varieties and give the preference to those with green pods, giving play to prejudice rather than to proper judgment, and acting unjustly in consequence. Some have a *penchant* for particular varieties, and go for them, to the exclusion of all others; and when their ruling is objected to on the ground that the rejected pods are, in some instances, better and more finished, shelter themselves under the assumption that they went for flavour. I think that flavour is often made a hobby of too pronounced a character, especially as I find great difference of opinion prevailing as to what constitutes fine flavour in Peas. Some prefer sweet, soft, melting Peas; others, those that are of a firmer texture and more mealy character. I care not whether the pods are green or white, and if, say, thirty or fifty are shown in a dish, I require that they be large, according to the sort, handsome, even in appearance, well filled,

and with that nice fresh appearance that denotes fitness for table; and, above all, I like to see a bloom upon them, which testifies to good cultivation.

R. D.

EARLY VEGETABLES.

In order to obtain these as early as possible in the open air, three conditions are necessary, viz., a southern aspect, a dry, warm soil, and some temporary shelter. In some gardens there are narrow borders in front of the glasshouses, which are the best possible positions for early Potatoes, French Beans, Horn Carrots, dwarf Peas, &c. It is a very easy matter to make the soil in such borders deep, and to lay the surface at such an inclination as will catch all the rays of the sun. The next best position for early crops is at the foot of a south wall, and the nearer the plants can be placed to the wall the better. A row of dwarf Peas placed parallel with the wall, and about 6 inches or 8 inches from it, will be much earlier than if away from its shelter. Potatoes, Lettuces, Cauliflowers, and French Beans will profit in like manner from contiguity to the wall's friendly surface. A thick hedge is not a bad substitute for a wall, so far as mere shelter goes, but the hedge does not absorb heat from the sun's rays during the day and give it off again at night, and, therefore, to that extent the hedge is inferior to the wall. A Reed or a board fence, blackened with a coat of tar, forms a very good back to an early vegetable border. And if the surface of the border inclines abruptly to the south, the position will be warm and early. A garden provided with a ridge of this character, backed by a hedge or a temporary screen, should not be deficient in early vegetables. Of course the soil must be deep and as good as it is possible to make it, but composts are better than raw manure. Very often during our springs there are periods of cold weather when even all the advantages I have named might be supplemented with some temporary shelter. A covering of netting, such as is commonly used to protect seeds and fruit from the depredations of birds, has a very great protective effect in warding off spring frosts and breaking up cold currents. The thin covering of netting, drawn tightly over a bed of early Lettuces, Cabbages, Cauliflowers, or dwarf Peas, 18 inches or so above the plants, does not seem to shelter them much, but one has only to watch the progress of the plants so sheltered, and compare them with others near which are uncovered, to be convinced of the value of even the thinnest covering from the end of February through the spring. It may be advisable in the case of special crops to introduce a little bottom-heat in the shape of stable manure, placed in the border in sufficient bulk to ferment. A space 6 feet or so square, excavated 2 feet deep, filled with warm stable manure, and covered with 8 inches of free-working mellow soil, will produce a good many Early Horn Carrots, Radishes, &c.; but for such beds either straw covers or oiled calico, tacked on light frames, should be provided. Of course, glass would be better still, but I was thinking only of the early crops which come on in succession to those grown under glass, and in the majority of gardens only a limited amount of glass can be devoted to vegetable forcing, owing to the demand for flowers, &c., which has to be met.

E. HOBDAV.

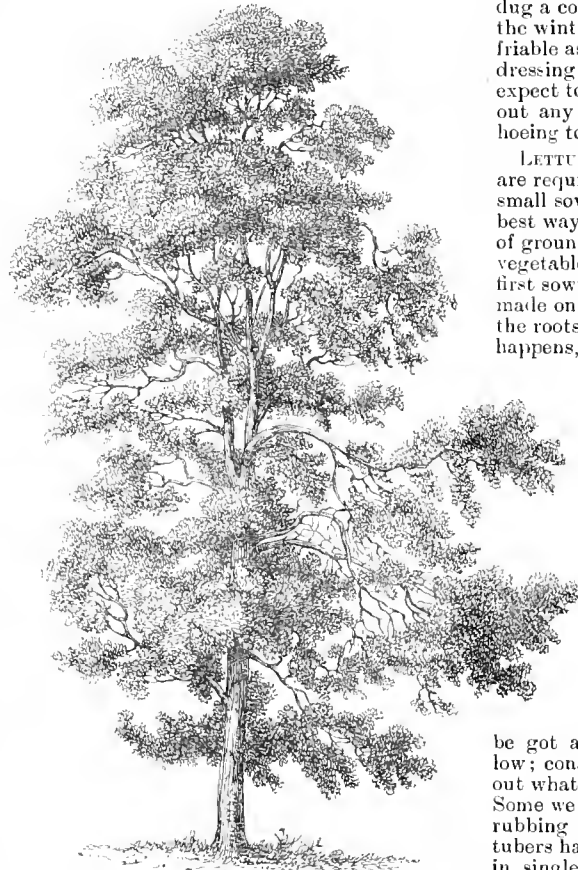
SHORT NOTES.—KITCHEN.

Chou de Burghley.—"F. R. H. S." has undoubtedly got this Cabbage. If sown under glass in March it brings good heads in October, which last through the winter. Chou de Burghley, unlike other Cabbages, never cracks. If another sowing is made in the first week in May, the produce will be ready for use in February and will last until ordinary Cabbages come in. It is dressed for table exactly in the same way as other green vegetables, but its flavour is superior to that of all Cabbages.—THE RADISH.

Possin Lettuce.—This is catalogued by Messrs. Vitch, of Exeter, but apparently the variety is not much in demand. It is, nevertheless, an excellent sort for standing drought. Three years ago it stood firm in the month of August, when other varieties alongside of it had bolted.—A. H.

KITCHEN GARDEN NOTES.

PARSNIPS.—Sowing these early is a point of the greatest importance, and, given favourable conditions as to soil, the end of January is none too early. Fortunately, Parsnips are very hardy, and severe frost does not harm the small seedlings a bit. Depth of soil rather than undue fertility of it should be aimed at, as it conduces to the descent of the main roots in straight form; whereas in a rich soil, and particularly if it has been recently manured, strong roots form in every direction, and the produce, though possibly of greater bulk, is ill-shaped and cuts greatly to waste in the dressing. A sandy loam is the perfection of soil for Parsnips, and the best fertilisers soot and burnt wood ash. In stiff, heavy soils the roots do wonderfully well when once they have got a fair start, and the first preliminary to that end is to prepare a good seed bed. Such land will not for some time be in a fit condition for sowing, but as soon as it will bear to be trodden upon, draw wide drills to a depth of 4 inches and



The American Pitch Pine (*P. rigida*) in England. (See p. 128.)

18 inches apart, and strew thickly in them a mixture of fine dry soil with leaf-mould and wood ashes added; on this sow the seed thinly, and fill in with the same light soil; press down the soil with the back of the rake and the work is complete. The same distance apart of drills meets the requirements of naturally dry soil, and the soil for the seed drills in that case need not be of an artificial description. The Student is the only variety we grow, being handsome and finer grained in flesh, though not a bit better in quality than the Hollow-crowned and Guernsey varieties.

ONIONS.—Our ground now works nicely, and the first bit of kitchen garden planting has been done to day (Jan. 29). Autumn sown Onions being much too thick, have been thinned out to 4 inches apart, and the thinnings planted at the same distance in rows 15 inches apart. We plant with small dibbers, and only sufficiently deep to ensure the plants being firm in the ground. In

the rows thinned, we found it necessary to draw a little soil to the Onions, and well firm them to keep them upright. A thick dusting over with soot was afterwards applied to the whole plot, with a view to prevent an attack of grub rather than as a fertiliser, of which, however, it is one of the very best. The main crop of spring-sown Onions we like to get in by the middle of February. The ground is now being prepared by levelling it down with a coarse rake and picking off the largest stones; a dressing of burnt wood-ash and soot will then be given, and afterwards the final rake over preparatory to drawing the drills at distances apart of 15 inches. We sow but thinly, and so lessen the labour of thinning out the seedlings. Thin seeding implies the greater need for care in covering in the seed, which we do by hand. Rolling or beating down of the ground is not needed; indeed the practice is injurious unless the soil be exceptionally dry on the surface. The ground selected is the Carrot ground of last year, which as soon as the crop was lifted in November had a good dressing of farmyard manure, and was dug a couple of spits deep, and left rough during the winter, and the frost and snow have made it as friable as the best potting soil, so that with the dressing of soot and ash, as above named, we expect to have an extra fine crop of Onions, without any further labour beyond thinning out and hoeing to keep down weeds.

LETTUCE, RADISH, AND EARLY CARROTS.—These are required in quantity in all gardens, and as small sowings of each at frequent intervals is the best way of continuing the supply, any small plots of ground that are comparatively useless for other vegetables can be made available for them. Our first sowing of Lettuce and Radish has just been made on a narrow fruit-tree border, that as yet the roots do not wholly monopolise; soon as this happens, our veneration for the full rights of the fruit trees to the whole border hinders all further vegetable cropping. Paris White Cos Lettuce, Early French Breakfast Radish and Early Nantes Carrot are the kinds now sown, and the latter is on a narrow border facing west, which is destined for next winter's supply of Parsley, to be sown as soon as the crop of Carrots is exhausted. The sowing we do very thinly in drills 9 inches apart, and thinning out is then unnecessary till it can be done by drawing them for use.

ROOT STORES.—Potatoes are of the first importance. We prefer to winter them in cellars or dark frost-proof sheds; they can then the more conveniently be got at in all weathers. Our stock is getting low; consequently there is ample room to spread out what remains to prevent premature sprouting. Some we find already manifest that tendency, and rubbing off must be done forthwith. The seed tubers have for some time past been laid on shelves in single file, and only the first early varieties show any signs of sprouting, a circumstance that shows the value of laying the sets out in this fashion, as some of the self-same varieties that have been stored in heaps have sprouts a couple of inches in length. Beetroot we have this season stored in Cocoa fibre, and it has kept perfectly, being as fresh and highly flavoured as if just lifted from the ground, and there has been no decay whatever. Carrots were got in dry and built up in heaps without any material between them, and they have also kept better than when we stored them in sand, dry soil, or leaf-mould, all of which seemed to assist decay, probably, I think, because small rootlets formed in the various materials, and consequently growth was excited, which, occurring under the artificial conditions of darkness and a confined atmosphere, tended to decay, a recurrence that the experience of the present season will prevent in the future. Parsnips we always winter in the ground, but as soon as the tops start into renewed growth, we lift and stack them up in a frost-proof shed. This must be done at once, as the recent mild weather has excited growth and

the roots get tough, or what is called stringy, if left in the ground after this. The remainder of the roots of Salsify and Scorzonera are rendered comparatively valueless by the supply of Seakale and Asparagus. Moreover, they, like Parsnips, get tough as soon as renewed growth begins, which, though we had them stored dry like Carrots, is really the case; hence, what remains will be thrown away. A dry store-room is essential to good and long preservation of Onions, and they must never be laid thickly together, or decay is certain. If shelf space for single layers is not at command, they ought to be tied in the old-fashioned way on strings, to hang up in any dry, airy place. We are fortunate in having an excellent store-room for them, and by taking the precaution to have them well harvested—dried—before housing, it is seldom we have to pick out a bad bulb or are troubled with premature growth.

COTTAGER'S KALE.

From the time that has elapsed since this vegetable was first brought under public notice, one might have supposed that it would have been more generally cultivated than it is. When first distributed it received a high character, not only for free growth, great weight of crop from the ground occupied, hardness, enabling it to withstand the severest winters, but, above all, for fine flavour. This high character has been fully borne out, and still we find numbers of gardens in which this, the best Kale in existence, is not grown, and the place in which it should be found occupied by Scotch Kales, which are much inferior to it in flavour, and not superior in their power to withstand severe frost. The first season in which it was distributed I grew it; but at the time of planting I noticed that there was a considerable difference in the plants, some being green in the stems like ordinary Kale, others having more or less of a purplish tinge. I at once concluded that the seed had not been carefully sved; that is, the seed plants had been, when in flower, growing too near some other of the Brassica family in bloom. Subsequent experience proved that in this I was mistaken. In planting, the green plants were put on a separate plot from the purple ones, but were treated in every way in a similar manner. In any plant essentially of a decorative character, novelty of some distinctive kind is a sufficient warrant for its cultivation. Not so with a culinary vegetable, the legitimate use of which is to be eaten. Consequently, I submitted this Kale to the test to which, with me, new vegetables were always subjected, viz. comparison when cooked with the best established variety that admitted of being tested with the new comer. On that occasion, late in the autumn, I had Brussels Sprouts, Walcheren Broccoli, and the purple and green varieties of the Kale cooked separately; also the two forms of the Kale cooked together. The verdict of myself and several friends was, that the green form was very much inferior to the Brussels Sprouts both in flavour and texture, being tough and stringy, and that, when cooked with the purple, completely destroyed the flavour of the latter, as well as gave the whole a disagreeably strong character. This mixture of the purple and green forms has doubtless had the effect of depreciating the value of this vegetable, for the purple, when cooked separately, was as different as could be, being as tender as Spinach, with a flavour more like that of Walcheren Broccoli than the Sprouts, the latter only surpassing it in appearance. From that time I have always grown this Kale as a crop to succeed Brussels Sprouts, giving up the Scotch Kales altogether, except a dwarf variety that is the latest of all in running to flower, and which bridges over the time from the end of the winter greens until the first early Cabbage comes in. From the impression I had first formed respecting the seed plants being improperly managed, I determined to save my own, selecting nothing but purple-stemmed plants; I kept them completely away from any other of the Brassica family, and, when in bloom, carefully covered them with hexagon netting, that effectually excluded bees and flies, yet the seed from these purple plants so treated produced as many green plants as of the colour wanted.

The practice I have followed from that time has been simply in planting to reject all green plants, only

using such as had the unmistakable purple tinge in the stems. To secure a full, heavy crop it is not necessary to sow the seed as early as in the case of Brussels Sprouts, yet it should be in the ground by the middle of April. The land should be well prepared by a good dressing of manure, dug in not too deeply, for this, like all others of the Cabbage tribe, is a surface-rooter; and, although all the family prefer a heavy, strong soil, still it should always be well pulverised, so that the roots can extend in all directions without the obstruction of big, hard, unbroken lumps, that alike offer resistance and afford little nutriment to the tender feeding rootlets. An opinion sometimes exists that in the preparation of ground for culinary vegetables, if a sufficient quantity of manure is dug into the soil within the distance that the roots of the intended crop will extend, this is all that is required. Such is by no means the case. The limited season that most culinary vegetables have in which to arrive at maturity necessitates the whole of their manurial food being evenly dispersed through the soil in which their roots extend; so that, from the day the young plant appears above ground until it is fit for the cook, it may have had all along a continuous supply of the necessary food. This cannot happen unless the manure is evenly dispersed through the soil, which is an impossibility, unless, in digging, the ground is broken sufficiently fine, so as to admit of the equal dispersion of the manure. This, as will be obvious, is of less importance in the case of any plant that requires years to come to maturity. If space can be spared, the plants may be at once put out from the seed-bed when large enough to handle, or they may be pricked out about 9 inches asunder, until some other crop is cleared off to make way for them. A few words respecting this preparatory process may not be out of place. The freest-rooting plants in existence have need of all the roots they make; consequently, in transplanting even so common a vegetable as a Cabbage, it is essential to prescribe as many of the roots free from mutilation as possible; yet how often are these and other plants treated as if their roots were of little or no importance. As regularly as the seasons come round there is the recurring lament over Lettuce prematurely running to seed; Celery and similar things bolting. Can it be wondered at when, in taking up for re-planting they are simply dragged out of the ground like weeds, three-fourths of their roots being ruthlessly torn off? Of the bad results arising from this barbarous work it is difficult to speak too forcibly. The necessity of using a trowel when planting, or of loosening the plants with a fork, so as to retain all the roots possible, may be insisted on, and yet not be always carried out by one's workmen. If anyone is doubtful as to the effect it has upon the crop ultimately, he may be convinced by simply noting the difference there will be all through the after-growth of any given crop, a portion of which is removed with all their roots intact, as compared with another portion torn up weed-fashion.

In preparing a nursery bed for this Kale, and all its congeners, the surface on which the soil is placed should be composed of as hard a material as can be got, so that the roots of the plants cannot penetrate it; and the 6 inches or 8 inches of soil placed thereon, in which they are pricked out, should be thoroughly pulverised before the plants are put in, so that when removed they will come away with nearly all their roots entire. The plants in the nursery bed should never be overcrowded—9 inches each way is a good distance; when they are well cared for, and assisted with water when they require it, good crops can be obtained, even when they are removed to their ultimate destination in the garden later in the season by some weeks than would be of any use attempting with badly prepared plants. This is an advantage, more especially where space is limited. Cottager's Kale, like all other vegetables intended to stand the winter, should not be planted too thickly; the weakening influences of overcrowding show themselves, and render plants unable to resist an amount of cold that they would have withstood without injury, if they had had room sufficient for light and air to give them their wonted strength. If the plants are put out in the quarters where they are to remain as early in the spring as they are large enough to handle, they should be planted 2 feet asunder in the rows, and the rows should be 2 feet 6 inches apart; if

planted later in the season from the nursery bed 2 feet each way will be sufficient. T. B.

RAISING CUCUMBER PLANTS.

The best way of raising plants is certainly in a manure frame or pit. A one-light frame is generally sufficient for the purpose, and care must be taken that the hot manure be perfectly sweet, and the bed of sufficient capacity to ensure a fine growing temperature for a month or six weeks from the time of sowing the seed. For this purpose a mixture of manure and leaves is preferable to manure alone, for they are less likely to heat violently, and consequently they retain the necessary temperature for a longer period. The bed being formed and the frame fixed in its place, it will be necessary to wash the glass perfectly clean, so as to command all the light possible. Then fill the frame to half its depth with sifted leaf mould, old tan, or cinder ashes, and as soon as that has attained the proper temperature, 80° to 85°, it will be fit for use. The seed should be sown in a pot of light soil, say loam and leaf-mould in equal proportions. Plunge the pot in the bed and cover it with flat glass, partly to increase the temperature, but more to protect the seed from the deprivations of mice or other vermin. In three or four days, according to the age, the seed will be up, and then it will be necessary to raise the plants to within a few inches of the glass, and to keep, night and day, a gentle circulation of air. The temperature should not fall much below 70°, and may rise to 80°, with bright light and plenty of air. In raising plants it is always desirable to keep them as short and strong as possible, and this cannot be effected except by a free exposure to light and an equally free exposure to air. When the seed-leaves have attained their full size will be the right time to single the plants out and place them in separate pots. For this purpose some warmed compost and clean warmed pots must be provided, and one or two plants, according to the kind, must be placed in each pot. Drain each pot with a little Moss and some flaky leaf soil, so that it may not be necessary to remove it at the time of planting. After the plants are potted they may be plunged in the frame, watered, and kept close for a day or two, shading them also should the weather be very sunny. So soon, however, as the plants have taken root, increase the quantity of air, and keep a gentle circulation by night as well as by day. When three weeks to a month old the plants will be fit to ridge out, but if the bed should not be ready they may be shifted into larger pots with advantage. Be particular that they do not receive any check, as upon that much of the future success of the plants will depend. C.

MARKET GARDEN NOTES.

EARLY PEAS.—The first sowings of these have been made during the past week, the drier soils being in excellent order for the purpose; whilst some growers still draw their drills with hoe and line 2 feet apart, others use the horse drill, sowing in rows only 18 inches apart, but, of course, much more thinly and evenly. Generally the weight of seed sown per acre—about 2½ bushels—is the same in each case, but with the drill the seeds lie less deep, and, whilst sooner up, are also in greater danger from birds. The chief sorts are Sangster's Improved No. 1, a good stock of an old kind, and William the First, the former for the first gathering. These sowings follow chiefly after autumn Broccoli, early Coleworts, or Turnips, or where winter Spinach has failed.

WINTER SPINACH has been a singular failure this winter, arising from some unknown cause, but apparently from a kind of fungus. The plants, when fairly strong in the autumn, showed evidences of decay in the stems at the base of the leaves, the parts turning brown and quite soft. As a consequence, the plants disappeared rapidly, and many acres were soon left almost without a plant to be seen. Such a misfortune has greatly helped to promote market growers' difficulties, as, on the

whole, Spinach I as usually proved to be a reliable and a profitable crop. Some growers have held that the soil is Spinach-sick; others, that the ground is too full of manure; and others, that the plants suffered from exceptional rains at a critical moment. The mischief was done too late for remedy the same season.

HEARTED CABBAGES—These have suffered so much from frost and snow, that large breadths of what otherwise might have been profitable heads are now half rotten, and smell most unpleasantly. That is but another sample of the uncertainties which hang over market gardening. Sheep are not plentiful in this locality, Middlesex not being an agricultural county, but if a flock of these useful animals could be folded over these Cabbages, they would in feeding on them admirably manure the soil. Failing that, there seems no other resource but to cut the heads to pieces and plough or dig them in as manure, and certainly Potatoes will thrive admirably upon a green crop turned in as manure. Still, the market grower prefers to sell his crops and take home manure.

POTATOES.—Even for such an easily satisfied crop as Potatoes, it is evident that much of the ground is getting overdosed with manure, because the market grower, who works so much by rule of thumb, seldom employs any other than animal manure, and perhaps soot—an excellent thing, but lacking these elements which kainit, superphosphate, &c., give. The ground now being cleared of later Coleworts, and Turnips will soon be planted with early Potatoes, chiefly Beauty of Hebron, now the favourite early kind. The White Beauty is not so well known as it deserves, but without doubt it will be the favourite in a few years. Growers for market, because of the conservatism of the dealing trade, are very chary of changing old for new kinds.

SEAKALE—This root is not grown very largely below the Twickenham boundary, as it needs a rich, deep-holding soil, but it will eventually become more widely grown as the builder covers the soil Fulham way. It follows as a capital crop on soil somewhat overdone by Celery, but which has been deeply worked. Seed sown early in April in rows 2 feet apart will in such case give very strong roots the first season, and in less favoured soils really first-rate planting roots. Of course, the seedlings should be well thinned to 6 inches apart at least, and even wider, if intending to become strong; whilst yet young, where largely grown for the production of forcing roots, the weaker ones left are being trenched out, trimmed to lengths of about 6 inches, and laid in temporarily until the soil is dry enough to dig deeply, then they will be dibbled out at roomy intervals and will make fine roots by the winter.

RHUBARB—Old plantations of this useful root are being trenched out gradually, the roots clamped in sheds or cart-houses, or surrounded by hurdles and straw, and thus induced to make early stalks. Early Potatoes follow, helping during the season's cultivation to make the ground cleaner and fitted for other crops. Rhubarb invariably induces the growth of Couch or Twitch Grass, which it seems impossible to fully eradicate, even with all care. Although, no doubt, seedling Rhubarb plants would prove the more robust and profitable, and are very easily raised, yet there is some uncertainty as to their proving true; hence it is found safer to cut up and replant crowns from the forced roots, as in the second year these give an abundance of stalks, and usually break up rather the earlier for the previous forcing. When a moderate breadth of old roots is thus treated annually, an ample stock of clean ones is always maintained.

A. D.

Cinerarias.—From Mr. B. S. Williams come blooms of these, rich and varied in colour, round and smooth in outline, and large without being coarse; evidently a good strain.

BOOKS RECEIVED.

Industrial Insects.—Robert Denn's. Murray, Albemarle Street, London.

SOCIETIES.

ROYAL HORTICULTURAL.

THE annual report for 1886 to be submitted to the anniversary meeting on Tuesday next has just reached us, and from it we extract the following: The council have been for a long time anxiously considering the arrangements which have now to be entered into, in order to enable the society to carry on the useful work on which it has been engaged during nearly the whole of the present century. While they cannot conceal from themselves that the society's connection with the recent exhibitions, and indeed with South Kensington generally, has been gravely disadvantageous to it in the prosecution of its legitimate work—the promotion of scientific and practical horticulture—it is obvious that the society could not establish itself in a new home adequate to its requirements without undertaking a very serious expenditure, for which funds would have to be provided. The council have therefore entered into preliminary negotiations with the Royal Albert Hall Corporation, and they are prepared to recommend to the Fellows that they should be empowered to enter into an agreement with that body on the following terms—terms which the council believe will leave the society practically independent, while providing sufficient accommodation for its wants. The Royal Albert Hall Corporation agree to give the Royal Horticultural Society—

- (a) The use of the conservatory for fortnightly and other shows.
- (b) Accommodation for the Lindley library and the meetings of the scientific, fruit, floral, and other committees.
- (c) Accommodation for the society's office and staff.
- (d) Admission to the Royal Horticultural Gardens every day, and to the Royal Albert Hall (unreserved seat) whenever open to the public.

The Royal Horticultural Society undertake the horticultural (but not the structural) maintenance of the conservatory, and of such limited portions of the gardens as may be occupied by the Royal Albert Hall Corporation, and to contribute an amount to be agreed upon towards the heating of the conservatory. It is distinctly understood that the Royal Horticultural Society will enter into any agreement it may make as an independent body, and that the society will have no connection whatever with the musical or other entertainments contemplated by the Royal Albert Hall Corporation. The latter body have intimated that at present they are not prepared to give the Fellows of the Royal Horticultural Society transferable tickets.

The auditors report as follows: "We much regret that two great disturbing influences have had a serious and depressing effect on the finances of the society in 1886; the first being the taking away the privilege of transferable tickets of admission and making them personal, which resulted in the resignation of a large number of Fellows, causing a reduction in the receipts of this most important part of the revenues to the amount of £850; secondly, the failure of the Liverpool Exhibition, which shows a deficiency over the receipts of £740, and, added to the loss from subscriptions, makes a total loss under these two heads of £1590, against which there is the asset of £300 for overdue subscriptions."

NATIONAL CHRYSANTHEMUM SOCIETY.

ON Monday evening last the annual general meeting of this society took place; the balance sheet and report were received and adopted. It was announced that for the first time in the history of the society three shows of Chrysanthemums had been held in one season, that the September and November shows were very successful, and that at the mid-winter exhibition of late varieties in January exhibits had been sent from all parts of the country. It was resolved that during the ensuing season three similar shows should be held. After the election of fifteen new members, applications were read from four provincial societies to become affiliated. The election of officers and general committeemen was then proceeded with, and upon the motion of Mr. Holmes it was resolved

that in future one-third of the members of that committee do retire annually in rotation. Arrangements have been completed with the Royal Aquarium Company to hold the exhibitions of the society there as hitherto, and the company have offered the following sums to be distributed in prize money, viz., £50 for the September show, £100 10s. for the one in November, and £50 for the show in January, 1888. The names of donors of special prizes and contributions to the prize fund were next announced. The classes in which the six Veitch Memorial medals are to be offered will be specified in the society's schedule. It was resolved that the preparation of the schedule for the current year be referred to a special sub-committee. The meeting was brought to a close after various suggestions as to alterations and emendations in the schedule had been made.

GARDEN DESTROYERS.

Destroying ants.—M. Dybowski states, in the journal of the French National Horticultural Society, that he has found sulpho carbonate of potassium a sure means of destroying ants when they are working among the roots of plants. A quart of this dissolved to ten quarts of pure water is found to kill them. If one watering is not effectual, two will be found a sure remedy. An important point in connection with the use of this chemical is, that it does not injure the most tender root. Ants being fond of making their runs in Box edgings and among the roots of hardy plants generally, where the use of boiling water is inadmissible, this recipe for their extirpation will be welcome to many. M. Dybowski also states that in glass houses they are most easily trapped by means of sugar-water, to which a little rum or brandy is added. They are so fond of this, that where they are at all numerous, the vessel containing the mixture becomes in a short time a mass of dead ants. They become stupefied by the alcohol, fall in, and cannot extricate themselves.—J. C. B.

Woodlice.—I find these to be destructive to Ferns; they hide in the crevices of the rockwork, commit depredations at night, and anyone not conversant with their habits might attribute the ragged look of his plants to other causes than the right one. The tissues of some of the leaves are eaten away until only the midribs are left, while other kinds seem to be unmolessted. When these troublesome pests get established in rockwork it is a tedious process to eradicate them. But in ordinary plant houses they may be readily destroyed by laying flat pieces of board or slate on the borders with Potato peelings placed under them. Under these boards they congregate, and may be destroyed by boiling water, or flower-pots with some hay in them and baited with a few pieces of Potato make good traps. In this way their numbers may soon be reduced. But, as in the case of all greenhouse Ferns, young fronds are now pushing up, it is of the utmost importance to keep these from injury; when young and tender, woodlice soon play sad havoc with them. A few choice specimens might be kept safe by setting them on inverted flower pots in pans of water. But where large numbers have to be dealt with, the only plan is to trap them, and when cleaning the houses in spring, a plentiful supply of boiling water should be poured into their hiding-places.—J. G., *Hants*.

The Eucharis mite. This mite does not confine its depredations to the Eucharis, but also causes the loss of many other bulbous plants, including Vallotas, Anemones, and Pansies. A very fine collection of these has had to be destroyed on account of being affected by this pest.

Names of plants.—*H. D.* 1. *Illecebra Brocklehurstiana*, *Chionodoxa pauciflora*.—*B. Kald.* The ordinary form of *Labisia* (moss).—*H. M.* *Agrostis* (moss).—*H. S.* *Scilla* (moss).—Probably *Stipa aristata*, specimen insufficient.—*H. L.* 1. *Phloxopsis andalibis*; 2. *Eupatorium Canadense*; 3. *Cyclamen Cornu*.—*H. H. (Epsom)*.—1. *Epiphyllum truncatum* var.; 2. *Marrubia Massingiana*; 3. *Epiphyllum cilicorne*; 4. *Adiantum formosum*.—*H. J. (Dorchester)*.—1. *Gymnogramma sulphurea*; 2. *Dorlia caudata*; 3. *Aspidistra brachyptera*; 4. *Elaphoglossum viscosum*.—*T.* 1. *Oncidium unguiculatum*; 2. *Lycast*; *Barringtonia*; 3. *Oncidium cucullatum*.—*F. T.* 1. *Erica carnea*; 2. *E. meliobora*.

Names of fruits.—*F. D. (Horseshoe Heath)*.—Small Pear, Bishop's Thumb; Apple, Winter Pearmain; Large Pear Vicar of Winkfield.

WOODS & FORESTS.

YORKSHIREMAN.

FENCES.

If our forestry management is to be cheapened in the future we must begin with the fences, which are such a considerable item in forming new plantations, and the old quick hedge will have to go, being perhaps the most expensive to rear and keep in good order. Wherever one goes in England you find the hedges planted round plantations neglected and decayed, in many parts extensive gaps made up with stakes and bindings, the original hedge having entirely disappeared, while in other places it has never grown, owing to the trees growing over and smothering it. The worst place for a hedge is next to a plantation, unless you place it further off than you can afford to do considering the value of the land. Timber or iron supply the material for the plantation fences of the future, and the simpler and stronger these are the better. Unless we keep down the cost we shall have no fences at all nor woods either. On large estates a few men can get and rive as many stout Oak fencing stakes of any size necessary as will supply not only the estate annually, but the tenants at a cheap price. These, if driven in thickly enough with a rail on the top and stayed, will make a fence good enough to keep cattle out, and if the stakes are driven in thinner and wattled with bindings of Thorn, Hazel, Willows, or other underwood, they will answer better still. Such fences are not ornamental, but are rustic enough looking, and are as good as any fence needs to be between farm lands and the plantations. Dry stone walls are substantial, but expensive, and are the reverse of ornamental. Where stone is scarce they are out of the question. In these times when timber yields such a small return per acre fine fences cannot be afforded, nor have they ever been at any time necessary. I should not advise live fences, nor any other that cannot be easily and quickly put up with the timber of the estate or wire. A common piling of posts and rails—the latter nailed on—is perhaps one of the cheapest kinds of fence, that stands well and can be soon mended when it fails. It is a mistake to suppose that plantation fences require to be very high or very strong. Young and unbroken horses are perhaps the worst to fend against, but my experience of even these in large numbers in the parks where there are miles of slim fences round the woods is that a very insignificant barrier turns them unless they are being driven or frightened. It is a most uncommon thing to find either cattle or horses breaking through fences of any kind unless it be at a gap.

— In Northern England, at least one half of the live fences are, pure and simple, but a waste of valuable ground, a harbour for vermin to prey on the farm crops, and utterly useless for the purpose intended. It is no uncommon thing to see what are classed as fences, but which in reality are but a combination of stones, bushes, and neglected Thorns, taking up as much as 12 feet in width of the field in which they occur. A great mound of earth was thrown up, a few Quicks, Elders, Ashes, Willows, and whatever else of the nature of a hedge plant could be obtained planted on its summit, and the whole left for Nature to have her own way. Rabbits burrowed into the cosy earth mound and injured the roots, while gaps made by the farm stock were filled up by dragging a dead branch into them or placing a few stones on top of each other, and thus the fence was treated, until in the end it was neither a live nor dead one, but a combination of the two, and worse than useless for the purpose intended. I have seen and measured 9 acres of a farm that contained fences occupying fully one third of the total area, and had they been fences in the true sense of the word, less complaint might be made, but they were little else than field divisions, and expensive ones too. A well-managed and, of course, properly formed hedge should not occupy of itself more than

30 inches in width, and I am well acquainted with miles and miles of such fences that give but little trouble and are quite proof against the incursions of farm stock. Of course, in such cases as those just cited an annual trimming and cleaning of the fences is engaged in, while gaps or holes are filled up at once by driving a couple or so of posts into each and planting stout, well-rooted Quicks in the openings. Planting live fences on mounds is objectionable, unless, indeed, the soil is extremely damp, and even in such cases it is preferable to use some plants suitable for such situations and have the hedge on the level, for even with great care and attention the ridge or mound gets broken down and causes endless expense in repairs.

A. D. W.

PRICES OF FIREWOOD.

THIS is a factor affecting the use of wood as fuel. From what I have heard lately, wood must be cheaper than coal in some places, but here it is not, and I do not see how, in prosperous times when trade is brisk, wood can be cheaper than coal anywhere, except in remote districts. In this part of Yorkshire the cheapest firewood is small ramil, which is practically unsaleable, but on most estates it is prepared for lighting the fires in the house, and delivered at 3s. per hundred kids or small bundles, the labour only being charged. The next cheapest is cordwood, which is saleable for charcoal-making, and which cannot be collected and delivered for less than 14s. per ton; hence it is dearer than coal in a colliery district, and does not go nearly so far. Next to cordwood comes dead and sap rotten timber, which is also saleable, according to the length of time it has been dead and felled. As firewood, split and delivered, this costs between 20s. and 25s. per ton, and where the labour only is charged, it costs about 18s. per ton. Good Ash, Beech, and Oak would cost nearly £3 per ton delivered, and inferior woods a little less. Ash at the present low prices fetches from 30s. to fully 40s. per ton in the wood standing, large Oak more, and middle-sized and poles about 35s. per ton. Birch and the like a little less. These prices are for poles or small trees; for large planking Ash and large Sycamore the price is much higher. These prices are, however, sufficient to show that we here could not burn timber without gross extravagance: and, of course, where coal is dear, firewood will rate proportionately. Still it appears that a considerable quantity of timber is burnt in private houses where one would not expect it. I am informed by our steward that in some mansions so near the main railways as Huntingdonshire timber is burnt both in the kitchen and rooms for economy's sake. What kind of timber it is I do not know, but I am curious to learn under what circumstances it can be cheaper to use timber in preference to coal, unless it is wholly waste, and fires cannot be kept of such materials. With regard to the prices of timber above quoted, it must not be imagined that they are particularly remunerative prices. Some years ago prices were at least half as much more, but when the quantity of the timber sold from an ordinary estate in one year is considered, it may happen that the return per acre may be very small indeed. Indeed, as things stand at present and have stood for years, it takes good management to get 5s. per acre of clear profit from woodlands in England, but it is the fault of our forestry, and not our timber or our markets that it is so. S.

Tinning for shelter.—This is an anomalous proceeding, as described by "H." in his paper on shelter-planting. According to him, shelter belts that are not thinned soon come to an end, being swept away by the wind, as, according to "H.'s" reasoning, the thicker the trees are grown together and the fewer the branches they have, the more liable they are to be blown over. In the same way we suppose a ship under bare poles would be most likely to lose its masts in a gale of wind. This will not hold water. The stiffest of all tree belts are those that are left pretty crowded, especially on the windy side, and this

fact is so apparent everywhere, that one wonders to see the opposite opinion recorded. Recent storms of wind have shown it. On some of the best thinned estates in the south of Scotland, where all the Spruce trees are furnished to the ground with branches, owing to their having room, and which "arrest the progress of the wind," according to "H.," more trees have been blown down than anywhere else in these islands. I knew one belt in particular, consisting mostly of Spruces, in which not one tree was left standing. The reason of this is, that in thin belts every well-branched tree is exposed to the fury of the gale, and if the force of the wind is greater than the root-hold, over it goes. Only the crowded belts stand the storm. If the outside is pretty thick, it breaks the force of the wind, which goes over the top of the plantation or whistles through between the crowded, but bare trunks. "H.'s" theories are not derived from observation. We have a fine example here on an exposed ledge where the gales are fierce enough to prevent a horse and cart venturing at times. The belt is a mile long, and has never been thinned severely. Outside on the windy side the trees are more branched and stunted, but inside they are less so, and grow taller and taller till the other side of the belt is reached, owing to the increasing shelter and warmth. It is rarely a tree is blown over here, and the same thing is observable in all such cases.—Y.

HEDGEROW TREES.

THE two main qualities required in a hedgerow tree are, first, that the habit of growth be somewhat fastigate, and, second, that the roots have a downward tendency or are not inclined to run along the surface, and so impoverish the upper stratum of earth. Few trees, it must be admitted, possess these qualities in conjunction to any great extent, and I know of no one that does more so than the Cornish Elm (*Ulmus cornubiensis*). The branches of this tree are fastigate to almost as great an extent as the Lombardy Poplar, while the roots incline more downwards than to run along the surface, and are consequently not so impoverishing to the ground in the immediate vicinity of the tree. Other good qualities to be found in the Cornish Elm are its ornamental appearance and value of the timber it produces. It bears pruning well, and may be trained with a clean stem for, say, 12 feet from the ground without in any way detracting from its ornamental appearance, while to the fence on which it is planted such a method of culture is highly beneficial. Other valuable hedgerow trees will be found in the Plane, Sycamore, Black Italian Poplar, Birch, English Elm, Spanish Chestnut, Lombardy Poplar, Norway Maple, and Larch. The Sycamore is a valuable field or hedgerow tree, inasmuch as it does not occasion too great a shade when well managed, is not impoverishing to the ground in its immediate vicinity, produces valuable timber, and for ornamental appearance is well fitted to hold its own with any other tree cultivated in this country. Were it not for the almost valueless timber it produces, the Lombardy Poplar might be considered as an A 1 hedgerow tree, for barring this one fault it possesses every other quality that is necessary for a tree in such a situation. The Maples are valuable and should be used largely, while the English Oak, if a little care has been expended on its nursery management, more particularly in the way of pruning, must not be despised, which may also be said of the various other trees above mentioned.

A. D. WEBSTER.

Timber in Scotland.—The statement of "H." (p. 87), who seems to speak for the whole of "the south of Scotland," that "the reason you always get" for the thinning of young plantations being neglected is that "the trees are of no use as wood," and are only fit for shelter. "H." says there are not ten plantations in the south of Scotland that are properly thinned, and their prospective worthlessness as timber is the reason. Is this true? we ask foresters in Scotland, because if it be they have had more to do with it than anyone else. If it is not true, "H." had no busi-

less to say so, I do not myself believe the statement, unless the trees are of the wrong sort, and that is probable enough. So long, however, as it will pay to import timber from almost every part of the world to this country, it will pay to grow it at home; and where it does not do so, it is the fault of our system of planting for game, planting the wrong kinds of trees, and the extravagant management generally.—J.

Appearance of good timber.—It may interest "A. N." (p. 112) to learn that the best of theory and the Admiralty tests are at direct variance with his assertion to the effect that timber which "has grown the slowest, as shown by the narrowness of the annual rings, is the strongest." Our typical trees, Oak and Ash, for example, resist the greatest tension and impact when grown fast, in consequence of the fibre being longer and stronger. Timber dealers are familiar with this fact, especially in the case of the Ash, and will always give a higher price for clean quick-grown trees. It was a common opinion once that slow-grown timber was the best till the Government tests proved the contrary, and Lindley altered the theory to correspond many years ago.—S.

Age at which young trees transplant best.—It is necessary on some lands to plant tall-growing plants, but the general impression seems to be that the smaller the tree the better the chances of success. Some species will break from the base, and make a better trunk therefrom than from a stem to begin with 4 feet or 5 feet high. In the case of Firs, there can be no doubt about the advantages of planting very young trees, and the only objection to doing so is the nature of the undergrowth they have to contend with. Where Bracken abounds, as it does in vast tracts in some parts, there is no chance for small trees unless the Bracken is kept down, and to do that means doubling the cost of planting, or more; therefore, planting trees tall enough to get their tops above the Bracken becomes a matter of importance.—Y.

Thinning forest trees.—Thinning trees, like every other part of practical forestry, is good or bad according to the manner in which it is done. One class of foresters would help Nature to develop her productions, while another would leave her to develop them as best she can. Now there can only exist a definite number of trees on any given area; therefore, to prevent overcrowding, thinning becomes a necessity. Nature unaided has certainly yielded some grand productions in the way of trees; but is it not just possible that if man had assisted Nature to distribute her power, that these trees would have been still as great, that there would have been more of them, and that they would have been of more uniform growth? Indeed, there is the best evidence to show that such would have been the case. It will not do to pin one's faith upon that magnificent trunk just recently arrived from a natural forest abroad. Such examples teach us nothing as to what is best to be done in regard to home forest management; and to copy Nature (as has been suggested) in her plan of thinning would result in disaster and ruin as regards our woods. Moreover, we have an object in view in thinning, namely, the yield of the greatest amount of useful wood or trees on any given space. Therefore, it is my opinion that those who thin their woods, &c., carefully and regularly will best realise a maximum of profit.—J. F.

Preservation of timber.—Amongst the most efficient means of preserving timber are good seasoning and the free circulation of air. Protection against moisture is afforded by oil paint, provided that the timber is perfectly dry when first painted, and that the paint is renewed from time to time. A coating of pitch or tar may be used for the same purpose. Protection against dry rot may be obtained by saturating the timber with solutions of particular metallic salts. For this purpose Chapman employed copperas (sulphate of iron); Kyan, corrosive sublimate (bichloride of mercury); Sir William Burnett, chloride of zinc. All these salts preserve timber so long as they remain in its pores; but it would seem that they are gradually removed by the long continued action of water. Dr. Boncherie employed a solution of sulphate of copper in about one hundred times its weight of water. The solution was contained in a tank about 30 feet or 40 feet above the level of the log, through the tubes

of the vascular tissue of which it was forced by the pressure of the column of fluid driving out the sap before it at the other end of the log, until the tubes were cleared of sap and filled with the solution instead. Timber is protected not only against wet rot and dry rot, but also against white ants and saw-arms, by Bethell's process of saturation with creosote, a kind of pitch oil. This is effected first by exhausting the air and moisture from the pores of the timber in an air-tight chamber, in which a partial vacuum is kept up for a few hours, and then forcing the creosote into these pores by a pressure of about 150 lbs. on the square inch, kept up for some days. The timber absorbs from a ninth to a twelfth of its weight of the oil in this process.—A. N.

PLANTS FOR RAILWAY HEDGES.

In many districts of England railway hedges seem to receive much greater attention than many of those planted for the intersectional fencing of land. The plant generally employed for railway fences is the White Thorn, and a useful plant it is for such purposes, and now contracted for as regularly as the rails themselves. On some of the newly formed lines the varieties of Evergreen Hollies ought to be tried, particularly on those portions of a line running through extensive and well-regulated policies in sight of the mansion. In some cases the proprietors may be induced to pay the extra difference of the plants, while the after-keeping will be much the same as the ordinary Thorn hedge. In all peaty districts the Spruce Fir will make an excellent Evergreen fence. It will cover more ground than the Holly; but in mossy situations this extra land will be found of less value. In sandy places, and particularly those near the seashore, the Sea Buckthorn (*Hippophae rhamnoides*) will be found an admirable substitute for Thorns to form hedges. If it should ever be required to make at once an impenetrable live fence, the Hornbeam (*Carpinus Betulus*) will be found the most suitable, and for this purpose clean grown sapling plants, 6 feet or 7 feet in length, ought to be procured. After the ground has been properly trenched and prepared, the plants should be put in, two together, at every 10 inches or 12 inches, according to the thickness or length of the saplings employed, giving one an inclination to the right and the other to the left. After being trodden in firmly, commence to plait all together, taking one set of the plants the one way, and the other set contrary, interlacing them at an angle of 45°. It will be necessary to tie them at top with a piece of wire or rope yarn, and also at several points near the bottom, to keep them in position till they adhere to each other. To facilitate the union, although not absolutely necessary, it will be desirable to take a thin cutting off the bark of several, particularly where they approximate. Shortly afterwards they will grow together, and form an impenetrable net-looking fence. From the pressure caused by the plaiting, they will throw out numerous shoots along the stems, which will continue to work in and fill up the interstices. In time the whole length will become an impenetrable mass, all engrafted together, and will bear cutting in like any other hedge. Numerous other plants will be found in nursery establishments suitable for such purposes, as the Hazel, Elm, Ash, Beech, Laburnum, &c. Such hedges can be made of any height, depending entirely on the length of the saplings employed. When not in leaf, they will be found extremely ornamental and agreeable to look on, and therefore worthy of encouragement, particularly when standing on a level with the rails. If it should ever be wanted to plant such hedges so as to render them useful as well as ornamental, particularly on lands slightly elevated above a damp surface, in such places Willows could be profitably employed, and the annual cuttings taken from them would yield a considerable revenue. Besides, when such plaited hedges are cut for profit, they are more likely to be kept in order than Thorn hedges, particularly when they run through lands which would be profitably employed for the growth of Willows. When planting Willows for such purposes, they could be inserted either as growing plants or cuttings—the latter will be preferable, provided the strip of ground has been properly prepared for them. They should be placed 12 inches apart, and

during the first thinning the strongest shoots should be left for plaiting. After the plaiting has been successfully accomplished, all after shoots could be removed for basket-making purposes. N.

TREES OUT OF PLACE.

How often do we observe trees planted in situations that would almost cause one to imagine that little thought or consideration had been previously given as to the amount of space they would require for extending their growth, or the size which they would ultimately attain. Everywhere do we find fine old Cedars, Larches, Cypresses, evergreen Oaks, and even Poplars, Yews, Horse Chestnuts, Elms, and other large and ornamental trees planted closely to old castles, mansions, halls, &c.; and still such misplacement is continued. Neither is this always the planter's fault, for a lady or gentleman may purchase in a pot a plant of some newly introduced tree, and, without consulting anybody, choose some conspicuous spot for the reception and future development of their little favourite. The planter is then informed of their decision, and although he may remonstrate, his endeavours to frustrate their purpose often fail. This, therefore, is frequently the reason why we find stately and handsome trees planted so near mansion houses. During their infancy all goes on well; but as they grow older, they increase in stature, as a matter of course; and, if not removed, they ultimately attain dimensions which quite unfit them for the situations they occupy, sometimes darkening the house, and at others obstructing a free view of the distant landscape. Where it is desired to have choice trees grown to advantage, a piece of deep, well-prepared ground should be selected purposely for them, in what may be termed an arboretum, where, when once planted, they should be allowed to remain uninterfered with.

When the *Sequoia* (*Wellingtonia*) *gigantea* was first introduced into this country, numbers of it were placed under my charge, and, with careful treatment and with regular and large shifts, to my great satisfaction, they soon made fine luxuriant plants. Proud of my success, I wished to provide them with a permanent situation where they would be well sheltered, have plenty of room, and enjoy a considerable depth of good soil, and with that object in view I consulted my employer about them, when I learned with astonishment that the place fixed upon for their future development was where they now stand, viz., in a situation exposed to the sea, on the poorest ground on the estate—a solid bed of gravel! I determined, however, to make the best of such adverse circumstances; I gave each tree a space of 60 feet, trenched the station on which it was to stand 10 feet in diameter, and enriched it with surface soil and whatever other suitable material I could obtain, thoroughly incorporating the whole and fashioning it into a gradually sloping mound 5 feet high in the middle. At the time of planting, a railway was to have been made through an adjoining field, the turfy surface of which I intended to secure for the purpose of filling up the hollows between the trees to a height of 6 feet or 8 feet, thus converting their present mounds into little valleys; but in this I was afterwards disappointed. In planting, the centre of each mound was cast out and a load of good open healthy soil was introduced, in which the plants were inserted. They were then mulched, and the operation was finished by placing a rustic cage 6 feet in diameter around each young tree. In the arboretum one tree was planted and did remarkably well, when, owing to an addition of 7 acres or 8 acres of new ground being made, it, together with others, had to be removed. I then planted it on a spot filled up with many hundreds of cartloads of healthy old bank soil mixed with turf, thus forming a depth of 8 feet of excellent soil, in which it will find room to grow and luxuriate for the next five hundred years at least. There it remains still, a noble example of what may be expected of this tree when planted under favourable circumstances.

T. B.

The three undermentioned pieces of timber were measured by the slide-rule:—

No. 1,	14 feet long,	104 inches round
No. 2,	10½ "	80 "
No. 3,	12 "	78 "

These measurements were taken round the middle of the tree.—T. Y.

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"This is an Art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—Shakespeare.

ROSE GARDEN.

T. W. GIRDLESTONE.

WHAT IS A GARDEN ROSE?

OF all the myriad times the term garden Rose is used in speaking and writing of Roses, or in Rose books and catalogues, in how many instances has the expression a definite or at all exact meaning? and were any two persons ever known to employ the term in a precisely similar sense? One grower talks of garden Roses as if they were things unknown to the wicked exhibitor; another proclaims the best exhibition Roses (deplorable term!) as being also the best garden Roses. One man will allude, with that half-pity born of contempt, to an exhibition Rose as a thing to be inspected only under canvas or set up in a green box, and not to be conceived as growing in the garden; and his neighbour will always be recommending for garden decoration the varieties with which he has won most prizes. And while, from the tone of the first, it might be inferred that raisers of Roses have produced nothing to beautify our gardens for the last thirty years, the latter would give the impression that it is only during this period that Roses worthy of a garden have been raised and distributed. That there is something in this diversity of conception is evident from the fact that the National Rose Society, in offering prizes for garden Roses, does not define the term, but evades the difficulty by merely excluding from the class all varieties enumerated in a certain arbitrary list of so-called exhibition Roses. This term is itself an unfortunate one; for either any Rose that is ever exhibited is an exhibition Rose, or it is not; if it is, then a large proportion of what are commonly called garden Roses are really exhibition Roses; if it is not, then its availability for exhibition does not constitute an exhibition Rose!

It has been suggested as a definition that a garden Rose is one which can endure without serious injury somewhat excessive drought and cold, and which will flourish with little or no special culture in a variety of soils and for a considerable term of years. But this sounds like the definition of a Rose for a wilderness rather than for a garden, and though we may well be thankful that there are Roses that will grow themselves, yet it is the ambition of everyone who gardens to bring to perfection things which, if left to themselves or not carefully tended, are liable soon to lose their attractiveness. Assuming, therefore, that a moderate amount of pains and care will not be grudged by those who are desirous of enjoying the beauty of the queen of flowers in their gardens, there is no imaginable reason for making the definition of a garden Rose such as to exclude the best of the varieties most commonly exhibited, and if these are admitted, the value of the expressions "exhibition" and "garden" Rose as distinctive terms is not obvious. Take, for instance, the two varieties La France and Madame Gabriel Luizet; both are hardy and vigorous. With a certain amount of skill and care both will make large plants and produce an abundance of beautiful flowers in a variety of soils and situations. The one is well known to be, and the other now seems likely to prove, a thoroughly autumnal bloomer, and therefore both might be considered essentially desirable

garden Roses. But, on the other hand, it would probably be safe to say that throughout the season there is hardly a Rose show at which these two varieties are not conspicuous, and they are undoubtedly both among the twelve best exhibition Roses.

It is obvious, therefore, that the definition of a garden Rose cannot be made to exclude exhibition Roses, and if it include them, it is no longer a distinctive term. An expression which means so much means nothing; and if both terms could be entirely abolished, a great amount of misapprehension would in all probability be avoided. No doubt a good many people who do not care to exhibit, but merely want Rose trees that will make attractive objects in the garden, are deterred by the term "show" Roses from employing some of the most beautiful and valuable varieties under the mistaken impression that these are of no use except to the exhibitor; and, again, some persons regard the epithet "garden" Rose as a positive stigma on a variety, instead of as the highest distinction.

It is not easy to see that there is any essential qualification for a garden Rose further than that it should have sufficient constitution to be able to form either singly or in a group an attractive object in the garden. The more freely and frequently it flowers, of course, the better; and, except in the case of climbers, the flowers make a more brilliant and striking effect if carried upright on the plant rather than pendent. This would include varieties of all classes, and the less that is heard about exhibition Roses and garden Roses as such the better. If writers and catalogue makers would make a point of not employing either term, they would both soon drop out of use, and with them perhaps the absurd notion still sometimes entertained that Roses which produce flowers sufficiently perfect to win prizes at exhibitions are thereby unfitted for making a display in the garden. Anyway, if the term "garden" Rose is to be retained, there is undoubtedly wanted a definition.

PRUNING INDOOR ROSES.

ACCORDING to my experience, indoor Roses are rarely pruned properly, the operator being too much afraid of overdoing it. The Teas are most neglected, or, if I may so put it, are the worst used in this respect. Only last week I saw two houses in different gardens nearly filled with Tea Roses in pots that evidently had not been pruned at all, those in charge preferring to let them break naturally. In both cases the plants were old and fairly strong, and doubtless will produce abundance of bloom, but this will be small, while the plants will be getting still weaker. I hold that all should be pruned, the spray being cut hard back, or to the first joint, and the remainder to the second, third, or fourth joint, according to their vigour. Spray is quite useless, but this and the other weak growth will break more strongly if hard pruned, and, other conditions being favourable, the plants will improve instead of gradually becoming rubbishy and worthless. Whoever saw young shoots on Teas too strong to flower properly? It is the weakly growth that refuses to flower, not the strong shoots, as these if too rank to produce a single bloom will branch and yield several. A Tea Rose, to remain in a profitable state, ought to be constantly pushing up suckers from the buried stem, and, unless pruning is resorted to, these will not often be forthcoming. It must be understood I am thinking about and treating upon own-root plants, these only, in my estimation, being suitable for pot culture. We certainly frequently have a few worked pot plants which are pruned similarly to the others, but they are bought in for the purpose of affording cuttings early in the spring, after which they are turned

out. Pot plants usually give a succession of blooms, being encouraged to break afresh two or three times in the spring, and they frequently endeavour to flower again in the summer. We are not constantly pruning the plants, cutting the buds or blooms being all that is necessary after the early winter shortening back. It is then when we cut back to near where they were last pruned, there usually being several back buds that did not push out below where the first bloom was cut. Thus pruned and otherwise well attended to, the plants can long be kept to a useful size. The youngest plants, or those struck in the previous spring, require little or no pruning, and these we find the best for flowering in heat during the winter. Those trained on the roof, with the exception of *Maréchal Niel*, also require to be pruned early in the year, or they soon become crowded and dirty. We thin ours out freely, and shorten back all the young growths, much as advised in the case of pot plants, and I may safely say no one has much better crops of *Homère*, *Safrano*, *Comtesse de Nadaillac*, and *Devoniensis* than we have. These are all on the Brier stock, are planted outside, and brought inside through the roof. They bloom during at least nine months in the year, and every season we use the knife freely, or rather scissors, for these are the best for pruning Roses. All useless spray on the *Maréchal Niel* should be cut away, the medium-sized and strong growths being laid in to their full length, good blooms being forthcoming from nearly every joint. When the plants give signs of being somewhat exhausted, or when no strong shoots are pushed out from different parts of the leading branches, hard pruning must be resorted to directly after the flowering period. If all the flowering branches are cut hard back, the plant should form another lot equally strong, or perhaps stronger, than these, and which will flower the following season. It is the neglect of this precaution that sometimes leads to an early break-down, but in all fairness I must add no amount of pruning or any other renovating measure will long save those with badly cankered stems. Hybrid Perpetuals in pots ought to be pruned exactly the same as those growing in the open air. All spray should be cut hard back, medium-sized shoots to the second joint, and the largest, say about the size of a lead pencil, to the third or fourth joint. This ensures a fairly strong, floriferous break, also plenty of back-growths constantly pushing out, and which tend to keep the plants dwarf and well furnished. W. I.

Planting Roses.—On this subject Mr. George Baker, of Reigate, a skilful Rose grower, writes as follows: A few general directions should in all cases be observed. It will become your first duty to see that your ground is in a proper state to receive your plants. The soil should be neither wet nor dry, and the earth should divide well, and intermingle with the fibres of the roots readily. We must be careful in treading in the plants; it is evidently injudicious to plant on a retentive soil at a time of rain, though on lighter grounds the work may be done safely, even though you have gentle showers. I question whether sufficient care and time are given to the mode of planting and arranging the roots in the ground; this is often carried out in too hurried a manner. Before placing the plants in their position, they should be carefully handled, and the roots well looked over, and all broken or injured portions removed; then spread out in a radiating direction, as far as possible, so that the rootlets may take up the aqueous and other fluids readily. It must be remembered that it is not the thick substances of the roots that gather up the food for the support of plant life—they serve an important end in firmly fixing the tree in the soil—but it is the minute root fibres to which the plant owes its nourishment. The roots, therefore, should be well spread out, and never packed up together, and planted down in a straight direction. Caution must be further observed that you do not plant too deeply in the soil. I suspect mistakes of this kind often occur. Mr. G. Prince, of Oxford, I remember once found fault with me in this re-

spect, and advised on the seedling Brier, that the union should be just above the ground line, but he emphatically called our attention to regard the same depth at which the plants had been previously grown. This latter part of his advice is in like manner urged by most of our practical nurserymen, though some of them are in favour of placing the points of junction beneath the soil, which they think will give the plants a double chance. No doubt, with the Manetti stock, you may plant deeper than with others.

Rosa polyantha grandiflora (Bernaix).—A new variety of this charming species is now being sent out by M. Bernaix, similar to, but with rather larger flowers than the type. In France, however, where *R. polyantha* is highly prized as a stock, especially in the seedling form, the great merit of this variety *grandiflora* is held to be its freedom in producing seed, the type not being a very prolific seed-bearer. It is stated also that the seed germinates very rapidly, and if sown on a hotbed in March, the seedling plants may be grafted the same autumn.

SHORT NOTES—ROSES.

Rosa pisocarpa.—This is a valuable and pretty Californian Rose and one that, judging from what we saw at Kew, is particularly well adapted for planting on rockwork. The flowers are of a desirable rose colour, and succeeded by bright red fruits; while the whole plant is of low straggling growth with dark green, evenly crested leaves.—A. D. W.

Old double yellow Rose. I should feel most grateful to anyone who could tell me where to procure the true *Rosa sulphurea*. I have written to all the leading Rose nurseries without success. I have even given a standing order in two cases of more than a year, and am now told it cannot be sent to me from them, although it is in their Rose catalogues.—F. W. Y.

PROPAGATING.

TUBEROUS BEGONIAS.—These are increased by two different methods—viz., seeds and cuttings. By this last mode alone can individual varieties be propagated, as seedlings will vary to a greater or less extent; yet a pinch of seed sown now, if it be saved from the best varieties, will give but little trouble, and yield a good display of bloom during the summer. All tubers that have been resting during the winter, and are now required for propagating from, should be shaken out of their old soil (if that has not been already done) and repotted in good open compost. Then, if placed in a gentle heat and under conditions favourable to growth, they soon push up shoots which are available for propagating purposes. In removing a shoot required for cuttings, it should not be pulled out at the base, but cut off with a sharp knife above the bottom joint, thus leaving a nucleus from which other shoots will in time be pushed forth and form the future plant. If started thus early in the season, there will be ample time to grow the parent plant into a specimen, even after it has yielded a crop of cuttings. Should, however, a few weak shoots be pushed up around the main stems, they may be separated quite close to the tuber, as they will not add to the effectiveness of the plant if allowed to remain. The separated shoots being now ready may be treated in the following manner: Cut them off clean at the bottom with a sharp knife, but it is not at all necessary to leave a joint at the base. Then insert the larger cuttings singly in small pots; the smaller ones may be put around the edge of a pot about 4 inches in diameter. A soil consisting of loam, leaf mould, and silver sand, the whole sifted fine, is very good for the reception of the cuttings. If they are kept fairly close, in a temperature of 65° to 75°, they soon root; but precautions will need to be taken against decay, as, from their soft and succulent nature, they are rather liable to damp off if kept too close or the soil is too moist. There is another way of increasing this class of Begonias, which can, however, only be followed in exceptional cases, and that is, some tubers assume a flattened shape, and shoots are borne from several different places on the surface thereof. When this happens, and the shoots are about an inch long, the tuber can with a

sharp knife be divided into as many pieces as there are stems, and if then potted they will grow away without any check. With regard to seed, it must be gathered just as the pods commence to open, and kept during the winter in a dry place. The seed may be sown in pots or pans, but whichever is employed must be perfectly clean and thoroughly drained. This done, they can be filled to within a quarter of an inch of the top with light vegetable soil, consisting of three parts well decayed leaf-mould, quite free from any signs of fungus, and one part loam, with a liberal admixture of silver sand. The compost must be sifted moderately fine, and pressed down perfectly level for the reception of the seeds. After the pots are filled with soil a thorough soaking of water through a very fine rosed water pot should be given, and while the surface is still moist the seed must be sown thereon. The principal thing to guard against in sowing such minute seed as this is to take care that it is not sown too thickly, for when on the surface of the soil it is scarcely possible to discern it, and if it has not sufficient space allowed it, many will soon after germination damp off. The seeds will adhere to the moistened surface of the soil and need no covering, except a pane of glass laid over the pot. When sown a good place for their reception is a shelf in not too dry or exposed a position in the stove, as germination then soon takes place, and directly the young plants make their appearance the glass must be removed. This practice of covering any seed pots that contain very minute seeds with a pane of glass is a beneficial one, as it prevents the surface becoming too dry, but in one respect great caution is necessary, for the sun must on no account be allowed to shine upon them, as the confined space will become very hot and the young plants be sometimes quite roasted up. A second point to which attention may be specially called is, that after the removal of the glass, cutting winds or draughts of all kinds must be especially guarded against. When the young plants begin to get crowded, or if any signs of decay make their appearance amongst them, they must be pricked off, using for that purpose the same kind of soil as that recommended for sowing the seed. The young plants are very fragile and by no means of rapid growth during their earlier stages, but afterwards they grow much more quickly.

CARPENTARIA CALIFORNICA.—This, the subject of a coloured plate in a recent number of THE GARDEN, is not difficult to propagate, yet at the same time one or two points require to be borne in mind when desirous of increasing this handsome shrub. As our plants are by no means large, I have not been able to try what measure of success would attend cuttings put in the open ground; but a little after midsummer I took some of the young shoots that were getting moderately firm at a length of 4 inches to 5 inches, and put them in a pot of light, sandy compost. They were placed in a frame fairly well protected from the sun's rays and the lights kept close, for it is used during the summer as a propagating case for all kinds of plants. As the leaves have not much substance the cuttings were, in addition, covered with a bell-glass, the result being a great success, but unfortunately, though they were potted off, several perished during the winter from damp, which is very liable to attack them when small, in the heavy atmosphere inseparable from a cold frame during some part of the winter. Since this I have wintered them for the first season in the drier air of the greenhouse, and by the second year they are quite safe, even if confined in pots and wintered in the frame.

AMONG THE DIFFERENT SPECIES OF ASPARAGUS now cultivated for the sake of their ornamental properties, by far the most popular is that known as *plumosus nanus*, the delicate flat, frond-like branchlets of which are admired by all. In the absence of seeds, which are rarely obtainable, the propagation of this plant is effected by division of the roots, and the present is a very suitable season for the purpose. The plants that are to be divided

must be turned out of their pots and the soil shaken from the roots. A very good way to clear the soil from the roots without injuring them is to wash away the ball of earth in a tub of water, as if carefully done, not even the slightest rootlet will be damaged. The plants may be divided into as many pieces as there are separate crowns, and in some cases it will be necessary to use the knife for that purpose, but in doing so care must be taken not to cut off any of the shoots, as the underground portion is not unfrequently much curved, and appears, unless very closely examined, to spring from a source other than it really does. After division the plants must be potted into small pots, and, if possible, plunged in a gentle bottom-heat and kept rather close till root action recommences.

OTHER KINDS OF ASPARAGUS may be increased in the same way, but in the case of the low-growing *A. decumbens*, the operation is best performed in the autumn before growth commences, as this species is not evergreen, but rests during the latter part of the summer, and recommences growing in the autumn. Some kinds of *Asparagus* again, notably *plumosus* and *tenuissimus*, will strike root readily from cuttings, notwithstanding the assertions that have been made to the contrary. The cuttings are simply formed of the young branchlets taken off at a length of about 4 inches, and dibbled into pots of sandy soil. They will have to be kept in a close propagating case, and so treated will soon form a base from which shoots will push up, and in time small tuber-like masses make their appearance. Though a very good time now for division of the roots to be carried out, cuttings will succeed better if put in about a couple of months later. In the case of seeds of any of these kinds being obtainable, they should be cleared from the pulpy matter surrounding them and sown without delay, for if kept out of the ground for a lengthened period, they often lie a long time before germination takes place. T.

Cucumbers and Tomatoes from cuttings.

—The rule is to raise Cucumbers and Tomatoes from seeds, and in the case of new varieties when a packet only contains a very few seeds, and some of these not perfectly sound, the plants secured are not numerous. In fact, I have seen and heard of only one plant being raised from a 1s., 2s., or 3s. packet of seed, and when this happens cultivators are apt to think that they have paid dearly for their stock, but if we can secure one plant of a new Cucumber or Tomato, I care but little for mere seedlings, as it is quite an easy matter to propagate them from cuttings. We have recourse to this plan in the case of all new varieties, and often also in that of many old ones, as I am of opinion that plants from cuttings fruit sooner and more freely than those from seeds do. Many seedlings of both sorts rush up with a long strong stem, and blossoms do not appear until a considerable amount of growth has been made; whereas, plants from cuttings are dwarf from the first, and generally fruit a few inches from the ground. We do not trust to reproducing a favourite variety of Tomato from seed; a few cuttings of it are rooted in autumn, and these serve as stock plants to supply dozens of cuttings in spring. This is an excellent way of getting up a quantity of robust and fertile Tomato plants, and if this plan was generally adopted it would be found to give satisfaction. We hardly ever sow seed of Cucumbers after the first few plants are raised, as when the shoots are being pinched back the points are stuck into the soil round the margin of the mound of soil in which the plant is growing, and in that way they root freely and can easily be transferred to other quarters. As to the process of rooting cuttings generally little need be said, as it is as easily and simply done as securing a root to any ordinary soft-wooded plant.—J. MUIR, *Morgan, South Wales.*

SHORT NOTE—PROPAGATING.

Bouvardias.—It may not be generally known that *Bouvardias* may be propagated from the old wood. In a case which came under our notice the other day, some pieces

last year's growth had been put in by way of experiment and treated in the same way as ordinary cuttings, the result being a very fine lot of young rooted plants.

Propagating in sawdust.—Cuttings of such plants as Crotons, Dracenas, Pandanus, &c., will root in nearly anything if kept close and warm; for instance, I placed some time ago in a propagating house a wood frame, filled it with sawdust to within 6 inches of the top, and as soon as it was warmed by the bottom heat, I inserted the cuttings in the sawdust, which was well watered. A sash was placed over them, so as to keep them perfectly close, and with a little attention as regards moisture and shading from the sun, they became rooted in the short period of ten days. They were then lifted and potted in 3-inch pots and plunged into bottom heat again. As the young roots are very tender and easily broken, great care must be taken when they are being lifted and potted. The soil in which they are to be placed should also be warmed to about the same temperature as that of the sawdust from which they were taken. As a rule, I have found this to be a surer and much quicker way of striking cuttings than that of putting them singly in 2½-inch pots, but even in that case a great advantage is gained by filling the pot with prepared soil, which should consist of good loam, leaf-mould, and sand. The hole for the cuttings should be entirely filled up with sand. When the cuttings are inserted, plunge them into a good bottom heat, where they will quickly root if kept moist and shaded.—C. COLLINS, *Howick, Leisby, Northumberland.*

FERNS.

W. H. GOWER.

TWINING FERNS.

PROMINENT amongst these are the Lygodiums, a class of Ferns that are both elegant and interesting on account of the variety of tints of green which their fronds assume. The latter continue to grow from year to year, and thus extend to an indefinite length, forming dense masses of desirable greenery when trained upon wires or upon pillars, whilst the fact of their withstanding exposure to full sunlight adds greatly to their value. They are not only effective, too, but extremely useful treated as rafter or roof plants, as they thus afford shelter for shade-loving kinds below them. Lygodiums are widely distributed throughout the Tropics, and their fronds vary considerably in form even upon the same plant, a circumstance which renders the task of defining a species extremely difficult. Ferns belonging to this genus have a robust constitution and are vigorous growers, thriving equally in a house in which there is a high temperature and in cooler situations; nor are they over-particular as to soil, succeeding either in peat, leaf-mould, or loam. An admixture of these in equal parts is, however, most likely to produce the best growth. Lygodium scandens, L. flexuosum, L. polystachyum, L. japonicum, and L. venustum are all handsome and distinct forms of climbing Ferns.

Davallia parvula.—This beautiful little Fern, perhaps the smallest of the genus, is a native of Singapore and Borneo, a full-sized frond and stipe being seldom more than 3 inches in height. Its rhizomes are about the size of ordinary whipcord, and are clothed profusely with short ferruginous hairs. The fertile fronds are much smaller in their divisions than the sterile, and when the plants are well grown, the colour of the fronds is a very dark green. In growth it is rather slow, taking some few years before a patch of about a foot in diameter can be obtained. To succeed in the cultivation of this species, it should be grown under a bell-glass. When the plant is in a thriving condition, it is better not to disturb the roots in repotting, but simply transfer it, together with its pot, into another pot or pan, filling this up to within an inch or two of the rim with broken

crocks and sandstone, placing above this a layer of fibrous peat mixed with some sand and pieces of the sandstone. Should vapour condense on the fronds, the bell-glass should be taken off for a hour or so. With this treatment, and placed in a temperature from 60° to 65°, success is certain.—W. H.

D. alpina is another Bornean plant, growing from 4 inches to 5 inches in height, and of a darker green. The fronds are deltoid in shape, belonging to that section with pinnatifid, barren fronds. It thrives under similar treatment to the above. The bell-glass should not rest close on the soil, but be raised a little all round the pot or pan.—W. H.

** We have also seen both these beautiful Ferns thriving admirably on the stems of Tree Ferns, and in such situations they are very effective.—ED.

HARDY FERNS.

THE Parsley Fern (*Allosorus*, or *Cryptogramma crispata*), undoubtedly one of the prettiest of all our native Ferns, is also one of the very few which retain their characters perfectly constant; notwithstanding the enormous quantities in cultivation, no deviation from the species worthy of record has yet been noticed. It remains as it was years ago, simply the Parsley Fern. The plant,



Parsley Fern.

which seldom exceeds 5 inches to 6 inches in height, appears particularly fond of a cold climate, and is found wild in the north and west of England, at Tenterfele, near Kendal, in Westmoreland, in Rutlandshire, and at Borrowdale, in Cumberland, also in Wales, on Cader Idris, in Merionethshire, and on Snowdon, in Carnarvonshire. It is equally plentiful in the Highlands of Scotland, grand masses of it having from time to time been gathered in an old quarry in Perthshire. It is essentially a deciduous kind, losing its fronds about the end of October, and starting into growth again about the beginning of May. There are two totally distinct kinds of fronds—one barren and the other fertile, both of which are abundantly produced from a short-tufted root or caudex, which lies horizontally just beneath the surface of the soil, and produces a great quantity of very minute fibrous rootlets. The fertile fronds are considerably taller than the others, which are very much appreciated for bouquet and button-hole making, and produced as a second crop of foliage later in the season. Their spores ripen and scatter themselves in their native state about September, after which the foliage begins to die down, the barren fronds remaining on the plants the longest. Although often found growing in exposed situations, it delights in a cool, moist, and shady spot, and is specially adapted for a quiet nook in some well-constructed

rockery; it should be planted in a mixture of loam and peat in about equal parts, with the addition of bricks broken into small pieces, but care should be taken at the same time that no lime enters the compost, as it, as well as smoke and gas, is highly injurious to it. It may be propagated by seedlings, but this is a slow and tedious process; the more so as it is readily increased by the division of the crowns in the spring months just before its growth commences. This little gem also grows luxuriantly in the greenhouse, under the shade of Vines, or in a cold pit. When planted in the rockery out of doors or in a border, a little protection in the shape of a handful of leaves or litter may with advantage be given to it. S. G.

CORBULARIAS AND THEIR DISTRIBUTION.*

CORBULARIAS of late years having become popular decorative plants, the whole of the known forms being now introduced to cultivation, I think that a few notes on their characters and geographical distribution, mainly derived from my own observations, may be acceptable. Although the greater number of the species of *Narcissus* have a wide geographical range, many of them spreading over the whole area occupied by the genus, the subsection *Corbularia* presents a contrast in the limited and compact area it occupies compared with the wide ranging of the entire genus *Narcissus*. The Spanish Peninsula is its metropolis, and beyond this its extension is very limited. It has a range of about 10 in latitude, from 35° to 45° north, and 12 in longitude, from 9° west to 3° east. Forms of *Corbularia* are to be found throughout almost the entire Spanish Peninsula, and they extend sparingly beyond the Spanish frontier into France, and along the North African coast from Tangier to the longitude of Algiers. The most northern recorded habitat is near Bordeaux, and the most south-eastern at Guet es Stel, 150 miles south of Algiers, where I gathered *Corbularia monophylla* in the spring of 1873. *Corbularias* do not occur in the Balearic Islands. The general impression left by the careful study of all the forms is that they are merely connecting links of one variable species which is undivisible by any well-marked boundary lines, and however different the extreme forms may appear, they are connected by insensible gradations, between which there is no definite demarcation.

FLOWER COLOURING.—Every form of *Corbularia* is self-coloured, and however much the forms and species vary in shade, the segments are invariably of the same colour as the corona, except that they are externally green, and the bicolor forms, such as occur in almost every other section of *Narcissus*, are never found in *Corbularia*. The filament is also invariably of the same colour as the corona and segments. We find, however, two or three distinct sets of colouring, viz., white, primrose-yellow, and orange. I say sets of colouring, because, excepting the white, the other two colourings, primrose-yellow and orange, run through, as it were, in duplicate the entire series of forms, however variable they may be in stature—*q.*, we have large primrose-yellow forms and large orange forms, small primrose-yellow forms and small orange forms, and in the same colour duplicates of every size. I have felt inclined to give the white *Corbularia monophylla* from North Africa a separate sort of specific rank from its invariable colouring of a kind that I was not aware occurred in any other form; but I have been somewhat shaken in this conviction by Mr. Tait's discovery near Oporto of a white form of *Corbularia nivalis*, the flowers of which are normally orange.

HABITATS, ALTITUDES, AND DISTRIBUTION.—The range in altitude is from near the sea-level to heights of from 6000 feet to 7000 feet, and my observations show that there are no strikingly prevalent highland or lowland forms, many of

* Notes on the geographical distribution of *Corbularias*. A paper read before the scientific committee of the Royal Horticultural Society on Feb. 8 by George Maw, F.L.S.

them having wide ranges in altitude. The habitats are generally moist boggy places. The forms are never intermixed, each occupying a distinct habitat; indeed, I have only met with one case in which two different forms grow in proximity, and in this instance they were not associated, but occupied separate portions of the mountain pasture. I shall perhaps be able to more clearly express the facts I have generalised by describing as an itinerary through Western France, Spain, Portugal, Morocco, and Algeria, mostly from my own observations, the successive forms of *Corbularia* that would be met with in such a tour. Commencing at Bordeaux; soon after leaving Bordeaux Station, the moist, healthy places in the Landes are at frequent intervals bespangled with the large sulphur-yellow form, which is also seen occasionally by the sides of the railway as Bayonne is approached, and the same large pale form is frequent near the sea level in the neighbourhood of Biarritz. The following localities in France on the borders of the Western Pyrenees may also be enumerated: Gradignan and Teste near Bordeaux, Agen, Dax, heathy places on Mount Olivet and the Palombiers above Bagnères de Bigorre, Tarbes, between Bagnères de Bigorre and Savoy; sandy places—Tiple near Fumel, Prades, Villefranche, Morlass, Pau, and between Biarritz and Cambo. It is also abundant on Monte de la Haya at altitudes of from 2000 feet to 2400 feet, and on other mountains on the Spanish frontier near Irun. A small, pale yellow form has recently been found near Biarritz. Passing into Spain, we find on the limestone hills of Pancorbo, at a height of 3000 ft., a form somewhat different to that prevailing in Western France, with small, bright yellow flowers on a long scape. Turning northwards towards Leon, the moist places within sight of the railway are golden yellow in April with a small orange form; and a still smaller orange form, approaching *nivalis* in character, is abundant near Busdongo, at an altitude of from 4000 feet to 5000 feet on the pass over the Asturias. Descending the north side of the Asturias, the same large pale yellow form which prevails on the north side of the Pyrenees in Western France again presents itself in moist meadows near Oviedo, near Lugones, and between Oviedo and Gijon; and in the immediate neighbourhood of Gijon a large orange form occurs sparingly. In passing by rail from Leon to Corunna, small orange *Corbularias* were abundant between Leon and Astorga; and west of Astorga the large orange form similar to that at Gijon occurred sparingly at intervals.

Passing southwards, two forms, *C. nivalis*, with small orange flowers, the smallest known form, and *C. Graellsii*, with pale primrose-yellow flowers, occur abundantly on the Sierra Guadarrama at altitudes of from 3000 feet to 5000 feet; in a meadow near the Naval Peral Station they were growing in proximity, though not intermixed; *nivalis* occurred in a boggy part of the field, and *Graellsii* on the dryer ground at an elevation of about 4000 feet. Descending the southern side of the Sierra towards the Escorial, *C. Graellsii* bespangled like Primroses the moist pastures with tens of thousands of its pretty pale yellow flowers. I gather from Mr. A. W. Tait's "Notes on the Narcissi of Portugal" that the same kinds of variations occur in the Portuguese as in the Spanish forms of *Corbularia*. The following particulars are mainly derived from Mr. Tait's notes, and partly from my own observations. In several parts of Portugal the form *obesa* occurs: it is of low stature, orange in colour, and departs somewhat in shape from the other forms in the corona, being inflated or balloon-shaped, with a convex instead of a concave outline. I found this in the neighbourhood of Cintra in 1871. It grows at Coimbra, intermixed with the ordinary *C. Bulbocodium*, and on the Berlengas Islands, off the coast of Portugal, all the *Corbularias* are of the *obesa* type. Mr. Tait's enumeration of the Portuguese *Corbularias* is as follows:—

No. 1.—With short-stemmed, bright orange flowers, produced in February and March; found in the neighbourhood of Oporto, within 100 feet of the sea level.

No. 2.—With a much longer scape and larger flower than

No. 1, and an exceptionally large bulb, from hot marshes near the sea, at Ovar, twenty miles south of Oporto, flowering in March and April.

No. 3.—Somewhat similar to No. 2, but of the *obesa* type, from Cantanhede, forty miles south of Oporto, flowering about the 18th of April at an elevation of 30 feet above the sea level.

No. 4.—*Corbularia nivalis*, the smallest known form, was found abundantly by Mr. Tait at elevations ranging from 1500 feet to 4600 feet on hills near Povoia de Lanhoso and on the Gerez Mountains, flowering from the beginning of March to the middle of May, according to elevation, but much paler in colour, varying to white, than the form I found in the Spanish Sierra de Guadarrama.

No. 5.—A double variety of a form resembling No. 1, found at Ovar, flowering on the 17th of April.

No. 6.—One of Mr. Tait's most interesting discoveries is a supposed hybrid between *Corbularia nivalis* and *Narcissus triandrus*, flowering from the end of April to the middle of May, at an elevation of about 3500 feet on the Gerez Mountains. The corona resembled that of *Corbularia nivalis*, but the segments were broader, and reflexed like those of *Narcissus triandrus*. The seven specimens obtained in the years 1885 and 1886 were growing intermixed with the supposed parents. This, I believe, is the only known hybrid *Corbularia*.

And now, crossing to North Africa, two West European forms occur on the Barbary coast, opposite the narrow Straits of Gibraltar, viz., the typical *C. Bulbocodium* and the inflated form, *C. obesa*, in the neighbourhood of Tangier, but how far these extend east in the direction of Algiers has not been ascertained. In the province of Oran, as at Beniza, near Sidi-bel-Abbès, at Saida and Djbel Santo, and other localities, the nearly white *Corbularia monophylla* takes their place, and there is no record of the occurrence of any orange *Corbularia* in Algeria. *C. monophylla* appears to extend as far to the east as the longitude of Algiers, or a little further east than the eastern limit of *Corbularias* in Europe. It grows abundantly near the Cedar forest at Teniet-el-Ahd, and in the spring of 1873 I observed it in flower at Boghar, 70 miles south of Algiers, and again at Guelt-es-Stel, 150 miles south of Algiers; but the last is the most south-eastern point from which it has been recorded, and is probably nearly the south-eastern limit of the range of the genus.

It will be gathered from these records that, with the exception of *C. monophylla*, there is no definite line of demarcation between the various forms of the genus, which pass into each other by insensible gradations, and that even in their geographical distribution they are scattered through the region they occupy in a very irregular way, both as regards altitude and locality.

NOTES OF THE WEEK.

Primula Magenta Queen—We have received from Mr. E. S. Williams, Victoria Nursery, Holloway, flowers of this new form of Chinese Primrose. They are large, of good substance, beautifully fringed, and of a rich, clear, deep magenta; a strikingly effective Primula.

Christmas Roses—Mr. G. F. Wilson has brought us some remarkably fine blooms of Christmas Roses sent to him by Mr. W. B. Hartland, of Cork. The finest of the collection was Mr. Poe's variety with pink stigma, apple-green stems, and very large blooms. The flowers are well above the foliage and very erect. A similar flower was more imbricated, free from pink stigma, and the foliage stems more pale in colour.

Snowdrops and other early flowers—I send you a few of our giant Welsh Snowdrops; later on, when fully developed, they will be much larger. We have also in flower *Galanthus plicatus*, G. Shylocki, G. pœniformis, G. latifolius, and the double flowered form of our Big Welshman. How pretty *Erica melanthera* and *E. carnea* are at present! and so useful as cut flowers, when save a stray *Crocus*, a few Primroses, or a lot of white Arabis, our other flowers are few indeed.—J. A. WEBSTER, *Llondegan, Bangor*.

Scarlet Musa—A bit of glowing red is effectively furnished just now by *Musa coccinea*, at present beautifully in flower in the Trinity College Botanic Gardens, Dublin, from which Mr. Burbidge sends us a brilliant example. With it also came blooms of Cornish Yellow Daffodil. It is a strong and quick grower, increasing rapidly, and forces well. The flowers received were stated to be from a greenhouse.

Chrysanthemum Golden Gem—As a further proof of the lateness of Golden Gem *Chrysanthemum*, I send you a head of bloom. I find this to be the best of all late *Chrysanthemums*. Every flower-bud expands, and under the worst of treatment. Cuttings struck in April in small 3 inch pots and potted on

into 5 inch and 6-inch pots, and stopped three times, the last time being about the first week in July. That is all the treatment, so far as making it late, they have ever received—in fact, all my stock of *Chrysanthemums* is treated alike.—ROBT. OWEN, *Floral Nursery, Castle Hill, Maidenhead*.

* * The flowers sent are golden yellow, and marvels of freshness, being as bright and clean-looking as *Chrysanthemums* could be in the early days of November; the foliage, too, is equally fresh and healthy. This variety is evidently an acquisition.—Ed.

A gardener's orphanage—Mr. Penny, Sandringham, suggests that as a house for the orphans of gardeners is badly wanted, such an institution would be a suitable gardeners' recognition of the Jubilee year. Attached to the orphanage he proposes to have a piece of land for cultivation, a school to hold fifty boys and girls, or more as the funds may allow. If every gardener would contribute 5s. and every journeyman 2s. 6d. annually, he thinks that sufficient funds might be raised for the purpose here indicated.

Callicarpa macrophylla—The common *Callicarpa* (*C. purpurea*), with its long branches clustered with bright purple berries, is a well-known shrub. *C. macrophylla* is somewhat like it, but instead of the berries being purple, they are pure white. The two shrubs should be grown together, and one can imagine the pretty effect of the white and purple-berried stems intermixed. *C. macrophylla* is now in berry in the Palm house at Kew.

OLD HOUSE AND SURROUNDINGS.

WE lately received from Mr. Fowler Jones, of Quarrybank, Malton, a number of photographs representing beautiful woodland scenery and country seats taken by him, chiefly in the midland and northern counties. From these we have selected one for illustration in THE GARDEN. It represents a beautiful old house surrounded by a garden of quite an unconventional type, and is the property of Sir George Wombwell. The building shows one part of the original hall inhabited by the Colvil family, who lived there at the time of the Norman survey. Such specimens of pure old English architecture are now so rare, that peculiar interest attaches to them apart from the historical associations that are generally connected with them. The quiet colour of the weather-beaten and lichen-stained old walls is enhanced by the luxuriant tree and shrub growth that reaches almost to the doors and windows, and this is one of the chief differences between old and modern country mansions. Old houses almost invariably nestle peacefully midst unrestricted tree-growth; new ones, as a rule, stand on a treeless level, often amid a maze of pattern beds and gravel, and are rarely unaccompanied by a raised terrace, with its excessive array of statuary and other formalities. We fear that architects, not landscape gardeners, are often responsible for this state of things. They seem to have an abhorrence of greenery of any sort approaching their handiwork. The prevalent practice among architects now seems to be that of raising the floor line of their houses seldom less than 2 feet above the natural ground level; consequently the surrounding soil has to be made up to it at great expense, or you get the alternative of the conventional terrace, with a more or less steep bank having no connection with the outlying ground. It is, therefore, a great pleasure to come upon such a house as that here represented after visiting those of the modern stamp. One can picture to themselves the charms which the old garden in connection with such a house must present at every season of the year. It would be brilliant with flowers in spring, shady in summer, glowing with the rich hues of the decaying leafage in autumn, and sheltered and snug-looking in winter. W. G.

STOVE AND GREENHOUSE.

T. BAINES.

STATICES AND THEIR CULTURE.

THE distinct appearance of these plants, the enduring character of their flowers and the freedom with which they are, as a rule, produced, are properties sufficiently desirable, one would suppose, to have caused their being more generally grown for greenhouse and conservatory decoration than they have hitherto been. The different species and varieties of *Statice* that require greenhouse treatment are not open to the objection often—though groundlessly—urged against the hard-wooded section of greenhouse plants—that of being unsuitable for general cultivation on account of their requiring more attention in stopping and training in the early stages of their growth, and more tying when they get older than the commoner kinds. It would be difficult to point to any plants that need so little training as *Statices*, either whilst young or when they have

on growing slowly in the winter, and in this they are unlike plants that remain all but at rest during the dormant season. In common with most plants, they need plenty of light, but in the spring and summer they should have a slight shade in the middle of the day; in the absence of this their leaves, even where the growth is strong, do not attain the size they otherwise would do. When a little protection is given, not only does the foliage get much larger in size, but it is fresher in appearance, and the growth made is double that which is forthcoming when the full force of the sun is allowed to reach the plants. This is particularly the case with *S. profusa*, a seedling variety which, taking all its qualities into account, may be said to be the best of the *Statices*. The leaves of the different kinds, though somewhat soft in texture, are of an enduring character when the plants are kept free from insects, particularly aphides and red spider, both of which attack them, and which, from the partially drooping habit of the leaves, are often present in quantity on their under-side without being detected by

markable for the freedom with which they make roots, and which penetrate the soil within the pots, so that the whole becomes a mass of fibres. This points to the necessity for giving more pot-room during the early stages of growth than would be required by things that make slower progress in this direction. When free-rooting plants like these are not allowed sufficient room in their early stages, they suffer in a way that can rarely afterwards be remedied, as when the roots get so packed together in the soil the plants languish for want of sustenance, getting into such a stunted state, that nothing that can then be done in the way of additional pot room has the desired effect.

Statices are frequently grown in peat, but good, rich, fibrous loam suits them best, as, like most things that will succeed in either of these materials, the leaves have more solidity and endurance in them when loam is used than peat. In localities where good peat can be obtained, and the loam is of an inferior description, I should give the former the preference. But whichever



View of old house and surroundings. Engraved for THE GARDEN from a photograph sent by Mr. G. F. Jones, of Malton.

attained specimen size, as even when they are large, nothing in the form of support is necessary beyond a few sticks to keep the branches sufficiently open. The colour of the flowers of the different sorts of *Statice* is likewise the least common amongst greenhouse plants that are of an enduring nature, and this also may be set down in their favour. The texture of the flowers is such as to enable them to retain a fresh appearance on the plants for months, whilst their form makes them distinct from all others.

There are one or two peculiarities in the cultivation of *Statices* that must not be lost sight of; yet, taking them altogether, they may be set down as amongst the easiest things to grow, and with fair treatment such plants will last from a dozen to a score of years. I have had *S. profusa* at the end of fifteen years as full of health and vigour as ever. All the kinds will succeed under ordinary cool greenhouse temperature, but in the winter months they like to be kept a little warmer than many plants need to be, as to do justice to them they require to keep

those who have not had much experience in their cultivation. When these pests become at all numerous, they do much injury, not alone by the dull, unsightly colour which the affected foliage assumes, but the vigour of the plants is proportionately reduced through the premature decay of the leaves that are thus affected. But if during spring and summer a little forethought is used in keeping a look-out for insects, and when they are discovered means are at once taken for their destruction, they will give little trouble. Plants of most kinds that are grown under glass are especially subject to the attacks of insects; and the want of exercising vigilance in their detection and destruction is the rock on which the expectations of not a few who attempt plant growing are wrecked.

Where attention is given to the matters above-mentioned, no one need feel doubtful of succeeding with these plants, which, as I have already intimated, will well repay the little care required to keep them in a thriving condition. When the foliage is clean and healthy, the plants are re-

is used, it should be of a nature that will admit of its lasting, as there must be no attempt at shaking out with the intention of renewing the material in after years. An addition of leaf-mould is sometimes advised for *Statices*, yet, though it gives an impetus to the growth for a time, it is better not to use it for these and other plants that do not like being periodically, all or partially, shaken out, as the material in question is deficient in the enduring properties that should be present in soil that the roots have permanently to remain in.

Those who prefer propagating the plants themselves will find no difficulty in striking cuttings. These should consist of shoots taken off in spring, severing them at a point where the wood is in a half solidified state. Some of the lower leaves will require removing, being careful in doing this not to injure or strip off the bark. The cuttings should be put singly into small pots partly filled with a mixture consisting of equal parts of sand and finely sifted loam, with sand alone on the top. Keep them moderately

moist and confined under a propagating glass, shading from the sun. They will not root so quickly as some things; consequently an intermediate heat will be safer for them than the high temperature that answers for plants that root quickly. After sufficient roots are present disperse with the glass, but keep the little plants on in a growing temperature through the summer, with shade in bright weather. They will require moving into larger pots before the season is too far advanced to admit of the roots getting well established in the soil. A temperature of 45° will suit them during winter, standing them where they will have plenty of light. So treated, they will keep on moving slowly. In spring cut out the points of the shoots. It is necessary to attend to this in good time, as if left to themselves the plants will not branch out low enough, the growth simply being confined to a single shoot until they are too tall and leggy. Plants of this character of any of these *Staticee* must be avoided, as they will never make well-furnished specimens; 6-inch pots will now be about the right shift to give them; this they should have early in spring. In the matters of air, light, and water, treatment such as is required by the generality of young hard-wooded greenhouse plants will answer, keeping a little more moisture in the atmosphere than is necessary for older stock, shading as before advised when the weather is bright and syringing freely when the house is closed in the afternoons until the end of summer, when more air and a drier condition of the atmosphere will be an advantage. All that will be needful this season in the way of stopping is to pinch out the flower shoots as they appear. So naturally inclined are most of the kinds to bloom, that they will produce flowers when the plants are quite small, yet it is much better not to allow them to do so until more size has been attained, as blooming at this stage will interfere with growth. Little, if any, shoot-stopping will now be necessary, as one peculiarity common to the different kinds of *Staticee* is that each flower-stem that appears divides at the extremity of the shoot from which it springs so as to form a second shoot, and in this way the plants continue to multiply their branches so long as they exist. As the branches get long enough to admit of their being tied out they should be secured with a few neat sticks and ties in a horizontal position, by which means the base of the specimens will be furnished, and overcrowding of the shoots in the centre of the plants will be avoided. After the second summer they may be allowed to bloom; some of the sorts, *S. profusa* in particular, will keep on pushing up flower-stems from early in spring to the end of summer, and these will open in succession, keeping the plants gay for half the year. After this larger shifts will be required at the annual potting, which, with these plants, is always best carried out early in spring. With a continuance of the treatment recommended they will attain a large size, ultimately needing pots 18 inches in diameter, or even larger, but when the specimens are in pots approaching these dimensions they must not be potted oftener than once in two years, assisting them during the growing season with manure water. *Staticee* are not so liable to die off suddenly in the way that some things do. I have had plants which, at the end of fourteen or fifteen years, were as vigorous and free in growth as when they were not more than as many months old. The best sort, *S. profusa*, is a small-leaved, bushy-habited kind, a good grower, and a free bloomer. *S. Butcheri* is a very fine variety, a strong, rapid grower; the flowers are produced freely, and are a fine deep shade of blue. *S. Holfordii* also is a strong, free-growing sort, with stout, many-branched flower-stems,

S. imbricata is a desirable kind that grows and flowers freely.

Asters in spring.—At a meeting of the French National Horticultural Society in April last some well-grown plants of *Asters* were exhibited in good bloom. It is not stated what particular variety they were, but they varied in colour, and it is certainly interesting to know that double *Asters* can be had in full flower in the spring months. The seeds were said to have been sown in summer, so that the plants just had time to make their growth. One would think that well-flowered pots of *Asters* would find a ready sale in Covent Garden in spring. It appears to be an easy matter to get them at that time of year.—BY FLEET.

Echeveria retusa.—This charming succulent blooms very freely, and is distinct in character from the general routine of winter-flowering plants. It is very compact in habit, bears beautiful red and yellow flowers, and may be easily propagated by means of the little off-shoots that are annually thrown up from the old stools. Great care must, however, be taken when the cuttings are put in that they are not over-watered, as being soft and fleshy they are very liable to damp off. A good plan is to lay them on a shelf for a few days to dry. They will do well if, after being established in pots, they are placed in a cool frame during the summer months, and in early autumn transferred to a moderately warm greenhouse.—T.

Roman Hyacinths.—The demand for white flowers at all seasons makes these *Hyacinths* doubly valuable, and the length of time during which they may be had in bloom is not the least of their recommendations. Other *Hyacinths* may be larger, but their size militates against their usefulness in a cut state. We do not force *Roman Hyacinths* into bloom nearly so early as might be done, because during autumn there is such a wealth of other white flowers, that they are really not wanted. Between December and April, however, they are most valuable, and, by having a succession of boxes in cool houses, and bringing them into gentle heat to open their flowers fully, a supply may be kept up, as they remain long in a half-open state in a cold house. Having quantities of bulbs that had been used in pots and boxes for one year, I have at various times planted them out, close to the foot of walls in various aspects, and they become useful for a late supply. The only attention they require is to put a little litter over them if very sharp frost sets in after they push through the soil, which they do before the ordinary Dutch kinds. Close to a wall, however, with a few glass lights or thatched hurdles put over them at night or during rough weather, they expand, fresh, fair, and fragrant, and, without any expensive appliances or scorching fire-heat, this lovely flower may be had nearly half the year.—J. GROOM.

Chinese Primroses.—Whilst a visit to Woodside, Farnham Royal, in a couple of months hence will be rewarded by the sight of some 2500 plants of Mr. James's best strain of *Cinerarias* in bloom, even now a visit is amply repaid in seeing the several hundreds of *Chinese Primroses* there which, in the clear light of that elevated rural district, exhibit the purest colours and the finest of culture. Better plants cannot be seen anywhere. All are sturdy, clean, and healthily luxuriant, both in foliage and in bloom. The old Market White, which always produces tinted flowers, is nevertheless a grand strain, the flowers of which are of wonderful size and substance, and make fine heads of bloom; constant selection has done this. The finest pure white is a light, Fern-leaved kind, that produces very large ivory-white flowers, borne in big trusses on stout stems, and presents one of the most perfect white *Primulas* yet seen. Another of great beauty has pure white flowers on reddish foliage; and yet another has mauve flushed flowers on dark red foliage. The lavender or marginate strain is wonderfully fine, and the flowers if anything over-large. The single red and single blue are of the best of their kinds, and a very pleasing form has reddish cerise flowers. The only semi-

double is one producing fine flowers of a magenta-red hue; this is a grand strain. All the plants are in perfect health, and when seen in masses of colours and sorts, command almost enthusiastic admiration, they are so exceedingly beautiful.—A. D.

STEPHANOTIS FLORIBUNDA FAILING.

It would be difficult to name a more popular plant than this, but although so well known, it is by no means generally to be seen in a flourishing or profitable condition. The reasons for this in some instances are not far to seek. No plant is more liable to be infested with mealy bug, or, during the period of active growth, more difficult to clean. A few years ago it was considered the best plan to take down the whole of a dirty plant and perhaps dip it in some bug-destroying solution, afterwards returning to the roof or trellis, as the case may be, only to find that the dose must be repeated several times before the bug is eradicated. I have frequently seen large plants of *Stephanotis* gradually taken down, the joints scrubbed with brushes, and the leaves sponged, some kind of insecticide being used at the time. The result of such a proceeding is a much-scratched and otherwise badly damaged plant, but no real clearance of the bug. The remedies are perseverance and petroleum, both being cheap, and altogether superior to the many nostrums, none of which, however, that I have tried, being really effective. There is no necessity to loosen the plants from the wires. After they have been duly pruned and thinned, and before active growth commences, the insect pests should be destroyed. Our remedy is two ounces or a wineglassful of petroleum (more commonly termed paraffin) to a gallon of soft water heated to about 120°. Some add a lump of soft soap about the size of an egg to every 3 gallons of water, but we have tried this repeatedly without discovering any advantage in its use. If two syringes are available, one is kept constantly forcibly discharged back into the can, and the other syringing the infested plants. When one syringe only is employed, every second discharge should be back into the can, as it is only by these means that the oil can be kept from floating on the surface. Merely damping the plant with the petroleum and water is not sufficient. It should be well driven into the clusters of bug, thus causing their rapid destruction. This must be persevered with, no one application being really effective, and if the later syringings have to be given during bright, sunny weather, a heavy shading overhead is necessary, otherwise the oil may cause the loss of a good many leaves. In hot weather it is also advisable to syringe with clear water soon after the oil has been used. Petroleum thus applied injures neither the foliage nor roots, and destroys scale as well as bug.

METHOD OF PRUNING.—This is sometimes answerable for a comparative failure of the *Stephanotis*. In many instances we see plenty of strong, healthy growth and few or no trusses of bloom. Very frequently the blame for this is attached to the variety, many holding, and it may be with some good ground, that there are forms in existence which flower anything but abundantly. Such was my conclusion at one time, but I have since considerably modified my opinion. We are supposed to have one of the best forms, and have raised plants for friends who covet them. Some of these flowered most satisfactorily and others quite the reverse. According to my experience, plenty of bloom in long succession, or say from the spring till the autumn, is best obtained by affording a limited root-run, a light position for the growths, a good rest in the winter, as well as a cautious use of the knife. One of the most floriferous plants I have yet seen, and which covered the roof of a small span-roofed stove, was growing undisturbed for three years in a 12 inch pot. It is almost needless to add that it was very carefully attended to, being watered during hot weather two or three times daily, a good top-dressing of old cow manure being given each spring, and frequent weak supplies of guano water

when in active growth. A careless cultivator would fail with a large plant in a comparatively small pot, and those who cannot attend closely to the wants of a large specimen will do well to plant it out in a loose brick pit situated somewhere near the pipes. Such a pit might be about 3 feet square and 2 feet in depth. A suitable compost would consist of two parts of turfy loam to one of good fibrous peat, both roughly broken up, and to this may be added a sprinkling of charcoal, mortar rubbish, and decayed manure, silver sand also being plentifully used. When the plants are breaking afresh is the time to turn them out of pots, and if the roots are carefully loosened from the old mass of soil, much of the latter being picked away, and well spread out in the new soil, they will soon take to their fresh quarters. In succeeding years it may be advisable to occasionally renew the soil in these pits. This, owing to the walls being formed with loose bricks, is a simple matter. The top-dressing given may consist of old cow manure, or, failing this, some fresh compost and a little bone meal may be added. While growing strongly abundance of water should be given, and those that are flowering freely also require frequent supplies of soot water, or some kind of artificial manure, always, however, in moderate quantities. Such treatment usually induces a healthy growth, and at the end of the season the plant will be well furnished with plenty of long and fairly strong growths. From September to the end of the year little or no bloom will open, and it is during that time that they ought to be rested. Only sufficient water should be given to keep the foliage from flagging and the roots from perishing, and this, coupled with a fairly dry atmosphere, ensures the ripening of the wood. Plenty succeed very well up to this point, but after well maturing these long growths they proceed in January or early in February to cut them hard back to near where they started from. The consequence is a vigorous break, and little or no bloom for some time or till the leading shoots are several feet in length. The proper course is to leave the greater portion of these well matured growths their full length, only cutting away any that may be weakly, or thinning out where they are at all crowded. Near the ends of many of these reserved growths there are frequently several embryo trusses formed late in the season, which increased heat, moisture, and sunshine quickly develop. This is a distinct gain, but compared with more important results following is trifling. Well matured growths will break at nearly every joint, and these young shoots are usually short-jointed as well as extremely floriferous, soon becoming literally clothed with fine trusses of flowers.

THE BEST POSITION for a *Stephanotis* is on wires fastened about 6 inches from the roof of an ordinary plant stove. Instead of training the growths in all directions, aiming only to cover the roof in any fashion, it will be found a far better practice to dispose the wires across the roof about 10 inches apart. Two or more growths may be trained along each wire, and the flowering shoots allowed to hang loose till such time as they become long or unsightly. Trained in this manner, the *Stephanotis* does not unduly shade any plants that are grown underneath, and may also be more easily kept clean. Frequent syringings serve to keep them clean, and are otherwise beneficial. They will stand any amount of heat, and, if healthy, plenty of sunshine also, but we shade lightly with blinds during the hottest part of the day—this in preference to any kind of fixed shading. Fine specimen plants seen at various flower shows are apt to mislead beginners. They are not supposed to know that these attractive specimens are not constantly trained over the formal balloon-shaped trellises on which they are flowering. Any novice, however, who attempts to both grow and flower their plant on a balloon trellis is liable to fail. During the greater part of the year all the leading growths should be thinly trained near the glass. A short time before they are wanted for exhibition they may be carefully

taken down and trained to the best advantage. We sometimes see the *Stephanotis* recommended for cultivation in conservatories, but in every case where I have known it tried, failure was the inevitable result. Conservatories, as a rule, are too heavily built, or else too cold to suit what I consider to be properly a stove plant. Even if the house is kept warm enough to induce free growth this rarely matures satisfactorily, and a flowerless *Stephanotis* is quite unattractive. Strong, well-ripened pot plants, or any which may be tubbed, will flower abundantly in a fairly warm greenhouse during the first season after removal from the stove; but I have observed that there is a great falling off indeed in the second, and failure eventually results. When at rest no harm will follow occasional low temperatures, but I would not winter a *Stephanotis* in a greenhouse. During the resting period the night temperature may safely range from 55° to 60°, and in the daytime 5° to 10° higher, but after active growth commences we like the temperatures to be respectively 60° to 65° and 65° to 75°, an occasional variation either way not much affecting the well-being of the occupants of the house. W. I.

ABUTILONS.

THESE NOW popular South American plants are very useful during the dull winter months, and also in early spring, as they yield their flowers in such close succession that one can always gather some from them. If kept in a moderate temperature they will keep on growing and flowering all the season. They are very easily raised from seed, which ripens well in the south of England. Some very beautiful varieties have been raised in this country, especially by Mr. George, of Putney, who some years ago made the raising of new varieties of *Abutilon* a special study. On the Continent, too, a double form has now been secured. It was raised from the now well known *A. Thompsoni*, and is its exact counterpart, except the flowers, which are decidedly double, but of really no beauty. *Abutilons* may be propagated easily from cuttings of the young wood, which strike freely in a bottom-heat of between 50° and 60°. Grown as pot plants, they are both useful and ornamental for the decoration of the conservatory. There may now be seen in the gardens of the Royal Horticultural Society in small pots a number of plants quite covered with beautiful flowers. As plants for pillars, too, *Abutilons* cannot be too highly recommended. When planted out in the greenhouse against a pillar, it is necessary to prepare soil for their reception. They thrive best in yellow loam, with an admixture of sand and rotten manure from an old Mushroom bed. *Abutilons* are gross feeders, and manure water may be administered to them with beneficial results. They may also be used with advantage in the sub-tropical garden, and none more so than the variegated form *niveum marmoratum*, which when pegged down makes a pretty edging to such plants as *Cannas*, *Solanum marginatum*, *Ricinus*, *Aralias*, &c. *Abutilons* also do well planted out during the summer months, more especially *Boule de Neige*, which during the season will produce its snow-white flowers in great abundance. In autumn on the appearance of frost those planted out may be lifted and potted in any ordinary soil, and kept in a warm house till they have become established; they may then be transferred to cooler quarters, and during the winter months kept rather drier. If cut down and put into heat in early spring they will yield cuttings in great profusion. All the varieties, with the exception of *insigne*, known now by the name of *igneum*, and *Sellowianum marmoratum*, are amenable to the greenhouse and summer treatment just described. The two last named varieties, however, require stove management.

The following is a list of varieties found to be the best, viz. :—

WHEELS.—*Boule de Neige*—Branching in habit and a very free flowerer; blooms of medium size, finely cupped, pure white. If the stamens are removed, the flowers of this sort

are very useful for any purpose for which white flowers are required. *Seraph*—Dwarf in habit, flowers white, more elongated than those of *Boule de Neige*.

LILACS.—*Anna Crozy*—Vigorous in habit, and a free flowerer late in the season; blooms large, with dark veenings; very pretty. *Louis Marignac*—Dwarf and compact in habit, free flowerer, and very showy.

YELLOWS.—*Lemoinei*. The counterpart of *Boule de Neige*, except in colour. *Reine d'Or*—Dwarf and compact in habit, flowers large, and of a beautiful bright yellow.

ROSE.—*Rosaeflorum*—Dwarf and compact in habit, a very free flowerer; the best of its colour. *Darwin robustum*—Strong in growth, rose, with a slight shade of red. *La Lorraine*—A very fine free-flowering variety.

PURPLE.—*Insigne* (syn. *igneum*) A tall grower; leaves large and rough; flowers, produced in clusters, of a medium size, broad, much reflexed, purple-crimson, with dark veins; a very useful and distinct variety, and one which ought to be in every collection. Figured in THE GARDEN, Vol. XVIII., p. 324.

VARIEGATED.—*Niveum imbricatum*—Leaves large, marbled pale green and yellow; valuable as a fine foliaged plant, and for bedding purposes. *Darwin tessellatum*—A beautifully variegated form, the leaves of which are prettily marbled with gold and yellow; flowers reddish, with distinct crimson veins; beautiful either in or out of flower. *Sellowianum marmoratum*—This, the handsomest of all the variegated section, requires stove treatment in order to develop its beautifully marbled foliage.

W. P. T.

Acacia longifolia.—With respect to the note on this excellent *Acacia* in THE GARDEN (p. 91), allow me to observe that there are two varieties of it—at least, there were some years ago, not differing perceptibly in growth and foliage, but remarkably so in floriferousness. I have known the shy-flowering variety to be grown for years without yielding a bloom. It may be that this has gone quite out of cultivation; if so, all the better, as it is a worthless thing; but if some of your readers have been unsuccessful in blooming this *Acacia*, they may conclude that they have the wrong kind, and may at once consign it to the rubbish-heap. The free-flowering variety is sure, under ordinarily good culture, to bloom well. —BYFLEET.

Brugmansia Waymanniana.—Mr. Gumbleton kindly sent me vol. iv. of Paxton's *Magazine of Botany*, and I see by it that my double *Brugmansia* is not *B. Waymanniana*, or at all like it. *B. Waymanniana* bears the same relation to a double one that a *Hose-in-hose* bears to a double *Polygonus*; that is to say, it is not double at all. Nevertheless, the peculiarity of shape and colour renders it a highly desirable plant. Paxton says that it was raised in a private garden from seed sent home from South America. It ought not to be beyond the powers of some of our enterprising nurserymen who have trade connections with that part of the world to re-introduce such a desirable plant if, as I suppose is the case, it has been lost to cultivation. Of course, if the plant that was raised in England was a chance sport and not typical, it is very unlikely that we shall ever look on it again.—FREDERICK TYMONS.

Gladiolus brenchleyensis in pots.—This is the brightest coloured of all the *Gladioli*, and it is the only one amongst the large-flowered section that blooms well in pots. Anyone who requires a quantity of bright flowers, either in pots or in a cut state, all through August cannot choose an easier subject to grow than this *Gladiolus*, or one that will prove more effective. The colour of the flowers is a fiery-red, and strong roots give such a grand spike of bloom, that for effectiveness there is nothing available for so many purposes to surpass them. If required, the bulbs can be potted in the sized pots that will be most suitable for particular purposes: but in general it is best to place six roots in an 8 inch pot, as the more soil the roots have the stronger will be the flower-spike. If there is no particular time at which they will be wanted in flower, they are best brought on in a cold frame; but it is a simple matter to retard them in June if needful to do so.—J. C. C.

SHORT NOTE.—STOVE AND GREENHOUSE.

Asparagus plumosus nanus. This graceful plant, which has hitherto, for the most part, been grown for the ornamentation of plant stoves or that of dinner tables, bids fair to supplant even the *Maendhair Fern* itself for such purposes. Its sprays when cut are also admirably adapted

for mixing, with cut flowers, in bouquets, and in the numberless other ways in which elegant greenery can be employed. This dwarf variety is largely and well grown by Mr. Luing at Forest Hill.

SEASONABLE WORK IN PLANT HOUSES.

STOVE.—The length of time during which a large well-grown specimen of *Stephanotis* will continue in bloom is such that where two or three plants are available, there is no difficulty in having a succession of its highly perfumed flowers during much of the spring and summer. The plant, even when required to cover a large space, does not need nearly so much root room as many things, or as is often given it. In common with most free-growing climbers, it thrives the fastest when planted out, but large specimens will continue for a number of years in a healthy condition when their roots have no more space than an 18-inch or 20-inch pot affords. And when thus grown there is the important advantage of being able to regulate the time of blooming by moving the plants to a warmer, or a cooler, structure at will; whereas when they are planted out in a bed their time of flowering is wholly dependent on the temperature that is kept up in the house where so located. Pot specimens that have been wintered in a temperature of about 55° should be moved to warmer quarters; 65° in the night will not be too hot for them. The roots will have been kept in a somewhat dry condition during the time the plants have been at rest, but the soil must now be well moistened. With the heat named, growth will commence at once, and if the last year's wood has been well ripened the young shoots will not extend far before they show flower from every joint. Except in the case of young examples that are required to be grown on, potting should not be attempted until after the plants have flowered.

COMBRETUM PURPUREUM.—Although much less useful for the production of cut flowers than some other stove plants, this is a fine plant for clothing a pillar or rafter, or for training over a path in the stove. Young plants that are required to fill more space should have enough root-room to support top growth, and unless the soil is not fully occupied by the roots, larger pots ought to be given now when the growth is beginning to move. In the case of full sized specimens some of the surface soil may be removed, replacing it with new; at the same time look to the drainage to see that it is in a condition that will enable the water to pass freely off. Being a slower grower, and also more limited in the extent of growth that it makes than many stove climbers, this *Combretum* requires proportionately smaller pots than the more vigorous occupants of the stove.

SARRACENIAS.—To grow these plants well there are several matters connected with their cultivation that need to be carried out to the letter, and without which their singular leaves will never attain anything like the size which they are capable of. The first essential is that the whole of the old material in which they are grown must be shaken away and replaced with new once a year. If this is not done, from the saturated condition it requires to be kept in, it is liable to get more or less too far decomposed for the roots to keep healthy in it. It is of equal importance that the shaking out and repotting is carried out before the roots have begun to move, otherwise the tender points of the young fibres are sure to get a check, the result of which is that the leaf growth that follows will be weakened. When the plants are wintered in a night temperature of about 48° or 50°, with a rise by day proportionate to the weather—which is better for all the species and varieties than if kept warmer—all the sorts except the different varieties of *S. Drummondii* will be in a condition to repot at once. The *Drummondii* varieties must be repotted in July, at which time their roots are usually quite at rest. The fibrous matter out of good Orchid peat with chopped Sphagnum, broken crocks, and a little sand, is the best material to grow them in. Give a good soaking with water as soon as the potting is com-

pleted. Stand them with their tops close to the glass in a light house, with no more shade than a thin piece of canvas over them whilst the sun is bright. Give an intermediate heat during spring and summer, with plenty of water once a day. Neither thrips nor greenfly must be allowed to have a lodgment on them, or the leaves will be disfigured. Treated in this way anyone may grow these interesting plants, the flowers of which are even more curious than the leaves, although it is better to pinch them out as soon as they appear until the plants get strong, as, in common with most things, blooming weakens *Sarracenas*.

DIPLODENIAS.—Where these plants were re-potted in the autumn, which time is the best where a warm stove temperature is maintained during the winter, they will now be in active growth. Regular attention will be needful to keep their twining shoots from getting entangled together. To do any good with these plants, the young shoots as they grow must be trained to wires or thin strings so placed that the extremities of the shoots as they extend are a little on the ascent. If allowed to hang down they will come weak and make little progress. Care must be taken not to over-water, as any excess of moisture in the soil is fatal to the roots. The white-flowered *D. belviensis* is the most useful of all for cutting, though the flowers individually are less conspicuous than those of the others. It does better planted out than the other kinds, either species or hybrids, do. So treated it will cover as much space under a roof as a *Stephanotis*; it will also succeed with less heat than the others. In stoves where the winter temperature is comparatively low, *Dipladenias* will now only be commencing to grow, in which case where the plants have attained full size they may be turned out of the pots, and the old soil shaken away, not disturbing the roots more than can be avoided, repotting in new material; good, turfy peat that is full of vegetable fibre, with a liberal addition of sand and some dry manure, such as is obtainable from an old Mushroom bed, is the best to grow them in.

IMPATIENS.—The merits of the ever-flowering *I. Sultani* are now so well known, that nothing requires to be said in its favour. Not the least of its valuable properties for ornamental purposes is that it will flower in even the smallest state. *I. Hawkeri* promises to be even better than the earlier introduced kind, the colour being more intense. Cuttings of these pretty Balsams should be put in; they will strike readily in a brisk heat. Young stock now propagated will begin to flower almost as soon as they get established in small pots, and will continue blooming as long in autumn as there is enough heat kept up to enable them to make growth. But, like other quick-growing plants that are soft in the texture of their shoots and leaves, if not stood close to the glass, they soon get so much drawn and puny as to have an indifferent appearance.

GREENHOUSE CLIMBERS.—Most of the kinds of climbing plants that are used for covering back walls, training round pillars, or draping the rafters require more or less cutting in once a year; but, in carrying out this work, it is necessary to take into account the more or less vigorous habit of the plants, shortening the branches proportionately according to the extent of top growth each particular species makes; and it is equally necessary that the time of pruning should be varied; species that flower from the current season's growth should be pruned at the present time before the plants begin to push their shoots. On the other hand, the various kinds that flower in spring from the growth made last summer must have whatever pruning they need deferred until after they have bloomed. In the case of such as are planted out in beds or borders, they should have assistance by top-dressing with new soil sufficiently enriched by the addition of manure. To make way for this, as much of the old exhausted material from the surface of the bed as can be got away without disturbing the roots should be removed. Inside borders wherein plants of the description under notice are grown are usually shallow, with drainage

material underneath, and, with the limited supply of water that is applied during the season of rest, it not unfrequently happens that the mass of soil gets so dry that it takes more water to moisten it through than is supposed, though the surface may appear wet enough. In such a condition it is scarcely necessary to say that healthy root growth is out of the question, the result being that the shoots come weak and the foliage gets infested with insects, which invariably seem to revel on plants that are wanting in healthy vigour. To avoid this, all beds and borders should now be examined to see that the soil is fairly moist all through. Roof climbers, if allowed to get infested with insects, naturally communicate them to everything that is grown underneath them; to prevent this, the whole should be gone over, giving them a thorough cleaning.

PLANTING CLIMBERS.—The present time, and a little later on, according to the earlier or later period of their growth commencing, is the best season for planting out greenhouse climbers. Success with plants of this character that are expected to go on for a number of years in a great measure depends on the preparation that is made for them. The soil, whether peat or loam, should be the best of its kind that can be obtained, containing enough vegetable fibre to enable it to keep in a sweet, healthy condition until the roots have had time to get well hold of the whole mass. In addition to this, sufficient sand, with broken crocks, crushed sandstone, or charcoal to keep it porous, should be added, and in all cases enough drainage ought to be placed in the bottom, with means for the water that percolates through the bed to pass off.

T. B.

FLOWER GARDEN.

CULTURE OF GLADIOLI.

A FRIEND writing to me the other day says, I do not think that there is any flower about whose culture there is so much difference of opinion as about the *Gladiolus*; and the columns of THE GARDEN fully bear this out. One week there appeared an article in which it was stated that there was no necessity to wait until the foliage had decayed before lifting the bulbs; while another writer stated that we should have to send the bulbs to Jamaica in order to get them thoroughly ripened. The same difference of opinion has been manifested in the matter of soils; some have contended that they ought to be grown in light soil; others, like myself and Mr. Burrell, of Cambridge, have maintained that heavy soil suits them best. Now, on both these points I wish to offer a bit of evidence. I have had lately the opportunity of seeing a number of the bulbs lifted by Mr. Burrell, and I say it advisedly, that after more than thirty years' knowledge of *Gladiolus* growing, and after having seen the bulbs of most growers both in France and this country, that they were a perfect revelation to me, for I have never seen such bulbs, so far as size is concerned, while in healthiness and freedom from any symptoms of disease, they could not be surpassed. Many of these bulbs measured 10 inches and 11 inches round, and that not merely such kinds as Shakespeare, which always is large, but other varieties, of which we have been contented to have small-sized bulbs, such as Baroness Burdett Coutts, Dalila, Mabel, &c., were of the same size; then they had that silvery appearance in the skin which always characterises the French sorts. Now there are other points connected with the culture of these roots: 1st, they were grown on stiff soil, of course well cultivated and drained; 2nd, they were not lifted until the first week in December; and 3rd, quite 80 per cent. of them had been produced from bulbs which had been cut in two before planting. The second point in this is to me a novelty. I have myself never deferred lifting my bulbs so late, but after what I have seen of these Cambridge bulbs, I shall most certainly defer the lifting of my small stock to a later period. It may be asked, Is there any ad-

vantage in having such large bulbs? Yes, unquestionably, if they are well ripened, more especially for northern and late districts, for these large bulbs always bloom earlier than the smaller ones; then you can cut them in halves, thus doubling your stock. Of course, if the bulbs are not well ripened, there is great danger in these large ones losing vigour, but with such ripened bulbs as these there can be no risk of that.

These bulbs, too, seem effectually to do away with the action of degeneration, so that when properly grown and in suitable soil, our English grown bulbs are superior to the French. Many of these bulbs are from some which were imported from France three years ago, and although the old bulbs decay every year, we may, in ordinary language, call them three-year-old English-grown bulbs, and I do not think, therefore, that it can be pretended that the losses which many of us suffer is to be attributed to degeneracy. Mr. Burrell suffers, so he tells me, very little from the disease to which they are subject, soil and climate both appearing to agree with them.

In looking through my own stock of bulbs, I find that they are keeping well. I have never found that bulbs which are healthy when lifted go off afterwards before planting time, while those which were unsound at that period become gradually worse, becoming black and shrivelled, and without any signs of life in them; but, strangely enough, when a diseased bulb is potted after lifting time, I find that it frequently throws up a shoot from what seemed only a mass of decay.

DELTA.

Tropæolum tuberosum.—Some complain that this is a shy flowerer; but with us it is annually a sheet of bloom during the greater part of the summer. A few years ago I put a few roots of it against a wall, and they grew so fast that they quickly covered the space allotted to them, and took possession of a Rose tree on the same wall. In short, they flowered and grew to such an extent, that they had to be constantly cut away to keep them within bounds. In another case a plant of this Tropæolum took possession of an Arbor-vitæ hedge 6 feet high, and literally covered it with growth long before the summer was over and flowered freely. In this district many plant it against their houses and form bowers with it, and no creeper is more effective. I find that a rich soil is not of so much importance as one of a lighter and more porous character. It is especially partial to lime rubble, and does not object to take to a gravel walk, which shows that warmth for the roots is as essential as good soil; being quite hardy, it may be planted at any time before it starts into growth.—J. C. C.

Paneratiums out of doors.—*P. maritimum* and *illyricum* do well in the open air in summer in some of the southern counties; but even under the best of climates they require a warm border and a rather dry soil. They are, however, so delightfully fragrant, that they are worth an effort if they can be induced to thrive. I find that when cultivated in the open, the flower-stem is stronger than in pots; consequently the heads of flowers are larger. Many might grow these Paneratiums in pots, and keep them under glass; where they have failed, it has been through giving them an insufficient quantity of soil to support vigorous growth. When thoroughly healthy, and surrounding conditions are favourable, they make a number of leaves and roots in proportion, which cannot be sustained if confined to small pots. There should now be no delay in getting the bulbs potted, and, as the strongest are rather large, each one should have a pot 7 inches in diameter. As regards compost, equal parts loam and leaf soil and a sprinkle of sand suit them admirably.—SOMERSET.

French Anemones.—These may be planted now, but in favourable situations it is best to plant them in November. Put in now, however, they will flower late in spring. The double varieties are grand flowers for a bed or for clumps in choice positions; the colours are so various and bright, that each individual blossom accompanied by two or three of its own leaves is a host in itself. The single varieties produce the greatest number of flowers, and, if possible, the colours are more diverse; but both are so beautiful and so easily grown, that there is no need to praise one at the expense of the other. What further enhances their value is the fact that, if required in a cut state, and they are taken just as they are about half expanded and placed in water, they will develop blossoms as well as if left on

the plant, and remain in good condition for a considerable time. As regards cultural details, it is necessary that they have the full benefit of the sun, and that the soil be rather light and friable, and kept well watered in dry weather. They are not averse to a heavier root medium, provided it is well drained and broken up into small particles before planting.—J. C. C.

New Violet.—The Messrs. Forgeot, of Paris, are distributing a Violet of their raising which promises to be a useful addition to kinds now in cultivation. It unites beauty of foliage with great precocity and continuity of bloom. The leaves are so distinctly marked with golden stripes as to render this Violet extremely ornamental when used as an edging. It commences to bloom in October, and sometimes as early as September. It is of seedling origin, and has retained its distinctive character over a period of more than seven years. It is called *Marie Guerin*.—J. CONSHILL.

CLEMATIS DAVIDIANA.

THIS useful Clematis is not cultivated as much as it deserves to be. Its large, deep green, Vine-like leaves and clusters of pale blue flowers, of a very rare and delicate quality of colour, entitle it to a place in the choicest collections. Probably it is only hardy in our southern counties,



Clematis Davidiana. Engraved for THE GARDEN from a photograph.

and even there likes a warm sheltered place and a little dry Fern for winter protection; but its distinct character and refined beauty well repay a little care and trouble. It forms a bushy plant about 2 feet high and flowers in July.

Primroses in the sunlight.—We are compelled to grow all our Primroses and Polyanthuses here in the full light of the sun, having no shade. Double Primroses will not stand it, but singles thrive admirably. The soil is very stiff and has a clay base, but none the less burns and bakes exceedingly under hot sunshine. The worst enemies of the plants are found in thrips in the summer, and excessive wet in the winter. Old plants are rarely worth retention after three seasons' blooming, although some will divide fairly well. Still, it is obvious that divided plants never seem to have that robustness which is found in seedlings. In raising a big batch of seedlings every year we are independent of old plants, and do not care to preserve them beyond the third year. I have often noted that even wild Primroses growing in shade and in cool, deep-soiled woods rarely show plants of great age; indeed, apparently seldom

beyond three years old. The inference seems to be that Nature reproduces by seed annually, and that old plants soon die out. I find the snow and frost have not appreciably injured Primroses or Polyanthuses, and where in frames the autumn-raised seedlings had become loosened somewhat, a heavy watering has rendered them firm. Because of the tendency of the soil to harden so much under the influence of heavy winter rains, I have of late refrained from planting the seedlings out in the early winter, but keep them in frames where they get strong, and go out admirably in fresh-dug soil in the spring. I have several thousands of Primroses and Polyanthuses thus to go out now, and I am assured that the plan is the best for still soil, and induces to after-endurance and robustness.—A. D.

DOT PLANTS IN FLOWER BEDS.

OF the newer departures in summer bedding none have a more pleasing effect, or are likely to last longer in public favour, than the employment of what are generally known as dot plants in a carpet either of flower or foliage, and as the season for thinking about the summer arrangement of the flower garden is approaching, let me put on record a few combinations which may be new to some of your readers. The system finds favour from its diversity of outline, and from the way in which it relieves all flat uniform surfaces, whether carpet beds, pure and simple, or blocks and masses of colour. Tuberous Begonias are very useful for this work, and have a more pleasing effect when thus employed than in masses. The large flowering varieties are admirably adapted for dot plants, and where named sorts are not at

hand, good seedlings of decided colours in scarlet, pink, and light shades should be selected, care being taken that they are free-flowering and of sturdy robust habit. The best carpet for scarlet Begonias is the *Mesembryanthemum*; a few dotted here and there in this groundwork, and far enough apart to show up the variegated foliage, with an occasional plant of *Acacia lophantha*, make a very pretty and effective bed, whilst for the lighter varieties a green carpet, as *Camomile*, *Mentha*, &c., or, better still, the blue *Viola*, may be used. A plant I can thoroughly recommend for dotting about amongst masses of blue *Viola* is *Sisyrinchium californicum*; its flag-like foliage and long spikes of creamy yellow flowers stand well up, and form an effective contrast to the blue carpet; the same *Viola* may also be used to advantage as a groundwork for large beds of scarlet and

pink Geraniums the best dot plants are white *Marguerites*; struck in spring and turned out of 3 inch pots, they make large bushes quickly, and the dense sheets of white rising out of the bright colours of the Geraniums have a very pretty effect. For smaller beds, *Eucalyptus* and the sweet-scented *Tobacco* may be used instead of *Marguerites*. Nice little plants of *Fuchsia*, with compact bushy heads, are also very useful, and can be worked in according to colour in beds of *Viola*, dwarf *Ageratum*, *Iresine*, *Heliotrope*, and the like. A pleasing combination for a large bed is a groundwork of dark purple *Petunia* interspersed with occasional plants of the large variegated *Abutilon*, and yet another is a carpet of dark *Heliotrope* dotted over with *Centaurea candidissima*. For green, feathery foliage, to be used where bright variegation predominates, nothing is better than *Acacia lophantha*. The above list might, of course, be largely extended, but the plants enumerated are within the reach of all who have a greenhouse, and wish to furnish some pleasing combinations for the summer decoration of the flower garden. E. B.

Violets after the snow.—Mr. Allan's account of the flourishing state of his Violets must refer to those that he manages so admirably under the

glass-lights which he places so prominently in the eye of the sun, at Gunton Park, throughout the winter and the early spring. Were it otherwise, then indeed must Gunton be a weather Paradise, free from the chilling snows and cutting frosts that have played such havoc with Violets in the open this winter. The three sorts of which Mr. Allan has sent you flowers are also those that have suffered most in the open this winter. Borders of Marie Louise, Neapolitan, and Comte Brazza, studded with bloom and well clothed with foliage before Christmas, are now flat with the ground and brown, as if boiling water had passed over them. Whatever may be said with truth of the snow keeping Roses warm and snug for a month or more at a stretch, it is abundantly proved by results that these best of all Violets have not yet learned the art of sleeping for the same period under the snow and reappearing as fresh and fragrant as before. On the contrary, they have resented the snow wrappings and all its chilling works of successional thawings and freezings. The Czar, as might be expected from its semi-Arctic name, and Queen Victoria, probably a close blood-relative of The Czar, as becomes it also, have borne their long period of hibernation with impunity, and come forth breaking into bloom—which, however, seems in no hurry to fully open.—D. T. F.

Double Primroses.—Of claret-hued kinds, other than the old double crimson I have grown one here, under the designation of Scotch red. Apparently, it is a robust sort in its northern home, but in the hot south it soon went the way of all double Primroses. The flowers were of a reddish chestnut hue. They opened at first small and single, but later became good doubles, though not large. There is also a variety variously known as the Scotch purple, crimson-purple, and purple, which has rather smooth leafage, and produces its blooms in clusters on semi-Polyanthus stalks. This is early and free, and one of the very best where it can be induced to thrive. The flowers are of a reddish purple, and might be by some termed claret, or port-wine coloured. The true double purple has distinctive flowers, each petal being marked with a tiny white spot; the foliage is long and fairly smooth. Compared with single Primroses now so fine, so varied in colour, so early in bloom, and withal so robust and free, it is very doubtful whether doubles, even of the most striking form, can hold their own now. The single kinds are also easily raised from seed, and hundreds of plants of them will involve less trouble and anxiety than will a dozen choice double Primroses in pots. My plants, in hundreds, after being half-drowned in snow water, are bursting into very early and beautiful bloom, such as no doubles could equal.—A. D.

SHORT NOTES.—FLOWER.

Saxifraga Burseriana.—This beautiful little Saxifrage is grown admirably at Chiswick, where large clumps of it in pots in cool pits may be seen now just coming into flower.

Crocus Imperati. This beautiful early Crocus may be seen at the present time in full flower on the rock-work in the Royal Horticultural Society's gardens at Chiswick.

Canna Gloire de Lyon.—This is at once the hardiest and darkest variety with which we are acquainted. In growth it is remarkably upright, the leaves erect and pointed, and of a beautiful deep red colour.

Cyclamen Coum vernum.—This pretty little gem with its reddish purple blossoms may now be seen flowering freely in a shaded nook in the gardens of the Royal Horticultural Society at Chiswick.

Canna Premiers de Nice.—Anyone desirous of procuring a yellow-flowered variety of Indian Shot cannot do better than procure this. In habit it is very dwarf and compact, and throws up its beautiful yellow flowers in great abundance.

Galanthus nivalis præcox.—A very pretty form of this popular spring flower is now to be seen in fine large clumps on the rock-work at Chiswick. It well merits its name, as it is much earlier than many other varieties growing in close proximity to it, and this character it has maintained for many seasons.

Lavatera arborea variegata.—We saw the other day at Chiswick some plants of this handsome Malvaceous plant that had been lifted from the open ground in the autumn. A peculiarity of this is that when planted out during the summer months, the foliage turns quite green and remains so. On being again lifted and potted, the variegation gradually returns and makes it a very effective plant for horse-decoration. It is easily raised from seed, which comes quite true

Iberis from the mountains of Greece.—This beautiful dwarf little Iberis is now in flower in one of the hardy pits in the Royal Horticultural Society's gardens at Chiswick. It is the earliest of all the family, but difficult to get a stock of, as it flowers so freely that no cuttings can be had, and we have never seen it ripen seed. Perhaps Mr. Maw could give us some information regarding it, as I think it was he who introduced it.

Globularia Alypum.—To the genus *Globularia* belong about seven European species or varieties, all of which, except *Alypum*, are dwarf evergreen alpine plants. Their flowers are of various shades of blue, and are borne on stems from 2 inches to 10 inches in height. *G. Alypum* is, however, an erect, evergreen, twiggy bush, from 1 foot to 3 feet in height, and frequently as much through. It has obovate, spatulate, glossy dark green leaves from half an inch to 1½ inches long, clothing the entire length of the woody stems. Its flowers, which are solitary and terminal, are about the size of a sixpence, and pale blue, shaded with deeper blue on the outer portion. This species is usually found in extremely narrow fissures of calcareous rocks bordering on the sea—so narrow, in fact, that it is almost impossible to get it extracted with roots sufficient to enable it to grow. On my last journey in South Europe I was, however, fortunate in meeting with a station where some were growing on a stony tract on a hillside. These have become nicely established, and are now flowering. It appears to grow well in peat, loam, and sand in about equal quantities, but it should be placed tightly between two pieces of limestone. It should also be in a warm, sunny position on rockwork or at the foot of a warm, sunny wall. The finest plants of it I ever remember to have seen were at Villefranche, on the borders of Spain. They were growing near the butresses, &c., of the fortifications—large bushes, bearing a profusion of lovely, delicate blue button-like flowers.—R. POTTER, York.

Violets.—Our treatment of this differs somewhat from that recorded by Mr. Uphill (p. 119). We find that they (especially Marie Louise) do not produce clumps sufficiently large either for sale or home work from cuttings the first year. Therefore, when the pits are cleared of them in spring we divide the plants into very small pieces, and select the best and freshest crowns for planting in open quarters. They are generally put on ground on which Cauliflowers grew, or such crops as had been fairly well manured the previous season. They also receive a dressing of some artificial manure when planted, repeating the dose twice or thrice during the growing season. In order to keep our stock from deteriorating through age, and to keep up the required number, we annually grow several thousands from cuttings. These are selected runners taken off when putting the plants under glass in October. They are laid in thickly in the open ground. By February they are rooted, and soon afterwards are planted out under Apple and Pear trees, where most of them remain until the following spring, when they are lifted, divided, and treated in every way the same as those that have been under glass, and where, as a matter of course, they will be placed in the autumn. Plants thus divided are our sheet anchor, and by these means we ensure extra strong clumps that afford us very large quantities of fine flowers nearly, if not quite, all the year round.—J. R.

Preservation of native plants.—In THE GARDEN (p. 101) Mr. Webster, author of an excellent book upon British Orchids, speaks about the protection of your native flora, and mentions the efforts that are being made in Geneva to protect wild plants. Let me add that our work extends beyond the limits of our own country, and that by means of our pamphlets, of the newspapers, of conferences, and of correspondence we have already directed the attention of many foreign naturalists to the importance of this question as it affects their own country. Since we founded our society we have had the pleasure of getting from many of the countries of Europe information, which shows us that this question has been brought to the front by our publications. Even in England, three years ago, we got from the Natural History Society of the Midlands an address of sympathy, which concluded with the

expression of the wish that some similar society should be established in England. We got once from some botanists in Brazil information about Orchid destroyers, who were sent from European horticulturists to report on some rare Orchids. We were told that some of them, in order to render the species rarer and dearer, destroyed all the plants which remained, and sent their examples to Europe as "the last" (similar occurrences have also taken place in Switzerland with alpine plants). We wrote immediately to Rio de Janeiro, and we had the pleasure of receiving an answer to the effect that something would be done to prevent such vandalism. I am glad to hear that Mr. Webster is of our opinion, and I hope he will become a member of our society, which wants the names of those who protest against the destruction of natural objects. But I feel the necessity of further aid, and of asking in THE GARDEN if there are not in England native lovers enough to form an English association for the preservation of plants. I have for a long time heard complaints of the destruction of plants in England as in Switzerland. Many of your greatest botanical and horticultural authorities have said to me, "We want here in England such a society as yours." We had, I can assure you, great trouble here to found the society, because we had to deal with people that are not very enthusiastic in regard to plants. But in England—I do not believe that anywhere in the world could there be found a people more enthusiastic in regard to plants and flowers than the English are, and I can say that we found greater success for our ideas of protection in England than in any other country. I hope the time will come, and soon, when our Association for the Protection of Plants will have a sister to fraternise with in England. All those who are interested in these questions can get our reports gratis at my office.—H. COLEMAN, Geneva.

FRUIT GARDEN.

W. COLEMAN.

DUCK'S-BILL APPLE.

IN THE GARDEN (p. 99) "J. C. C." has done good service to orchardists in drawing attention to this valuable late variety. With us it is grown extensively as the Winter Pearmain, in Sussex as the Duck's-bill or Sussex Scarlet Pearmain, and although some confusion exists, it is just questionable if this is not the oldest Apple on record, consequently the original of all the Pearmains, a numerous and most excellent family. Indeed, were I confined to one section for my yearly supply of fruit, I have often thought I should plant in duplicate all the best varieties, commencing with the old Summer and Worcester Pearmains and winding up with the Herefordshire and Mannington's. All the varieties, especially the old ones, are very hardy, moderate but good growers, and generally carry good crops of fruit, a large tree of the Duck's-bill with me, probably sixty years of age, having borne more or less heavily each season since the year 1860. "J. C. C." is quite correct in saying the sample sent to him is still sound and looks like keeping till April; nay, more, if placed in a cool even temperature he will find it plump enough in May, if not later, for only last season I placed two of the most beautiful samples I ever saw in a desk in my room, where, in the dark, they laid on their rich crimson streaks and spots and kept sound till June. I then took them out, and not only was their flavour of the highest quality, but the aroma they left behind in the desk remained for months afterwards. I have been looking over my stock, of which I have several bushels from my old standard, and find they are just changing from dull green to pale yellow, and the rich stripes and sunny cheeks

will soon become bright crimson, when the fruit will be delicious and an ornament on the best appointed table.

For the guidance of planters who do not know the Apple I will quote a description of it from our great authority, Dr. Bull, who says:—

The fruit is 3½ inches wide, the same in height, of a true Pearmain shape, somewhat five-sided towards the crown. Skin smooth, greenish yellow, marked with streaks of dull red on the shaded side, deep red next the sun, and strewed with russety dots. Eye large and open, with short segments set in a deep basin. Stalk a quarter of an inch long, inserted in a deep funnel-shaped cavity lined with russet. Flesh yellowish, firm, crisp, juicy and sugary, brisk, piquant, and pleasant. Quality highly esteemed for culinary purposes, but may be placed on the dessert table with credit. A very handsome fruit, and always fetches a high price in the market. Season from December to May.

When I state that the writer of this description did not care for sensational examples, but gave preference to good average fruit, readers will gather that this old variety is worth looking after, not only by private consumers, but also by growers for market. At the present time there is a strong feeling in favour of the fine samples imported from the colonies, and, strange as it may appear, leading dealers and salesmen are prejudiced in their notions of good Apples and their proper season, particularly those of home growth. This prejudice must be got over, and it is needless to say the task rests with growers, who must devote their attention to a few of the best sorts which do well in their own localities, and are acknowledged by the middlemen. Of these they must produce quantities, and send none but picked samples to market. I do not wish to prevent them from buying and planting new and mid-season sorts, but if they would redeem the ground already lost, they must cultivate acres of the best early and late varieties which have quality as well as good looks to recommend them. The Pearmains for culinary or dessert purposes span the whole Apple season, and being with few exceptions such good croppers and so thoroughly hardy, it is hardly possible for anyone to make a bad selection from the score or more varieties now met with in good fruit catalogues. First on the list in point of earliness come the handsome Worcester and Scarlet Pearmains, fit for use in September and October, and always likely to command a good price, as they can be rushed into the market before the colonial fruit reaches our shores. Then follow a few delicious mid-season sorts, and last, but not least, we have Adam's Pearmain, from December to May; Baxter's Pearmain, from November to March; Claygate Pearmain, equal to the Ribston Pippin, from Christmas through March and April; Lamb Abbey Pearmain, from January to April; Bolehin's Pearmain, which keeps well till May; the Golden Winter Pearmain, quite distinct from King of the Pippins and the Winter Pearmain of the Horticultural Society; the old Herefordshire Pearmain, a valuable Apple, sometimes called Royal Pearmain, in use from December to March; and, as a matter of course, the Duck's-bill mentioned by Blomefield in his "History of Norfolk," as being the variety which furnished 200 Pearmains and four hogsheads of cider of Pearmains to the exchequer for use at the feast of St. Michael's yearly.

SHORT NOTES.—FRUIT.

Pear Fortunee Boisselot—This when well ripened is a most useful variety for dessert during this month. It is of large size, flesh white and melting, very juicy, and possessing a pleasant aroma.

Apple-tree flower-buds are so stout and abundant even now that it will be well to prune liberally to enable the trees to carry the forthcoming crop. Tree heads fill so

quickly when doing well, that it is wiser to err in the direction of free thinning than to spare the saw; indeed, to spare the saw is to spoil the tree. A. D.

Apple the Sandringham.—This very fine new variety is now in good condition. It is of large size, light green, flushed on the sunny side, keeps well until March, and is well worthy the attention of fruit growers at the present time.

Filberts.—I observe trees of these in abundant bloom already (Feb. 4). Should this free blooming be indicative of a large crop of Filberts and other small nuts, the indication is welcome. It would be interesting to learn how the Filbert bushes look in Kent.—A. D.

RENEWING VINE RODS.

Those who have but little room for Grape growing, and who like to grow as many varieties as possible, may, by adopting the following system of management, gain results equal to those secured by the extension system of training, and still confine each Vine to the limits usually assigned to it when grown on the single-rod principle. The advantage of the extension system is that the wood from which the fruiting laterals spring is young and vigorous, and the buds stronger than those produced by old, spur-pruned rods. What we have to do, therefore, is to keep up a succession of young rods, and still get a full crop of fruit every year. By a little management this is easily done. If the Vines are about 4 feet apart a succession of rods can be brought on, each of which will in its turn bear fruit of the best quality for three or four years. In the first year of bearing, which should be the fourth year of growth, these young rods should only be allowed to bear half a crop, but this will not lessen the average crop, as the top half of the old rod on the same Vine should be allowed to bear fruit for that year. Of course, all buds should be rubbed from the lower half of this old rod to give room for the fruiting laterals of the young one, and at pruning time it should be cut out entirely. In the following spring a new one should be started from the strongest, well-placed bud that can be found. It may be thought that too much room is required for working this plan, but that is not the case; the young rods take very little room till they begin to bear fruit, as their laterals may be frequently stopped. Some years ago I worked three vineries in this way, and was well satisfied with the result; the Vines so treated bore larger bunches and berries, and heavier and better finished crops than the old rods had borne for many years. I gradually removed the old rods, and now there is not one in these houses which is more than seven years old, though the stools must be over twenty. If any of your readers, who are now depending on the produce of old rods that seem to have lost vigour, will adopt this system, they will soon see a great improvement in the quality and quantity of the fruit obtained. T.

APPLES FOR SMALL ORCHARDS.

ALTHOUGH not so enthusiastic in the matter of Blenheim's (p. 74) as to wish for an orchard composed entirely of that variety, I am inclined to think that, in the matter of Apples, as with other fruits, plants, and vegetables, we are rather overburdened with varieties, and that a certain restriction in this direction at planting time would be beneficial. In large places where space is no object it is very well to have a large collection to compare notes, and to be ready with a few extra-sized fruit on an emergency; but in the majority of cases the planting an endless number of varieties brings neither pleasure to the gardener nor profit to the employer. With respect to the particular kind of tree to be used, there is certainly nothing like good standards where the filling up of the fruit room is a consideration and where Apples are largely used, and I do not think either bushes or pyramids will ever hold their own against them, for there are few places so small

that cannot find room at any rate for a small orchard, and the trees might be planted well enough to admit of the spaces between them being utilised for bush fruits. In planting a small orchard, I should confine myself to ten varieties—five dessert and five culinary—viz., Devonshire Quarrenden, King of the Pippins, Cox's Orange Pippin, Claygate Pearmain, and Cackle's Pippin for dessert; and Lord Sutherland, Warner's King, Blenheim Orange, Hambleton Deux Ans, and Norfolk Beaufin for kitchen work. To the planter in doubt for some extra trees to fill up a corner, I would say plant more Blenheim Oranges and King of the Pippins. This latter variety was subjected to a considerable share of hostile criticism at the time of the Apple congress, owing to the high position then assigned it, and unjustly, I think, for in very many places it is deservedly at the very top of the tree. With a little extra attention at root and branch it produces very handsome fruit, a little over medium size, and is in good condition for dessert nearly three months. The tree is healthy and vigorous, and a great and constant bearer. Taken on the whole, I think the ten varieties named will be found to possess all the necessary qualifications in their respective seasons, either for dessert or kitchen purposes, and in addition they are all handsome in appearance and capital croppers. Where space is a consideration, and only a limited area can be devoted to the orchard proper, some of them, notably Cackle Pippin, Blenheim Orange, and Hambleton Deux Ans might with advantage be planted on the lawn or in open spots in the shrubbery, as, in addition to other good qualities, they possess the merit of growing into very handsome trees. E. B.

SEASONABLE WORK AMONG FRUITS.

VINES.

THE work in this important department is now increasing rapidly, and an effort must be made to keep every detail well in hand, for, next to the performance of every minor matter in a sharp, business-like way, we must not overlook the fact that the proper time is a factor which often makes or mars an otherwise good system at the end of the season. Just now Vines in the early houses are not only gaining strength under a few hours' genial sunshine, but they are making rapid headway, and a fine month will redeem much of the time lost during the trying month of January. Here, then, timely help must be given first of all by giving the chink of morning air to let out vitiated moisture, by gradually increasing it, and, finally, by closing very early with sun-heat to secure quick growth during the afternoon. Fire, of which we have had more than enough, by this means may be economised, and yet the temperature being high, the syringe may be freely used to break up young colonies of pests which its baneful influence has brought into existence. Many people never wet their Vines after all the buds have started; but this has been an exceptional season, and each man must solve for himself the problem as to whether he will stand firm to his crotchet or stoop to conquer that inveterate enemy, red spider, by an occasional bath quite up to the flowering stage. Pure soft water judiciously applied is an invaluable element, and when it is just tinged by the little bag of soot lying at the bottom of the cistern, it becomes a gentle tonic and a mild insecticide. If water has not been given to internal borders since the Vines broke, a quantity equal to a rainfall of 3 inches, provided they are well drained, will tell beneficially in a few hours, and most likely help the Vines over the setting process. This, as a matter of course, should be equal to the maximum temperature of the house, otherwise it may not produce the desired effect upon the hitherto dormant roots, as it is a well-known fact that vigorous root action invariably ensures a good set of fruit. If external borders have been well covered with dry, warm leaves, which in their turn have been protected from the elements, they will take no harm, as the

roots are now only just beginning to move; whilst those inside, which are more advanced, may be drawn to the surface by spreading down the old fermenting material immediately after the borders are watered.

Disbudding, stopping, and tying down also require timely attention, otherwise a march may easily be lost and never regained. The first operation should be performed piecemeal as soon as the best shows can be discerned; the second, when the shoots have attained their proper length, when pinching out a point not larger than a pin's head will produce the desired effect without robbing the Vines of an ounce of vital force. This term may not be quite correct, but it answers my purpose, as I wish to see an end put to the unwise system of allowing the shoots to run to waste, and afterwards weakened by cutting back to an ugly stump, followed by bleeding. Once stopped at the second or third leaf beyond the bunch, the first set of point laterals may be allowed to extend until every bit of trellis in due course will be furnished with foliage. Here again some judgment must be brought to bear, as it will be necessary to allow for the full development of this lateral foliage without becoming crowded, and so impeding the free circulation of air. Tying down and the removal of superfluous or inferior bunches generally go hand in hand. A bright afternoon, when the shoots are slightly limp, is the best time to draw them downwards, and then the pressure should be very slight—so slight, indeed, at first, that the ties should little more than prevent them from ascending to the glass.

Fertilisation.—Hamburgs do not often receive this attention, but mixed sorts, notably the Sweetwaters, Foster's Seedling, and the Frontignans, should not be neglected. Hamburg pollen is always preferred, and the act of collecting it is often advantageous to the pollen parent, which does not always set so freely as one could wish, otherwise so many stoneless berries would not be met with at the final thinning. If Hamburg pollen is brushed into a small box and kept dry and airtight, it is often found useful in the early Muscat house, when artificial fertilisation of this fine Grape is of the greatest importance.

Succession vineries.—The Vines in these will now be on the move and in many places disbudded. General rules observed in the management of early houses apply to these in almost every particular, the only difference being a somewhat higher temperature, which the advanced period will now justify. When fairly on the move, 60° at night and 70° by day will be quite high enough for ordinary varieties, and these figures may be increased to 65° as the minimum by the time the bunches come into flower. As this stage is approached and the bunches begin to elongate, advantage must be taken of every bright and sunny day for running up the temperature to 75° or 80°, when the framework of larger clusters will result, and the progress made will not only justify, but necessitate moderate firing through the night.

Pot Vines.—If these are intended to produce not only the first ripe Grapes, but also to save the first set of established Vines, the Grapes should now be ready for thinning. Quality taking precedence of quantity, the bunches in the first place should be reduced to six, possibly to eight, according to the strength of the rods and the condition of the roots, for, unless these are in every way satisfactory, the attempt to obtain a heavy crop of black Grapes will be followed by disappointment. Of the two I should give preference to the smaller number of bunches, and then, provided the Vines are up to their work, not only will the weight in the aggregate be equal to that obtained from the eight, but the berries will be larger and the colour better. The thinning of Grapes is an operation which every grower, particularly of pot Vines, must manage in his own way. Hamburgs, which form the staple of the crop, vary more than any other family of Grapes. Some form close, compact clusters, and swell their berries to the largest size; others are loose in the bunch, and the berries, as a rule, are oval. The first, compara-

tively speaking, require heavy thinning; the second, possibly hardly any thinning at all. To lay down rules for the manipulation of these might mislead; therefore, knowing the character of his Grapes, every man should be the best judge of his own work when the time arrives for thinning. When a bunch is properly thinned, it should be free from small or stoneless berries, and those left should be sufficiently numerous to form a perfect cluster, free from spot or blemish, which will retain its form when cut and placed upon the dish. When the Grapes are thinned, lateral growths may be tied out and pinched to secure an even spread of foliage over every part of the trellis, and the richest food at command may be used as a top dressing for the roots. This should be applied little and often, and, as a matter of course, washed in with copious supplies of warm water or diluted liquid, always, be it understood, weaker than the roots of healthy Vines will bear. Stimulating liquid in moderation is a most excellent aid to progress, but when, in addition to the rich top-dressing and the ammonia rising from the bed, it is used too strong, the most valuable roots perish or become paralysed, the foliage flags under bright sun, and the Grapes, as a natural consequence, never colour. Vines in pots being subject to red spider, the syringe from this time forward should be freely used for moistening the walls, the stems, and foliage with pure, soft water; and time being an object, the temperature may range from 65° to 70° at night, from 75° to 80° by day, and a few degrees higher after closing with sun heat. Air in proportion to these figures being imperative and the weather fickle, the fermenting material surrounding the pedestals on which the pots are placed should be renovated at short intervals, not only for the benefit of the roots, but also to favour a free circulation without reducing the heat to an injurious extent.

Cut-back Vines intended for next year's fruiting should be shaken out as soon as the buds have started, and repotted in 7-inch pots for growing on. The compost for these should be good sound turf, bones, or old lime rubble, three substances that will form a substantial nucleus and remain sweet until the Grapes are cut eighteen months hence. Peat, leaf-mould, rotten manure, and other perishable substances are often used to give the roots a start, but they soon become light, spongy, and sour, and for this reason should be avoided. When repotted the pots should be plunged to their rims in a snug pit, and not too far from the glass, where they can have a steady bottom heat ranging from 75° to 80°. An early and quick growth being important, a corresponding degree of top heat and plenty of atmospheric moisture must also be supplied, but the roots having been so recently disturbed very little water must be given until new ones have taken full possession of the soil, for much as Vines in full growth rejoice in an occasional deluge, they soon lose the few roots they have when as pot subjects in a comparatively dormant state they are over-watered. If two shoots have started from the crown of the old eye, the retention of both for a time favours root action, but the weakest of the two must be checked and entirely removed before the time arrives for the first shift forward.

Vine eyes put into small pots or inserted in squares of turf last month may now be plunged in a steady bottom heat of 80° in a moist-growing pit, where dewing with the syringe will keep them wet enough for the present. Vines may be struck in a much lower temperature, but much work having to be performed in a short time, propagators always prefer stealing a march in the spring, and so successful are some, that they invariably succeed in producing fruiting canes from eyes of the current year. The great secret of success in large manufacturing establishments is bound up in ripe wood, an early start, and a steady bottom-heat, which never varies. Private growers of a score or two of eyes can always secure the first and second, and start with the third at high pressure. All goes well until the stored-up sap is exhausted and young roots are forming, when, owing to the fleeting nature of their fermenting materials, the heat

suddenly declines, and nine-tenths of the pseudo-Vines are lost. This is the stumbling-block with many small growers, who should either provide two plunging beds for alternate renovation or start at moderate speed, which they can retain until the young Vines are well furnished with roots and leaves. Cut-and-dry calendar writers of the past have been too fond of cooking and hashing, and telling people what to eat and drink, but they have not told them what to avoid. Half the young gardeners in the kingdom can repeat the contents of old-style papers by heart, but it is questionable if lists of failures, causes of failure, or how not to do it might not form a very useful negative guide. The black bit to be avoided by the amateur propagator of Vines is the sudden drop from tropical to temperate heat just when the road to success turns in the opposite direction.

The latest Vines pruned, cleansed, and resting must be kept as quiet as possible for some time yet. It is not difficult to excite late varieties from which the Grapes were cut at Christmas, but a short rest means a weak and uneven break; consequently it is best to keep them quite cool until the buds begin to swell, when, like giants refreshed, they will break freely and make vigorous progress. Meantime, in the event of internal borders requiring renovation, preparations may be made for the performance of the work as soon as the sap is again on the move. Early and mid-season borders can be turned out as soon as the Grapes are cut and whilst the foliage is fresh, but late ones cannot be disturbed before the leaves fall, and then it is best to defer the lifting and re-laying of the roots until returning spring starts them into new life. If fresh turfy loam, bones, and other ingredients can be chopped up and thrown into a heap to ferment, a very important point will be gained, as the newly-laid roots, washed home with water at a temperature of 90°, will have the benefit and healing influence of a mild hotbed.

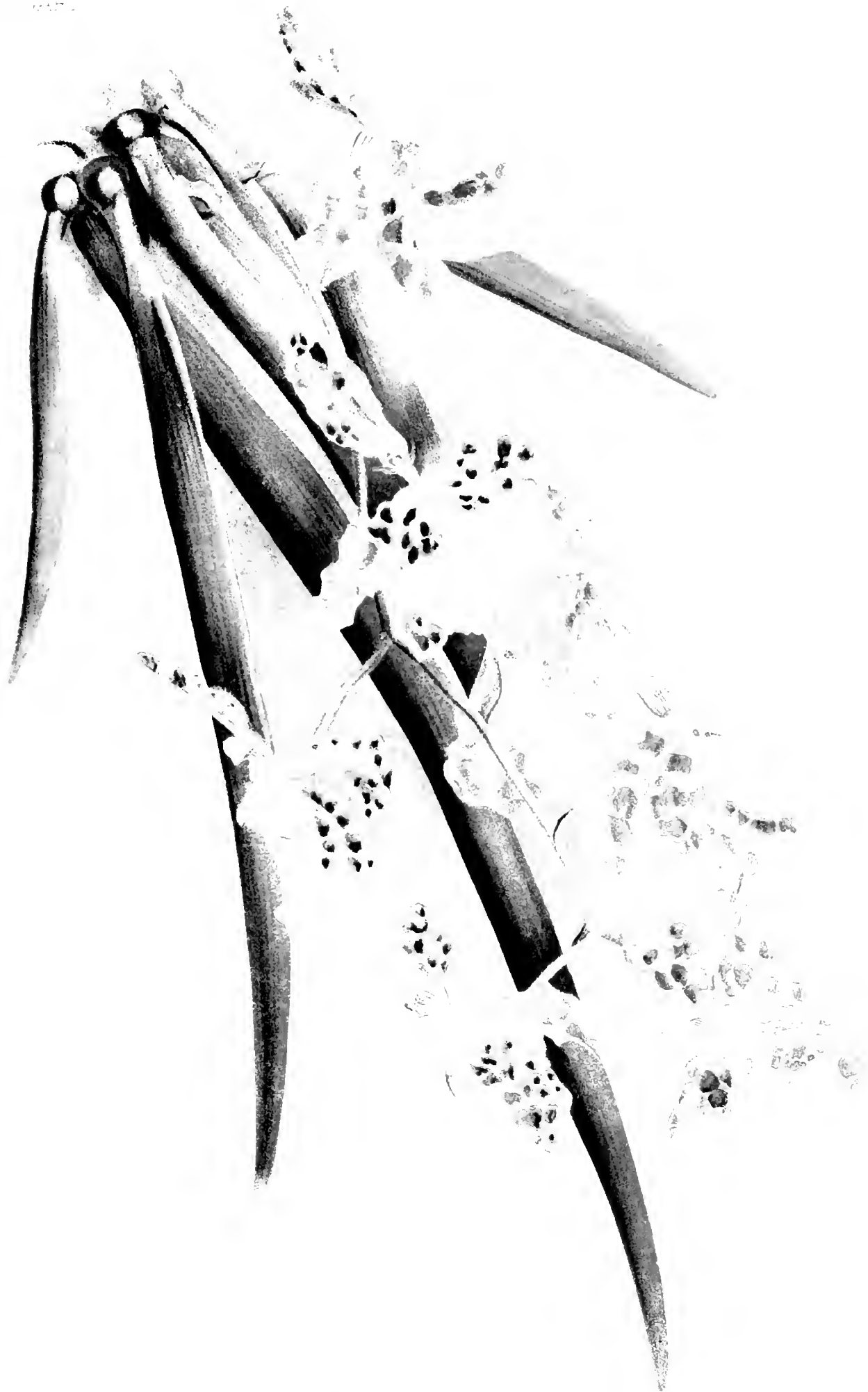
GARDEN FLORA.

PLATE 583.

ONCIDIUM JONESIANUM.*

THIS distinct and handsome *Oncidium* belongs to a section which contains but a few species, characterised by short pseudo-bulbs and Rush-like leaves. *O. Jonesianum* was discovered by M. Louis de St. Leger on Monte Grasso, Paraguay. It was distributed by Messrs. Horsman & Co., of Colchester, and named by Prof. Reichenbach after the Rev. Morgan Jones. Its pseudo-bulbs are small, and its leaves, which taper to a long sharp point, are deep green, and from 3 inches to 9 inches in length. Until quite recently this species had only produced simple drooping racemes of bloom, but during the last few months we have received long branched spikes of it bearing nearly forty flowers, a condition in which it is strikingly attractive. The individual blooms measure about 2½ inches across; the sepals and petals, which are waved at the edges, are large, creamy white, blotched and spotted with red or reddish brown. The lip is large, broad, and flat, the front lobe being wholly pure white in some varieties, in others spotted and dotted with reddish brown. The small side lobes of the lip are bright yellow dotted with red. Its blooming season is usually from June to November. The majority of terete-leaved *Oncidiums* are small-flowered and by no means showy; therefore few of them have been preserved. *O. Coboleti*, with light canary-coloured lip, and *O. juncifolium* and *O. brachyphyllum*, both natives of Mexico, are about all that are in cultivation in this country at present. *Oncidiums* are for the most part easily grown, and *O. Jonesianum* forms no ex-

* Drawn for THE GARDEN by H. G. Moon, in Mr. R. J. Measures's garden at Camberwell, on July 20, 1886, and printed by G. Severeys.



THE ART. ILLUSTRATION

ception to the rule. It thrives best and displays its beauties to the greatest advantage when grown upon a block or in a basket suspended head downwards from the roof of the Cattleya house. It should be well exposed to sun and light, and should be treated to an abundant supply of water during the growing season. W. H. G.

KITCHEN GARDEN.

W. WILDSMITH.

KITCHEN GARDENING.

OF late years increased interest is evidently being taken in regard to kitchen gardening. Young men who at one time were anxious to get "under glass," begin to think that after all kitchen gardening is not so despicable a thing as they once thought it. The fact is, their eyes are beginning to be opened, and though still in a little uncertainty as to whether or not it is dignified labour to plant a Cabbage, they have a strong inclination to try their hand at such work, and I for one applaud their resolution; I also sometimes think that we are ourselves to blame for the lack of interest that young gardeners take in the vegetable department. As a matter of course, in all large gardens young men must live on the place, and the houses must be attended to by regular hands, but it does not of necessity follow that they could not have a day occasionally in the vegetable or other departments. My rule is to let them have a turn at every description of work in the garden, and as they are engaged on these conditions, there is no bother about the matter; in fact, they enjoy the change. It is not to be expected that the would-be-thought-clever young fellow, who has gained admission into the fold by means of a premium, would agree with one of the articles of my creed, namely, that it is just as creditable to grow a good Tomato or a Cauliflower as it is to grow a fine bunch of Grapes or an Orchid, but it is true nevertheless, and he will soon have to recognise the fact by practical experience, or else seek some other calling, as gardening, like many other professions, has grown to be more of a pounds, shillings, and pence matter than it used to be. The artistic and ornamental branches of it were never in greater request, but there must be plenty for the money, and in the near future it will be only "all-round men" who will stand the least chance of rising to the highest positions. To young gardeners I would say, never think that your dignity suffers by digging a few rods of ground. Devote the same pains to thinning out Carrots, Parsnips, Onions, and the like as you would to thinning out the seeds of Mignonette in pots, disbudbing show Chrysanthemums, or thinning Grapes. Plant out Cabbages, Cauliflowers, Lettuces, and any other vegetable with the same amount of care as you would pot the choicest plants. Above all, get thoroughly rid of the notion that you are above doing what in gardening parlance is called "labourer's work;" then, as a set-off to what you may at present sometimes consider to be hard work, or such as you ought not to be called upon to do, you may with good reason hope one day to attain a position in the gardening world worthy of your devotedness to every branch of your calling.

Wintering Beet.—A considerable stock of Beetroot has wintered remarkably well so far laid in beneath trees in light loose soil. This is a good plan where it is specially desired to keep the roots fresh and plump, and when carefully lifted from the kitchen garden and so laid in, the shoulders being well covered with soil, and the tops in hard weather with leaves, it is remarkable how little the roots feel the lifting. Carrots and Parsnips also

keep well in the same way; frost, severe out in the open, is often comparatively light under overhanging trees.—A. D.

CULTURE OF SEAKALE.

WHERE a constant supply of this vegetable has to be maintained from the middle of November up to the same time in April, some forethought is required to prepare sufficient plants of quality good enough to keep up the supply to meet the demand of such a long season. Where recourse cannot be had to buying a stock of plants yearly prepared for forcing, a supply can easily be raised if the following details are carried out: Seakale delights in a strong moisture-holding soil approaching clay. In such a soil, if manure be freely applied, the plants grow freely, producing large leaves, which in turn develop good crowns for the following season's use. An easy, cheap way to procure a stock of plants is by growing them from seed, which should be sown the first week in April on land that has been previously deeply dug or trenched and manured the winter previous. Roughly rake over the ground, and with the corner of a hoe draw drills 2 inches deep and 15 inches apart; in these sow the seed thinly, and cover it by filling the soil into the drills, rake the whole over again to remove loose stones and make all neat; the seed will quickly germinate and grow; as soon as the plants can be handled thin them out to about 6 inches apart in the rows; better not allow them to be crowded; rather grow fewer in number. After this nothing beyond hoeing between the drills to keep down weeds will be required the first summer. Any time during February the following year the plants should be dug up and replanted, preserving the roots in good condition. Manure the ground freely, and dig deeply or trench as before. If this be done in the autumn or winter so much the better, and at planting time it will simply require forking over as planting proceeds; the rows should be 18 inches apart, and the plants at least 1 foot from each other. Previous to planting, the roots should be selected according to their size, retaining the largest in one batch, while the small ones should go together and can occupy rather less space. The reason for thus selecting the roots in this manner is that some of the largest after this season's growth will be ready for forcing, while the smallest will not be strong enough for another year, and if all are mixed more labour is entailed in digging them up and sorting; whereas if they are classed according to their sizes no trouble need be found in taking them up. The best plan is to dig the space required, then stretch a line, and with a spade chop out the space for each plant in a perpendicular manner; the roots should be buried under the soil at least an inch or two, the crown or growth shoot having been first cut off. This operation is to prevent the growth of bloom shoots being developed. If this takes place instead of leaf growth only the plants are spoilt for the next year's expectations of forcing. Certainly the cutting off of the crown should be done, say, half-an-inch under the point where the succeeding growth springs from. Plants so treated will make leaf growth only, and many will be of sufficient strength to force the following season. If not commencing too early with them it is always best to have some extra strong to depend upon for the earliest supplies. The smaller roots need not be taken up this season for replanting if time or space is an object, but the crowns should be all cut over before growth starts to prevent them blooming, and by the end of the next autumn a good stock of plants will be available, and can be kept up from this time onwards if properly attended to. After being forced, such treatment should be as follows: Any time after the Kale has been cut from them, they may be replanted at similar distances and in the same manner as described before, thoroughly well manuring the ground; if the roots are extra thick, they may be split down the middle, and if a larger stock is required, they should be cut into lengths of from 9 inches to a

foot; any pieces of the roots 3 inches long will grow, and in time will make nice plants if necessary to use them; but once a sufficient stock is secured, it can generally be maintained without using up all the root pieces.

Many are the methods adopted to force Seakale. In very few instances is the old-fashioned plan of making huge heaps of manure and leaves resorted to. No doubt the produce of such a method is of capital quality, but where time is an object of some importance, this system is not economical; besides, the appearance of such materials on the ground is not altogether good, but where no other convenience for the purpose is available, such a method must be practised. For the earliest supplies some roots may be placed in 10-inch or 12-inch pots with pots of the same size turned over them; these can be placed by the hot-water pipes in the plant stove or any house where a good heat is available. For a succession to be maintained until April there is no better place than the Mushroom house, where such structure can be partly devoted to the growth of Seakale. The time to renew the supply of roots must be guided by the demand. For a fair production, about once a fortnight is suitable, taking up the roots so that as little damage as possible may happen to them. We find the lighter the character of the soil the more tender is the Kale, and not so liable to that strong taste which sometimes is found in this vegetable. We therefore use rotted leaves entirely, and over each crown we place an inverted pot, which more thoroughly excludes the light. Some cover the roots entirely with fresh leaves, which answers very well; but there is more labour entailed in this way than by using pots. When the roots are all cut over once they should be removed, and laid in until a favourable opportunity presents itself to plant them in their summer quarters.

Some persons allow the roots to make a second growth, but, except the stock is small, it is not wise to allow second growths to form, as this weakens the roots. The latest supplies can be had from roots outside which have not been lifted. As soon as they show signs of growth in the spring cover the crowns with coal ashes of sufficient height to thoroughly exclude light. Over this turn an empty flower-pot. Capital late supplies may be had by such means. E. M.

MAIN-CROP PEAS.

THE rows should be isolated, and be ranged north and south, so that the sun may shine on both sides, as in our climate we never have too much sunshine for Peas if the roots are well placed; and in the cultivating operations now being carried on it is a good plan to set out the places for the rows of Peas and give the land a special preparation. In some gardens this may be unnecessary, the ordinary soil and the ordinary culture being of the best kind. Still, in difficult seasons it is as well not to leave anything to chance. What Peas require to enable them to stand against a dry, hot time is depth of soil of a mellow, genial character. Manure, even when used liberally on the land, will not compensate for loss of depth in the soil, and I think Peas dislike too much manure, especially if fresh or inclining to rankness. I have generally succeeded better by the use of composts, of which manure, blended with earth and the refuse matter from the rubbish-heap, formed the chief constituents. This compost, freely worked into the trench where it is intended to sow the Peas, never fails to produce satisfactory results.

Thick sowing is an evil always, as it prevents the plants, even when the rows are placed at wide intervals, from doing their best. I know of no better plan than drawing a drill with a 6-inch-bladed hoe from 2 inches to 3 inches deep, varying the depth between the figures given according to the season and the soil. Thus, say in March, if the soil is cold, draw the drills only 2 inches deep, and cover with mellow surface soil. Later in the season, when the soil is warm, draw the drills the full 3 inches deep, to give the roots a chance of getting down a little earlier to the cool, moist compost below. Of course in hot weather mulching with long littery manure is

a most useful, and in some soils an indispensable, expedient. It is also very important that all Peas should be gathered as soon as they become fit for use. Leaving the pods on the plants to get old takes the stamina out of the land, and the plants also, in a very expeditious manner. If the land be properly prepared now and the rows of Peas mulched at the beginning of the dry season, watering will not, as a rule, be necessary, so that in preparing the site now much heavy dragging of water is obviated in future.

As regards varieties, I have nothing to say beyond this, that anyone who casts aside a well-tried old variety to make room for something new or novel at a considerably enhanced price will probably regret it. *Huntingdonian*, an improved *Champion* of England, *Veitch's Perfection*, *No Plus Ultra*, and *British Queen* are excellent main-crop Peas, which may be bought at a reasonable price per peck or quart, and for the supply of a family they are thoroughly reliable.

E. HODGAY.

EARLY FORCED POTATOES.

The early Potato is one of the most useful vegetables which can be grown, for it is an everyday requisite in all families, always sure to be appreciated. In gardens where forcing is carried on during the spring months early crops may be grown at a trifling cost, and only a small amount of labour is required to grow a crop either in pits or flower-pots, provided a suitable temperature can be procured. Tubers may be had for use from the end of February or beginning of March, and from that time onwards during the spring until the earliest outdoor crop is ready to dig. Forced Potatoes usually take from fourteen to sixteen weeks from the time of planting until the tubers are large enough for use. The sorts of Potatoes to be grown should be the first thing which should be taken into consideration, some sorts being more suitable than others to grow under glass, both as regards earliness of varieties and quality of tubers. That which I consider to be a suitable Potato for forcing is one which grows dwarf, and produces a good crop of even tubers in proportion to its haulm. The pit which is to be used for growing forced Potatoes requires to be of medium depth, for it is useless trying to grow Potatoes in a shallow pit and not allowing sufficient head-room for the haulm, for as soon as the haulm reaches the glass the crop will be destroyed, especially in frosty weather. The plants should be grown as near the glass as possible, which will have a tendency to make the haulm grow stocky and firm, but at the same time, taking into consideration the height of the haulm, several sorts may be grown which will be found suitable for forcing. The varieties most suitable for forcing are the earliest kidney ones. The kinds which I have found to produce the best and earliest crops are *Early Bird* and *Rivers' Ashleaf*. The old *Myatt's Ashleaf* is one of the best for frame work. For late forcing *Covent Garden Perfection* will be found one of the most suitable varieties. Several different structures may be used for growing forced Potatoes. The most convenient pit is one in which chambers are constructed, so that fresh linings can be added at intervals to keep up the desired temperature, which should be as near 55° as possible. When pits are not at command good crops of early Potatoes can be grown in frames, the sides of which must be deep enough to hold 12 inches to 15 inches of soil, and allow 2 feet for the haulm. When the Potatoes are to be grown in frames, a good heap of fermenting material must be got together before making the bed. This should consist of fresh manure from the stable and about one-third of fresh leaves, which must be well shaken together, leaving them in a heap until they get what is termed well sweetened. Before forming the bed it is well to make a foundation of rough wood about 12 inches in depth, covering the same with small branches. When making the bed, which should be 3 feet to 5 feet high at back and 1 foot in front, tread it firmly. After treading the whole firmly and level place the frame upon the bed, and cover with 12 inches of rich soil. As soon as the temperature

declines to about 60° the Potatoes may be planted, a lining of hot manure being added to keep up the proper temperature. By carefully attending to the hot linings the heat can be maintained until the crop is fit to dig. It is well to plant the sets in boxes covered with light soil or sifted leaf-mould, and placed in a warm pit or house until they have sprouted an inch or two in length, when they will be ready to plant in the pit. The sets of the *Ashleaf* sorts may be planted 15 inches from set to set. Be careful not to break the young growths, covering the sets to the depth of 3 inches. Admit air upon all favourable occasions as soon as the plants commence to grow, to prevent the haulm from drawing up weakly, increasing the air as the plants grow stronger. When the tubers commence to form put a little soil round each stem to prevent the Potatoes becoming green. Cover up the frames at night to keep an even temperature. Early Potatoes may be grown in flower-pots with advantage, and especially where pits and frames are not at command, as the pots can be placed in forcing pits used for growing other crops, or in a vinery or Peach house, or any structure which is heated. Several sized pots may be used for the growth of forced Potatoes, but the most convenient size is a 10-inch one. The number of pots to be planted must depend upon the room at disposal; from three dozen to four dozen pots of that size planted at one time will produce a quantity of useful tubers. For potting materials mix loam, rotten stable manure, and a sprinkling of sifted leaf-mould, the whole to be well mixed together before filling the pots. Place a few pieces of broken crocks in the bottom of each pot, covering them over with a handful of dry leaves. Fill the pots half full of the soil, placing one Potato in the centre of each pot, covering it over with 2 inches of soil. Place the pots in some warm structure as near the glass as possible to keep the plants from drawing up weakly, and in a temperature ranging from 55° to 60°. When the haulm gets strong enough, additional soil is to be placed in the pots as an earthing up. Water should be sparingly given until the plants are strong and growing freely. When the crop is ripe and properly matured, the soil can be turned out of the pots and the tubers separated from it. Crops of forced Potatoes can be grown in deep boxes if pots cannot be had, treating the tubers the same as those grown in pots.

Horticultural.

Celery under the snow.—This in many cases has suffered severely, the centre—that is, almost the only valuable part—being rotted out, leaving the older leaves fairly intact. Our land is rather heavy, but the Celery was well earthed up and left in a sharp, narrow ridge, over which a thin layer of litter was strewn before the severe frosts. Thus the usual modes and means to ensure safe and sound keeping were adopted, but the results have by no means equalled the average, but so much to the contrary, that hardly one stick in ten is found safe and sound. It would be some consolation in misfortune to learn if others have suffered in a similar way, or have found any more safe and sound mode of keeping their Celery. I attribute its loss to its long period of hibernation under the snow, also to the amount of snow—fully 2 feet within a month—and the frequent thaws which took place during that period. The snow-water, as it is called, probably first utterly chilled, and then rotted out the hearts. Anyhow, they are gone, and will be much missed during the coming spring.—HORTUS.

Advantages of hoeing.—Too many persons who use the hoe suppose that the chief benefit derived from it is to kill the weeds. That certainly is an important work, and one greatly neglected. Weeds are not only in the way of cultivating the crops which we plant, but they rob them of much of the nutriment which they need. Hoeing, then, is an essential service in respect to destroying the weeds. There are other advantages, however, which are commonly overlooked. Let us see: 1. The loosening of the soil in the operation of hoeing is beneficial to the plants, as

much as the destruction of the weeds or more so. 2. Moisture abounds in the atmosphere during the hottest months, and is absorbed and retained most abundantly by a soil which is in the most friable state. 3. Then, again, pulverising soil enables it better to retain the moisture absorbed. 4. The soil, in order to be healthy and active, must have air. A light, porous soil admits air, and thus it is invigorated. 5. The sun's rays heat a hard soil much more quickly than a loose one, and the hotter the soil is, so much greater will be the evaporation from it. So that the hard soil is deprived of its moisture much sooner than one of a loose texture. 6. The soil that has been kept loose near the surface by the action of the hoe will receive and hold the rain-water that falls, while a hard soil will allow most of it to run off.—N.

PEA AMERICAN WONDER IN POTS.

Most gardeners have at some time in their career attempted the culture of Peas in pots, but unless an early gathering is wanted for some special purpose, they rarely repeat the experiment. Peas in pots do not pay for the trouble necessarily taken with them. However, if any reader is still disposed to test the truth of my assertion, or is undeterred by the experience of older men, he cannot do better than grow the *American Wonder*. They cannot be forced similar to *Kidney Beans*, but they may be forwarded considerably on shelves or front stages in late vineries, on the border of a light Peach or orchard house, or in any cool house, pit, or frame. Seed sown at once thinly in 9-inch pots, filled with rich loamy soil, will quickly germinate, and if well attended to in the shape of waterings, varied with frequent supplies of liquid manure, will yield one or two good pickings about a fortnight in advance of the earliest outside. Not less than twenty-five pots should be grown in a batch, or otherwise the dishes available at one time will be very small indeed. For frame culture the *American Wonder* is simply invaluable. Any rough pit or frame can be utilised for this crop, only a slight protection serving to ripen the crops from a week to a fortnight earlier, according to the season, than those outside. A very slight hotbed of leaves and stable manure may be used with advantage, placing on this about 9 in. of good loamy soil. If this cannot be carried out early in February, it is advisable to sow sufficient seed either in boxes of light soil or in small pots, placing these in any cool house or frame, or in gentle heat if need be. When about 3 inches high, they ought to be planted out. Shaking the plants clear of the soil does not appear to injure or check them to any appreciable extent—in fact, we prefer this plan to putting out root-bound patches from pots. Narrow deep drills are cut out with a spade, and each holds a good and fairly thick row of plants, the roots of which soon spread into the fresh soil that has been carefully disposed about them. Our rows are usually 15 inches apart, or three to each light, and between each line we grow *Early Paris Market Cabbage Lettuce*. These are dibbled in about 6 inches apart in the rows, and alone well repay the trouble taken, being more appreciated than any Lettuce we send to the table during the rest of the year. The Peas are supported with short spray rather more than 12 inches in height, and eventually with good cultivation present a very pleasing appearance. Being a *Marrow Pea* and very tender, it quite spoils the palate for any of the round-seeded sorts that may be grown for the earliest supply outside. The seed now being fairly plentiful and cheap, there is no reason why this variety should not be grown in any early warm border. W. GOULDEN.

SHORT NOTES.—KITCHEN.

Covent Garden Beet—This is a really first-class kind. It is handsome and tapering in form, of a deep crimson hue, and the flesh is soft and pleasantly flavoured. It is an old kind which has undergone careful selection, and is now found to be the best extant for market purposes. It is of a well selection, but is quite distinct.—A. D.

Snowball Cauliflower.—Seed of this early Cauliflower sown in a cold greenhouse has germinated freely in a fortnight, and will furnish strong plants ready to dibble out into frames by the end of March. After a month in frames, they will transplant with good balls of soil into a warm south border in cool soil, and then will turn in rapidly a few weeks later. This is really the whitest, earliest, and most

solid of all the Cauliflowers. I have grown it for fifteen years.—A. D.

Chairman Potato.—A quantity of this Potato, a seedling from *Magnum Bonum* and *Beauty of Hebron*, which had been put out in the field, and only just got into the store, has not only kept wonderfully well, but boils finely. No Regent can exceed it for quality or flavour. Chairman is a white, flattish round kind, somewhat resembling the Victoria in form and general appearance.—A. D.

TREATMENT OF SEED POTATOES.

I do not think many who fail to grow good crops of Potatoes are inclined to attribute this to their treatment of the seed tubers, but in my opinion more failures occur through badly treated seed than careless culture. Judging by the samples often seen planted, many must think that any kind of tuber will do for a seed Potato, as the smallest and most deformed tubers are frequently planted with the object of securing a good crop, but I cannot understand how this can be expected under the circumstances. Potatoes rejected for cooking should never be considered good enough for seed, as remunerative crops will never result from planting trash. Many of the seed firms, too, are not free from fostering this practice, as, in buying some of those new varieties so beautifully pictured in books, the seed is no more like the illustration than a Kidney Bean is like a Pea, and in opening the seed-bag, one cannot help wondering what can have become of all the large well-formed tubers. I can safely say I have received samples of new kinds of seed Potatoes which were greatly inferior in appearance to the refuse of ordinary kinds which were given to the pigs, and it tests one's faith severely to connect them with seductive illustrations. True, the small tubers of new and valuable kind may all be required to meet the demand for them, but I hold that the system of sending out inferior samples of seed of new Potatoes should not be encouraged; and if they were refused, probably many kinds which now fail to give satisfaction might prove to deserve the recommendation given to them by their raisers. I am sure, if other vegetable seeds were as badly proportioned as seed Potatoes generally are, they would be refused everywhere, and if we were more particular with our Potato seeds or sets, the results could not fail to be more satisfactory. So much for seed; now for its treatment. In this, I believe, mistakes are very frequently made, as in many cases seed tubers are never prepared for planting, but are put into the ground direct from the heap. When seed Potatoes are allowed to rest on the top of each other at this season and during the spring months, the young growths are encouraged to grow very long, and they frequently interlace the whole mass. Before planting can be done, they must all be moved, and in doing this the most of these growths are broken off, and those which remain are of no use, as a sprout on a Potato from 3 inches to 1 foot in length cannot be planted with advantage to the tuber at first or to the crop afterwards. The fact is, those elongated growths should never be allowed to form, and the seed tubers would be in a vastly superior condition if the shoots were only half an inch or so in length at planting time, and very robust in character. The tubers can then be moved without disturbing the growths, and they may be handled and planted with them on, when they prove a real advantage to the sure and early starting of the crop. I have tried a quarter with the abused sets, and another with those I mentioned last, and the crop was not only finer from these, but it also developed and retained a superior stamp of foliage, and all who wish to have good and paying crops of Potatoes must give attention to preparing the sets. It may be thought, if the growths become long and lanky now, they can be broken off and fresh ones of a more substantial description will form before they are planted or after they are in the ground, but the first growths are invariably the best, and these should be preserved and retained with the greatest care. The only way to secure robust growths is to spread the seed-tubers out in a single layer, and keep them cool and in

the light; so long as they are free from frost a low temperature will not check them, and they may be spread out in cool frames or any kind of house or shed. Early Potatoes should be taken in hand at once, and as these are planted they will make room for fresh batches of later sorts.

There is much satisfaction in planting plump, medium sized tubers bearing stumpy shoots which begin to grow freely and strongly as soon as they are put under the soil; but it is labour in vain to follow the rules of careful cultivation when the seed used is unworthy of the name. Those who have one or more acres to plant may think it would be a difficult matter to find room to make a layer of the seed; but those with acres of land to plant are generally pretty well provided with means of dealing with their seed-tubers properly, and where it is neglected it is not so much from a want of accommodation to spread out the tubers as a disinclination to do this, or an impression that it does not matter how the seed is treated, which is altogether a mistake. J. MURK.

KITCHEN GARDEN NOTES.

HERBS.—These should be well provided, for even if some are not asked for, the space which they take up is but little, and a well-arranged herb garden is always interesting. If possible, have all the kinds of herbs arranged together, and for convenience of gathering they should be near the vegetable shed. Now is a good time to overhaul the perennial kinds, and by division of roots increase the same, and throw away old roots of any kinds that are not needed. It is always desirable to have two small plots of Mint and Tarragon, the roots of one lot to be reserved for forcing in pots or boxes in the quantity required. A small box, 2 feet by 18 inches, will hold sufficient roots to produce a supply of Tarragon for the largest establishment, but several boxes of Mint, from four to six will not be too much, and the roots should be lifted at various times, say at intervals of three weeks or a month. The permanent small (very small of Tarragon) plots should now be freed of weeds and decayed stems, and afterwards a top-dressing of fine soil and manure about 3 inches thick be spread over the whole. When it is necessary to increase or renew the stock of either, prepare the soil by deep digging and manuring, and afterwards dibble in small portions of healthy roots about 4 inches apart over the entire space. Thyme, common, is in daily request, and should therefore be grown in quantity. If not too old, the roots will split up moderately well, but seedlings a year old are much to be preferred for renewal of plots. The plan we like best is to sow a pan, and raise the seeds in a cold frame, prick out in the open border about the middle of May, and from this stock our plot is now being renewed. The roots are planted at a foot by 18 inches apart. It is necessary to pinch out the points of the longest growths to induce a bushy, spreading growth. To have Lemon Thyme perfectly true, it must be increased either by division or cuttings. If more than three years old, the old roots do not split up nicely, and cuttings are much to be preferred. These we strike in sandy soil under hand-lights, arranged in any dry, sheltered corner. If put in about the end of September, the plants, as a rule, are ready to plant out now, though, if at all weakly, the planting had best be deferred till April, but the ground should be marked out whilst overhauling the others, so as to have all the varieties in one compact arrangement. Sage.—This is a non-essential, I know, but in all things, provided utility is not lessened, I like to study appearances, and therefore I go in for handsome bushes of Sage rather than lanky stems with only a few leaves at the top. To have such plants, seeds must be sown or cuttings put in at least once in two years. Seedlings give the least trouble, and we raise them the same as Thyme. Provided such a relay of plants is not at command, head back the old plants to within a few inches of the ground, point the ground between the roots and apply a rich top-dressing.

Of course, to maintain a present supply, part of the old plants must not be cut back till the others have made new shoots, then cut over the remainder, which operation may be done at any season. Balm, Hyssop, Angelica, and Pennyroyal are seldom required, except in very small quantities, and half a dozen roots of each are generally sufficient. Still, to prevent their extinction, it is necessary to occasionally lift and re-plant the healthiest offsets, and the present is a good time to do this. The foregoing are the whole of the kinds that I class, or advise, should be grown as perennials and in herb bed order, that is, in a plot by themselves. Of the annual section, Marjoram and Sweet Basil are the only kinds that are best sown under glass and planted out in May; Borage, Chervil, Dill, and Marigold should be sown in drills on a warm sunny border during the month of April; seed is cheap, therefore sow thick to ensure a plant, and thin out before the plants get crowded together.

JERUSALEM ARTICHOKE.—During the recent severe weather, when Broccoli, Brussels Sprouts, and other green vegetables could not be got, the great value of this excellent became conspicuous and was fully appreciated, being pronounced extra good. Though I venture no opinion as to whether they were or not, there is a double reason why such may have been the fact, the first being that the ground was better than we usually set apart for this good-natured tuber, and the next is they were dug up fresh as required for use, the ground being well protected with Bracken, not to mention the snow, of which we had sufficient to make us contented if we do not have any more for years. Generally we have lifted the crop in November or early in December and stored the same as Potatoes, but being so much hardier there is no doubt but that the right course to pursue is to leave them in the ground till there is danger of the tubers growing out. That time has now arrived, and we hope to be able to dig them up within the next few days, and having no other ground but that which they now occupy, we shall well manure and double dig it and replant with medium sized tubers. The rows will be 4 feet apart and the sets 2 feet apart in the row. We drill them in the same as Potatoes, and cover them with at least 6 inches of soil. The tubers for use will be stored in the Potato cellar and be covered over with straw to keep them from shrivelling.

CAULIFLOWERS.—Plants in handlights now have the fullest amount of air, the covers being left off altogether, except at night, when there are indications of frost. Those manifesting a tendency to button we have pulled out, and cleared decayed leaves from all; some required more space, therefore the spare plants have been lifted with all the soil adhering that it was possible to get without mutilating the roots of those that remain, which latter were at once earthed up with the siftings of the refuse soil from the potting-shed, and over this was spread a thick coating of soot. From plants wintered in frames the lights are now left entirely off, except during frost, and the Moss formed on the surface of the soil we have had scraped off with the fingers and the soil stirred with a pointed stick. We shall plant out in permanent position, at three different times, at intervals of about ten days, by way of getting successional supplies, and the first planting will be done about the middle of the present month. The plants from seeds sown in warmth a month ago are ready to prick out in frames, and this will be done at first opportunity. We have just made our first sowing in the open air on a warm sunny border, the sorts being Walcheren and Autumn Giant; the last-mentioned variety, though named Autumn, is about the best of summer Cauliflowers. By three sowings made from the present time to the beginning of April, a regular supply may be kept up, if the weather be open, well nigh till Christmas.

ASPARAGUS.—It is important that as soon as possible the plots should have whatever top dressing of soil or manure it is intended to apply, that the mixture may have time to get fully absorbed

in the soil before the roots start into active growth, at which period it is of greatest value. We use a mixture of soil, well-rotted manure, soot, and the ashes from the "smother" made by burning fruit-tree prunings, clippings from hedges, and the scraps of sticks raked up on the lawn and park; and over this is given a thick sprinkling of salt, which destroys grubs, prevents the growth of weeds, and is an excellent manure to boot. The old plan of ridging up the beds by digging out the soil from alleys is a senseless practice, exposing, as it does, a great portion of roots near the edges of the beds, and hinders the rainfall from being of most service to the roots by the ridged beds throwing it off into the alleys.

FORCING ASPARAGUS.—Given a good supply of roots and plenty of frames, leaves, and litter, there will be no difficulty in keeping up a constant supply of this delicious vegetable. We have all these except frames, and so we have to make shift as best we can. For the time being the floor of an early vinery is a most excellent substitute. The forcing bed is formed with hurdles, and good tree leaves is the heating medium. The plants are packed closely together in fine soil, the same as is done in frames, and the end of the matter is excellent produce, with, rather than otherwise, benefit to the Vines, as the moist heat generated by the leaves is most helpful to the expansion of the Vine buds, and the labour of syringing is not required; the humidity from the leaves and the occasional watering required by the Asparagus give off ample moisture. As the Vines advance to the flowering stage a fresh forcing bed will be formed by making up an ordinary hotbed, over which we shall erect a framework with hooped sticks, so as to tie over tarpauling, canvas, or mats as protection from bad weather. Our frames are all now in use for Potatoes, and the next planting of these will have to be made under temporary coverings in the same way. We have quite discontinued the unwieldy plan of forcing Seakale and Rhubarb on the ground where they have grown, as it is far more economical to lift the roots, and force them either in the Mushroom shed or in any other dark place. We put in roots in quantity desired at intervals of a week in respect of Seakale; but once in three weeks is sufficient for Rhubarb. Though it can hardly be called forcing, some may consider it so; therefore it is necessary for me to say that, for the very latest supply of Seakale, we cover the crowns over on the ground by heaping over them fine cinder ashes, and in this way get a supply a fortnight or more later than from the roots forced in pots or planted in the Mushroom shed.

GARDEN IN THE HOUSE.

PLANTS IN ROOMS.

THE following precautions should be observed, in order to prevent, as much as possible, any injury to large plants when removed from the plant house into the dwelling house: 1. Do not select any specimens in a growing condition, but choose those which have made their full growth, or such as are only commencing to push. The younger and more recently formed the leaves are, so much the more susceptible are they of being spoiled by being introduced into the atmosphere of a room. 2. Choose, if possible, the summer for introducing the specimens from the plant house into the dwelling house, as, the air being admitted into both these places at that season, the difference in the moisture of their respective atmospheres is not so considerable. 3. In removing plants into a warm room for the winter, do not select any which are growing in a low, moist plant house, but such as have been already hardened in the drier air of a high and dryish house. Care should be taken in this respect, not only with plants which are intended for permanent culture in the dwelling house, but also with those which are only placed there for temporary decoration. 4. Plants when first introduced into a room should be placed as near as possible to the window, with some shading from the direct rays of the sun in spring and summer. This protec-

tion will only be necessary for a short time after the introduction of the plants. 5. Plants removed from a moist plant house should be sprinkled with water every morning and evening for the first week, which will prevent the injury which would result from the excessive evaporation from the leaves. Anyone following these rules carefully will scarcely fail to successfully grow such plants as are commonly to be found in windows.

From some Cordylines which had been grown for years in a room, a selection was made of those kinds which are well known to be capable of enduring the open air in summer. These were placed in a glass-roofed balcony with open sides. Here, very soon indeed, they put forth a new and a stronger growth than they had made in the room. A specimen of *C. australis*, which had been already cultivated in the room for two years, and was covered with a mass of handsome overhanging leaves, especially distinguished itself by the development of leaves much larger, broader, and of a deeper green, just such as this species only produces when placed in the open air in summer. In the midst of this growth, these experiment plants were taken back into the room in autumn; but the results of moving them were very unfavourable. In the course of the following winter, *C. australis* lost all its old leaves and a portion of the new ones as well, and continued in a very sickly condition all through the winter, so that this fine specimen, which had kept its leaves for three years, was quite ruined by the experiment. *C. stricta*, which is one of the most durable plants for room-culture, and which, to be sure, on this account had, when brought back to the room, been placed in a rather dark part at a distance from the windows, gradually lost all its leaves and soon died.

That these injuries, which all the other plants which were thus experimented on likewise suffered in the loss of all their old leaves and a portion of the new ones, could only be attributed to their having been shifted from the room to the open air, was manifest enough from the fact that all the other specimens which passed the summer in the room continued to grow away uninjured, as in former years. The falling off of the old leaves were in this case entirely the result of the reaction of a summer's growth made under different conditions and influences, and which cost the plants the loss of the advantages of several years' acclimatization in the room. The partial loss of the leaves of the new growth resulted from this circumstance, that that growth was not quite completed when the plants were brought back into the room, where the higher temperature stimulated them to a further growth in the course of the winter. This part of the injury might have been prevented by removing the plants back to the room somewhat earlier in the season.

It is to be understood that all the preceding remarks on the acclimatization of plants in rooms are applicable only to the more important evergreen ornamental plants, whether intended for the temporary or permanent decoration of apartments. For the management of plants flowering in winter and spring, the rules just given will be useful, but for summer-flowering plants, such as Pelargoniums, the room is merely a winter shelter. What has been said respecting ornamental plants will apply equally to all flowering plants with evergreen foliage, which are wintered in ordinary dwelling-rooms with a temperature of from 45° to 60°. Such are Camellias, Indian Azaleas, and Ficuses, of which many amateurs purchase very handsome specimens at high prices. The buds with which these specimens are thickly covered excite lively expectations of future flowers. But it happens otherwise. In spite of the greatest care one bud after another drops off without opening, and with them all hope of flowers fall equally to the ground. Even when Camellias are grown in a plant-house, a change of position usually proves highly detrimental to the development of bloom. In a much greater degree is this the case when a Camellia, raised in a plant-house and covered with buds, is transferred to the dry air of a dwelling room. But the amateur who wishes to succeed with these plants should not allow himself to be discouraged by the unfavourable results which always follow for the first year after their removal, but should rather continue

his care of them. His perseverance will be rewarded by the success of growing Camellias in a dwelling-room to as fine specimens and as well furnished with flowers as it is possible to do in any plant-house. These plants, like the Evergreens, should make a new growth in the apartment to which they are removed, and, like them, should not be afterwards shifted to the open air.—H.

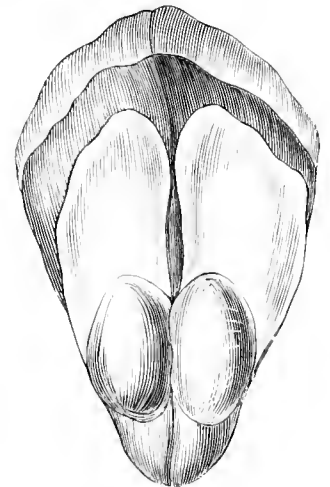
TREES AND SHRUBS.

W. GOLDRING.

THE SUGAR PINE.

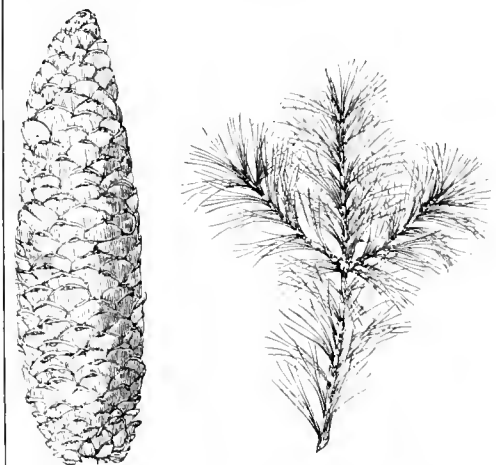
(PINUS LAMBERTIANA)

IN California, that wonderland of trees, the vast forests of the Sierras consist mostly of Conifers of gigantic growth, and among these the Sugar Pine is one of the most remarkable. It holds the undisputed name of King of the Pines, for it is larger than any of its associates, towering



Full-sized scale and seeds of Sugar Pine.

above them all, and only excelled in height by those mighty giants, the Wellingtonia and the Redwood (*S. sempervirens*). The grandeur of the Conifers in Californian forests makes an impression on all travellers, and none more so than *P. Lambertiana*. In some localities Lambert's Pine may be seen upon every ridge and cañon of the Sierra Nevada, and it is the more



Cone and branch of *Pinus Lambertiana* (reduced).

noticeable because it is not found in large forests, like most of the others, but in scattered masses, the finest trees of it often standing out separated from all others (as shown in the accompanying woodcut), where it occupies an exposed ridge

along with a few saplings of Redwood. Some of these trees measure as much as 230 feet in height, and their ponderous boles are often 12 feet in diameter. These trees, thus exposed, have in many cases withstood the storms of centuries, and have thereby been rendered extremely picturesque. But it is its value for English gardens and plantations that we have now to consider; for, however noble a tree may be in its wild state, it is of little value here if not able to withstand our climate, or is not ornamental or good for timber. Writers on Conifers have been somewhat scant in their praise of the Sugar

and it is dense because the leaf-tufts feather all the branches, and so heavy are these tassels of foliage, that they droop somewhat after the manner of the Morinda Spruce. The colour of the foliage is a subdued bluish green, while the smooth bark of the stem and branches is of a rich cinnamon-brown. In the various arboretums where I have found large specimens, I could single them out from all the other Pines at a distance simply by the foliage, colour, and the singular drooping leaf tassels. The best trees I know are grown in a light soil with a gravelly subsoil, and in a position sheltered from cold

arranged in dense tassels, and of a glaucous grey tinge, particularly in their young state. The cones are of an enormous size, larger in fact than those of any other Pine. They commonly measure a foot in length, but often they are as much as 18 inches long by about 4 inches in diameter. When young they are of a deep green colour, purplish on the exposed side. They are produced singly at the slender pendent branches, and as they dangle at every breath of wind, they have a singular appearance. When ripe in autumn they are of a yellowish brown, the scales open and the winged seeds take flight, but the cones themselves remain on the tree till blown down by wind. These great cones have therefore two or three distinct phases of beauty—the green stage, the close stage, and the stage when the seeds have escaped and the cone scales reflex. Mr. Boverton Redwood, who has just returned from a visit to the Yosemite Valley, tells me that the singular appearance of these great cones on the old Sugar Pines is scarcely less impressive than their grandeur. He says that the ground beneath them is strewn with cones, one of which he brought me home. It measures just 17 inches in length by 5 inches in diameter. Every scale is empty, and as it is now hanging in a dry room the scales are beginning to reflex, which increases the diameter of the cone. Mr. Redwood says that the Sugar Pines were even more wonderful than the Sequoias, and no description can give an idea of their majestic size. *P. Lambertiana* was discovered in 1825 by Douglas, who introduced it to this country about the year 1827. It was named in compliment to the author of that noble work, the "Genus Pinus," and such a noble tree could not have been named after a worthier botanist. The range of the Sugar Pine extends throughout California and Oregon. It grows at elevations from 5000 feet to 7000 feet, but grows finest at about 5000 feet above sea level. Douglas stated that this Pine grows sparingly on low hills where the soil consists of pure sand. It covers wide areas about 100 miles from the ocean, and occurs most plentifully between the forty-third parallel on the north to as far south as the fortieth parallel.



Cone of Sugar Pine (*Pinus Lambertiana*) in sections (natural size).

Pine, but that it possesses great merit as an ornamental tree no one can deny who has seen a vigorous tree of it over 50 feet in height. I look upon it as a very fine Pine, distinct in growth from that of any other and different in colour. It grows rapidly, keeps perfectly erect, and retains its lower branches, which, together with all the others, have a downward tendency; on this account it is distinct from other Pines; even in youth the branches spring out quite horizontally, and as they acquire weight they begin to bend downwards. It is not a spreading tree at any period of growth,

winds, though there is nothing to fear in respect to its hardiness. Some, I know, think it too much like the common Weymouth Pine (*P. Strobus*) to render it of much value in ornamental planting, but this is a mistake, for though there is a resemblance, the Sugar Pine is a much denser tree and deeper in colour, besides the horizontal or downward tendency of branching is rarely seen in *P. Strobus*.

Lambert's Pine belongs to the *Strobus* or Weymouth Pine section, the species comprising which have five leaves in a sheath. The leaves are very slender, from 3 inches to 5 inches long,

***Pinus ponderosa*.**—The small number of specimens of this Pine that one meets with is surprising, for when from 30 feet to 50 feet in height there are few more imposing trees. The largest specimen of it with which I am acquainted is at Beaupart, near Hastings. When I saw it last it seemed to me to be one of the most distinct of all Conifers. As trees of it get old they unfortunately lose that dignified character which makes them so striking when younger; the branches become loose, and then they get wrenched off by wind and snow. It is not remarkable for great height, and if its name implies anything, it should be a useful timber tree.—J. C. C.

The Japanese Wych Hazel (*Hamamelis arborea*).—One of the first harbingers of spring flowers is this charming shrub, which opened its first blooms in Kew Gardens on the last day of January. A more beautiful winter shrub than this does not exist in gardens, and when seen in full splendor in the sunshine of a February day it may be described as a clod of gold. It is a singular-looking shrub, possessing at flowering time not a vestige of foliage, but each branch and twig is wreathed with golden blossoms. These are very curious and unflower-like. The petals are narrow and twisted about in an octopus-like way, while the centre is a deep red, so that each flower looks like a ruby set in shreds of gold. The growth of this shrub, or rather small tree, is erect and twiggy, and in summer is not remarkable for beauty, but for its winter bloom it is most precious. One can imagine the effect of a few specimens of it rising from a low mass of some Evergreen, and with an Evergreen background. It should always be planted in a get-at-able spot, so that its blossoms may

be seen and enjoyed. The North American Wych Hazel is not to be compared with this Japanese species for beauty.

BUTCHER'S BROOM.

ANYONE who has seen Butcher's Broom in a really happy condition, as, for instance, clothing the hillsides above Porto Fino, and to the south of Monte Telegrapho beyond Genoa, may well have wished to establish such an exquisitely lovely plant here at home. It is reckoned as a native British plant, but I only know one spot in England where it really fruits, and even there it is as different as possible in appearance from the glorious glossy green foliage sprinkled all over with lovely crimson-like berries the size of the biggest Marrow-fat Peas. Here in England it assumes a much closer habit, the leaflets are more crowded, and altogether it is of a much darker, gloomier hue; it always looks as if it felt the cold and had huddled itself together to keep warm, and even an undersized, stunted berry is indeed a *rara avis*. I have endeavoured to establish it under trees in my light, dry, sandy soil, but with very indifferent success. It lives, and that is all I can say for it. I lately noticed it growing very strongly into dense, thick, low bushes in the heavy clay of the weald of Kent, but so grown it is of forbidding aspect. I wonder if anyone has ever tried it planted out in a large conservatory or winter garden? It might do itself justice there. I have often seen it covered with berries for sale in the best flower shops in Paris, and two or three shoots of it mingled with a handful of *Laurus tinus* make a charming and lasting winter bouquet. From observing it both at home and abroad, I am convinced that though it is hardy here, and will struggle bravely against drought, it loves warmth and water and dislikes too heavy a shade. The only things I find to grow even tolerably under heavy shade, as of Oaks and Beeches, Scotch Firs and Ilexes, are *Rhododendron ponticum*, Box, and Holly. Even these will always under such conditions look enervated, but they do grow and cover the ground with greenery. —W. WILKES, *Shirley Vicarage*.

We have a large quantity of Butcher's Broom planted here (Northumberland) under an avenue of Lime trees, but it does not grow well, and never bears berries. All the points of the shoots die off, and even the tips of the leaves turn white. It is planted in a damp heavy soil. It is my opinion that it succeeds best in a dry position, for I have never seen it grow so well as it does in the south of Hampshire, where on a hot gravelly soil it grows wild and in enormous quantities, intermixed with common Furze and covered with bright red berries. —C. COLLINS.

The Water Oak (*Quercus aquatica*) is conspicuous among the Oaks in the Kew arboretum, as it is one of the few that have not shed their leaves; but it is not a good Evergreen, because the leaves get a rusty look by midwinter—at least in the neighbourhood of London. I should like to know if any readers in Devonshire or other warm parts of the coast could tell us if the Water Oak is a good Evergreen there. It is, no doubt, perfectly hardy, but unless it retains green foliage in winter, it is not of much value as an ornamental tree. —W. G.

The Pontic Daphne.—The beauty and value of this low spreading evergreen shrub is not recognised in lawn planting. A mass of it has, however, a grand effect; its foliage being of a much paler green than that of the turf, shows itself well at a distance. This Daphne is always dwarf and neat, and has an inclination to spread in all directions, so that if a dozen are planted in a mass, say about 10 feet or 12 feet across, a dense group will soon be the result. It is a good deal like the common Spurge or Wood Laurel, but the leaves are shorter and more oval in outline. The flowers produced in spring are also different, for while those of *D. Laureola* are borne in clusters of five, those of *D. pontica* are borne in pairs, are more yellow, and more sweetly-scented. There is a variety (*nubra*) with red flowers and another

with variegated leaves, but neither of these are common. The Pontic Daphne is a native of Asia Minor and Siberia, where it generally forms a dense undergrowth in woods, and rarely grows more than 5 feet high. It thrives in any soil, from almost a clay to an American peat bed. I saw and admired a most luxuriant mass of it the other day in a garden in the weald of Sussex, where the soil is very heavy, while on the poor, hungry soil at Kew it is quite as luxuriant. —W. G.

PINUS CEMBRA.

ALLOW me to add a few words to the excellent article which appeared in THE GARDEN (p. 104) upon our Swiss Pine. Even if that tree could at one time have been described as Swiss, and as being the prevailing tree in our Alps, such a description would now be quite incorrect. Our old books upon the Alps and Swiss history mention the fact that two or three centuries ago that tree was found everywhere upon the highest Alps. It was, above all others, the mountain tree, coming from the large plains of Siberia, and extending over all the mountains of Central Asia, the Alps, &c. The central parts of the Alps were covered with it, and it formed large and useful forests. Dr. Chust, in his "*Flora de la Suisse et ses Origines*," tells us that its numbers are now so much reduced, that the time can be foreseen when the glorious tree of our Alps will be a thing of the past. In the year 1822, Kasthofer wrote: "Still rarer than Larch-tree forests are Arolla forests; without the forester's help that tree can no more be preserved in our country, and it will soon be extinct in our populated valleys."

The Arole or Arolla has so many enemies, that it cannot survive if the foresters do not protect it. Human beings, birds of many kinds, squirrels, mice, and other animals are very fond of its seeds. Sheep and goats are fond of the young trees; but the most dangerous of all its enemies is man—man, the perfection of all the creatures in creation, who has the greatest interest in protecting the young trees, and in helping them to develop their branches; man, who is protected by the forests, and for whom these trees are treasures! During the past half-century the limits of the forests have decreased rapidly. It is sad indeed to think of the enormous diminution of our forests in all the Alpine regions lately. The shepherds for their milk industries, and the communes to extend their pasturages, cut down all these trees, which Nature has placed there to protect their districts. Large forests have been destroyed in order to get pasturages, and the wealth of the valley is gone with the woods. Arole trees can seldom be seen in forests; it is even rare to see pretty individual trees, and to see them in quantity it is necessary to go into districts like Arola, in the Val d'Arola, Valais, Hotel Weis-horn, in the Val d'Anniviers, over St. Luc, Valais, on the Riffel by Zermatt, in Grubben Thal, Valais, in the Engadine. Elsewhere they are rare and small. The tree grows very slowly. In a few minutes the woodcutter can undo the work that Nature took 1000 years to accomplish. I have seen in the Vallée de Nenday (Valais), in Civiez, large specimens of that tree cut down and rotting on the soil, the object of the destruction being the extension of the pasturages. And because our trees are becoming so rare, and our forests are disappearing rapidly, in spite of the excellent forest laws which Switzerland possesses, the Association pour la Protection des Plantes has added to her work "Protection of Forests," and has begun to cry as loudly as it can, "Our trees and forests in the highest regions are sacred; do not cut them down!" H. CORREVOX.

Guerra.

The Amur Ivy (*Hedera amurensis*).—This Ivy, to which an allusion was made the other day, has been grown at Kew for about four years. A large plant of it is growing on an open stump in the Ivy collection, and judging from its present appearance it is as hardy as any. The leaves are large and bold,

mostly heart-shaped, and are beautifully stained with brownish purple and overlaid by a network of green veins. It is to all appearance a first rate Ivy, distinct from all the rest, a fast grower, and perfectly hardy. —W. G.

Pinus flexilis.—This Rocky Mountain Pine is one of those scrubby-looking Pines about which I wrote the other day, but at the time I forgot to mention it. It is a distinct-looking little Pine in growth, much resembling others of the Scotch Fir race, but much darker in tint, and what is most remarkable, its branches are completely covered with needles, bottle-brush fashion. It is a fine little lawn tree, and I should always place it so that it would appear to be an off-shoot from a main mass of bigger Pines, or in a recess, either singly or a group of three or four plants placed within a few feet of each other. It is a native of the Sierra Nevada, and is one of the alpine trees of the Rocky Mountain region, where it grows to a large tree in some parts.

Magnolia Halleana.—This Magnolia is not so rare as some seem to imagine, but, pretty though it be, it certainly cannot claim to be the "finest of its tribe." It forms a low, much-branched shrub, and belongs to that section of the genus which blossoms before the leaves appear. The flowers, which are borne singly on the points of the shoots, measure from 3 inches to 4 inches in diameter, and are composed of a number of narrow strap-like petals, which, after being open for a short time, gradually reflex. They are pure white, but when in the bud-state the exterior is slightly suffused with pink. *Halleana* flowers about the same time, or a little later, than the Yulan (*M. conspicua*). Its leaves, which after a time make their appearance, are about 4 inches or 5 inches in length, and of rather a pale green hue. It is thoroughly hardy, at all events around London, as plants of it at Coombe Wood testify, yet it is not seen at its best except in some sheltered spot; where exposed the blooms are often injured by spring frosts. There is, however, one purpose for which this Magnolia when in blossom is well suited, and that is for the embellishment of the greenhouse or conservatory. It is very amenable to pot culture, and when protected by glass the blossoms are seen to advantage. It is now some half-dozen years since I first saw it in the temperate house at Kew, and I was then so struck with its beauty that I have since grown it under glass, and thus treated the delicious fragrance of its blossoms is more pronounced than in the open air. After blooming, we remove our plants to a frame, where they are gradually hardened off, and after a time plunged in the open ground. Under this treatment they set their blooms freely, and on the approach of winter they are replaced in the frame and in spring taken into the greenhouse. This Magnolia, like other members of the genus, is not an easy plant to propagate, for, though layers will strike root, their slow growth prevents such a mode of increase being extensively followed. It is generally grafted on *M. obovata*, which is mostly used as a stock for this section. *M. Halleana* is sometimes met with under the name of *M. stellata*.—T.

SHORT NOTES.—TREES AND SHRUBS.

Ivies.—Anyone interested in Ivies will be well repaid by a visit to the Royal Horticultural Society's gardens at Chiswick, where Mr. Barron has got together a very extensive collection of the different varieties, which, as the season advances, will be very interesting.

Picea bracteata.—This is perhaps less known than most Conifers, a circumstance to be regretted, as it is very distinct in appearance, and a capital subject for choice positions. Its appearance is lighter than that of many of the family to which it belongs, and if planted in good soil it should grow rapidly and attain a good height; seeing that it comes from California, it should, I think, prove hardy. —C. C.

Cotoneasters. *C. microphylla* allowed to trail freely over rockwork at Chiswick is now very conspicuous, being laden with beautiful coral berries. *Cotoneaster Hooker* growing in close proximity is bearing no fruit at all, and seems to have suffered very much from the late severe weather, the foliage looking as if it had been scorched.

Picea cephalonica.—This is not so extensively planted in parks and pleasure grounds as it deserves to be. It is a wonderfully fast-growing tree, and makes invariably a handsome specimen. Even in a young state the branches are so regularly set, that the contour of the tree is always pleasing. As a park tree it is of great value. Cattle do not like to touch it

on account of its sharp spines. Nevertheless, young specimens should not be left altogether unprotected.—J. C. C.

FRENCH GARDENING TOOLS.

A young English gardener, well up in short Grass mowing—a qualification, by the way, rather rare in the present age of mowing machines—would be considerably taken aback if required to make a clean-shaven lawn with the implement that is familiar to his French colleagues. To the eyes of an English gardener there can be nothing more awkward-looking than the French scythe. The blade, it is true, offers a tolerably close resemblance to that of English make, but here the similarity ends, for the handle is as straight as that of a prong, and there is but one grasp, which is placed about halfway down the handle. This is, of course, for the left hand; the right claps the upper portion of the handle just in the same way that one would take hold of a pitchfork or any similar straight-handled implement. To those used to the curved handle of our own scythe it would seem almost impossible to make good work with an implement of this description. It does do short Grass-mowing, however, very well indeed, and I am inclined to think that it has one advantage over scythes in use with us. The blade is very thin, and, contrary to what is the rule with French cutting implements, the scateur excepted, well tempered. In the hands of a good workman it will cut almost like a razor. In the matter of sharpening, however, the Frenchman goes to work in a manner that differs as much from that practised by us as the two implements vary in form. His first proceeding is to fix a piece of iron firmly in the ground, the top of which is wedge-shaped. He seats himself before this, and, laying the edge of the blade on the blunt edge of the iron, with a hammer taps it smartly from one end to the other; then, reversing the blade, he completes the first stage of sharpening. The second consists, as with us, in passing a "rubber" along both edges, but with this important difference that his rubber is flat-sided instead of being round, and that he never by any chance uses it dry. The rubber is kept in a horn containing water slung at the back of the workman, so that it is kept in a wet condition. It is easy to understand that in this way a finer edge can be obtained, for everyone knows that if we want to put a keen edge on a pruning knife we always sharpen on a moist stone. I should explain that the beating of the edge of the scythe is rendered imperative by the thinness of the material, which turns a little after being used some time. If a man is mowing all day long he will need to beat the edge of his scythe about twice. It will doubtless appear strange that such thin material should be employed in the manufacture of scythes, but there is good reason for this. Without a very keen cutting implement you cannot mow short Grass in France in the summer time. Owing to the great amount of dry heat, the Grass is so tough that I doubt if the most expert of English mowers could do much with it with our ordinary scythe. There is an almost entire absence of those heavy night dews that so frequently accompany very hot summer days in this country, and to which we owe much of our verdant freshness at that time of year, so that there is but little chance of taking advantage in the early morning of a moist condition of the Grass for mowing, as used to be done in English gardens before the mowing machine supplanted the scythe. Even at the present time the greater portion of the Grass in French provincial gardens is mowed, mowing machines being not nearly so much used as with us.

The French spade differs quite as much from the implement used in this country as the two scythes do. It has a long, straight handle like a prong, with no grasp at the end, and the blade, instead of being straight, is much wider at the top than at the bottom. It is certainly, to unaccustomed eyes, an awkward-looking tool, and a man using it has, at a little distance off, the appearance of pitch-forking the ground over. It does very well on light soils, but on heavy land I do

not see how it can do its work efficiently. The workman certainly has not the same power over it as with one of our make. The shovel has a handle of the same description, only not so long, but in factories and places where much fuel is burned the English shovel has for the most part taken the place of the French tool. There is one thing that would strike an English gardener as curious in French gardens, *i. e.*, the absence of the common hoe. If he were to ask for a hoe, he would be brought a ponderous-looking tool much resembling a mattock, only larger. This is a serviceable enough implement in its way, especially on heavy lands which become burnt and baked in summer, and on which in a dry time our common light hoe makes but little impression. Its principal use is to break up the surface to a depth of 2 inches or 3 inches, and it has its equivalent with us in the cultivator, which many English gardeners find under some circumstances a satisfactory substitute for the spade. The hoe proper of French gardens is the Dutch hoe, and for most kinds of light hoeing operations this is decidedly the best tool that could be used. I have often thought that the Dutch hoe is not so much used as it should be with us. In most large gardens it is valued, but in small ones one seldom sees it. It must be owned, however, that it is a tool for the thrifty gardener only. He who allows weeds to grow till they almost seed will want something different, but where the stich-in-time principle is in vogue, the Dutch hoe for all ordinary purposes is the best, and as regards expenditure of labour the most economical. With it a brisk workman will go over a lot of ground in a day, and working backwards, as one has to do, none of the weeds are trodden in to take a fresh lease of life, as is often the case with ordinary hoeing, and the whole surface soil operated on is left loose and friable.

With respect to watering pots, they are, as a friend of mine once said, "a caution." In form they are elegant, very much like some of the old-fashioned china jugs, but they are made of copper, and the opening at top, already small, is further diminished by a rim of from 1 inch to 2 inches in width, thus rendering the dipping of the water about as little easy as possible. The rose is not over large, and in a general way is not even made to be taken off. It forms an irremovable portion of the pot, which has the merit of simplicity, but which, when time is scarce and water is not so free from impurities as it should be, is apt, by being continually in a semi-choked condition, to cause much vexation. A more inconvenient garden implement I never used. The handle is of rolled copper, and runs from the rim of the can to about two-thirds of the way down, and from the opposite edge a bar connects it with the spout. One could understand that such an antiquated affair might linger in out-of-the-way country gardens, but it is difficult to understand that even in the Paris market gardens it should be about the only kind of watering-can in use. It would naturally be thought that to a quick-witted race of cultivators, such as the Paris market gardeners as a body are, the palpable defect of such a watering-can would many years ago have caused its total abolition where water-carrying forms the chief item in gardening work for a considerable portion of the year. It is probable, however, that some change has taken place in this respect within the last few years in the better ordered of the Paris market gardens. I know that a watering-can was invented by a Paris manufacturer which was specially designed for use in market gardens, and which it was thought would facilitate watering considerably. This was made in form between round and oval, with the opening placed as is the case with our own cans, but the handle, which was of rolled zinc, curves over the top of the can from the spout to about half-way down the back of it. In form this can certainly offers a contrast to, and has great advantages over, the old kind, the peculiar position of the handle being supposed to be the happy hit in its construction. This will be understood when I explain how much of the watering is done in French market gardens. Space there is very valuable, so that the alleys be-

tween the beds are of the narrowest, and on this account, and because work there is done at high pressure, the workman cannot make the ordinary double movement of setting down the can and then grasping it by the handle before using its contents. The cans are grasped, one in each hand, by the piece that connects the can with the spout, and being filled, they are carried in this way to where the watering is to be done. Then comes a bit of sleight-of-hand that requires considerable practice to become master of. As before mentioned, the cans are not set down, but the workman gives a short outward jerk of the wrist, which turns the can and brings the handle towards him. This he grasps, and goes to work at once, doing the same with the other can in its turn. This is termed by the French jumping the cans. It will readily be conceived that work of this description carried on for days together under a scorching sun is terribly exhausting. It will also be easily understood that the can above described would considerably reduce the toilsome character of the work, as, owing to the handle running from the spout to the back of the can, the hand has only to be slid backwards a little to bring the can into the right position for watering.

I may mention that a can identical with this was sent out some years ago by Messrs. Boulton & Paul under the name of the Battlesden can, but there has never been sufficient demand for it to warrant them keeping it in stock. I omitted to mention that an important feature of this can is that instead of the ordinary rose it is fitted with a long spout with a small opening, to which is affixed a contrivance for distributing the water in a thin wave-like spray. This spout gives the can a rather awkward-looking appearance, but having used it for a good many years, I am able to assert that it is very useful. With it one can cast a spray over a bed 6 feet wide, and it is not liable to choke up as the ordinary rose does. I have several of these cans in use, and would not like to be without them. With respect to pruning and budding knives, the French gardener has to put up with a very inferior article. It does not seem possible to get a good knife in France, and you can scarcely give a French gardener greater pleasure than in presenting him with one of real English make. What seems so strange is that the scateur is really an admirably tempered implement, and one would naturally think that there should be no more difficulty in making a good pruning-knife.

JOHN CORNHILL.

ORCHIDS.

W. H. GOWER.

HOULLETIAS.

THESE belong to a small family of distinct and handsome Orchids, which when not in flower much resemble some species of Stanhopea. The first-known kind was discovered on the Organ Mountains, near Rio Janeiro, but all the others are natives of the mountain forests of Columbia and New Grenada. Their flowers are doubly interesting on account of the peculiar structure of the lip and the pleasant aromatic fragrance which they emit. Houlettias grow best in pots, and just now is a good time to repot, or renew the soil about their roots. They thrive well side by side with *Odontoglossum crispum*, and require about the same treatment as that lovely cool Orchid. Houlettias produce their flowers in bold racemes, which are strikingly effective when contrasted with the snowy white blossoms of Princess of Wales *Odontoglossum*. Hitherto, however, from some unexplained reason, they have found more favour with Orchid growers on the other side of the Channel than with us. *H. Brocklehurstiana*, the species of Houlettia first grown in this country, has conical, strongly ribbed pseudo-bulbs, which bear a broad plaited deep green leaf; the scape, which is erect, bears

from six to twelve thick, fleshy flowers, each measuring some $3\frac{1}{2}$ inches across; their sepals and petals are deep rich brown, profusely spotted and transversely streaked with purplish brown. The ground colour of the lip is yellow, but it is almost hidden by lines and spots of brownish purple; the flowers are produced during winter, and have a delightful aromatic fragrance. *H. tigrina* has larger flowers than those of the species just described. The sepals and petals in this case are pale yellow, profusely mottled and variegated with rosy red. The lip, which is flat and spade-shaped in front, is white, freely dotted all over with rosy crimson, while the narrow stalk-like base is transversely streaked with red, and ornamented at each side with an erect, sickle-shaped horn, which is white, tipped with purple; and the large, arching column is white. It comes from Ocaña, and is usually found growing on the ground in forests there. *H. picta* is a native of the same country and is a similar plant, but the leaves have a longer stem; the scape, which is erect, like that of others, rises from the base of the mature pseudo-bulbs when the young growths push up; the flowers measure between 3 inches and 4 inches across; their sepals and petals, which are narrowest at the base, are rich brown, the basal half being yellow, chequered with transverse, oblong spots of cinnamon; the lip, which has a hastate lobe in front, is yellow or white, heavily streaked and spotted with blackish purple. *H. odoratissima*, which comes from Columbia, is somewhat less robust in habit of growth; the scape is about six-flowered; the sepals and petals are narrow, and dull red; the lip is white, with a curious, halberd-shaped middle lobe and a large, falcate, red, tooth-like process on each side; the column is large and white. The flowers of this species emit an agreeable odour, something like that of Violets. *H. antiocquensis* is considered to be a variety of the preceding, but differs from it in colour; the sepals and petals are broader, and rich reddish crimson in colour, but dull brown on the outside. *H. chrysantha*, which comes from New Grenada, has flowers of a rich golden yellow colour; the sepals and petals on the inside are profusely spotted with rich bright brown, and the lip is deep yellow, dotted with chocolate or crimson.

Lælia Turneri.—This is undoubtedly the richest and most deeply coloured form of all the varieties of *L. elegans*. It is both an autumn and winter bloomer, and is thus doubly valuable; although it has now been in cultivation some years, it would appear to be still scarce, judging from the fact that the "reserve price" of a moderate-sized plant in bloom is a hundred guineas. The flowers measure upwards of 6 inches across; the sepals and petals are deep purple tinged with rose; the lip is broad, spoon-shaped, and intense purplish magenta.

Odontoglossum Sanderianum.—This beautiful and distinct plant has vastly improved under cultivation, and may now be seen in bloom in abundance. On its first introduction it was supposed to be a natural hybrid between *O. nevadense* and *O. nevium*, a supposition which does not appear to be borne out by facts. The raceme is erect, dense, and many-flowered, and the individual flowers measure upwards of 2 inches across. The sepals and petals are yellow, streaked and spotted with crimson; the lip is white and the crest yellow, with a large triangular spot of velvety crimson in front, the middle lobe being pointed in front. It is an attractive winter-flowering plant.

Saccolabium cœleste.—Lovers of Orchids will be glad to know that Mr. Shuttleworth, of Clapham, has recently received a consignment of this rare and beautiful plant. It appears from these imported plants that it flowers and seeds most freely in its native country. It has somewhat the habit of *S. curvifolium*, but the leaves are broader, nor are they of that yellowish hue which is so marked a feature in

that species, but rich deep green. The raceme is erect, nearly a foot long, and densely flowered. We believe it has as yet only been flowered in this country by Sir Trevor Lawrence. The lip is amethyst, the sepals and petals being also tipped with the same colour. The rarity of such colours amongst Orchids must assuredly render this plant popular.

ORCHID CULTURE.

"W." puts the question, "Does Orchid growing pay?" And then, after drawing a gloomy picture of the plants and the meagreness of their flowering, arrives at the conclusion that not only does the cultivation of Orchids not pay, but that they are not desirable plants to grow. Now, taking all that may be fairly urged in their favour, including the singularity and



Sugar Pine on an exposed ridge. (See p. 152.)

elegance of their flowers, their chaste and beautiful colours and enduring properties, there is not likely to be any falling off in the estimation in which Orchids are held by any but a few who are prejudiced against them. As to whether their cultivation in private establishments pays or not, according to the ordinary acceptance of the term, there can be no question that when well selected the balance will be much in their favour as compared with most other plants. And this I hold to be the only way in which the question can be put. What of the soft-wooded quick-growing plants that now principally fill the cool and warm plant houses of the present day—the Begonias,

Pelargoniums, Chrysanthemums, Cinerarias, Cyclamens, Fuchsias, Ferns, fine-leaved and flowering stove plants? Do growers of these expect to get anything worth naming for them if they should happen to give up their cultivation? If they do, they will find out their mistake. Yet the plants in question cost as much for house room, fuel, and attention as Orchids if grown in a way to give satisfaction to the owner or credit to the gardener. "W.'s" comments might have held good if the extravagant prices that Orchids used to fetch were still the rule, when most of the desirable kinds realised more pounds than they now do shillings, and when they were killed by thousands through the barbarous treatment to which they were subjected.

From opportunities which I have had of seeing great numbers of collections, large and small, throughout the country, I can say, emphatically, that the assertion that Orchids are unsatisfactory is groundless. Places may occasionally be met with in which Orchids, in common with other things, are in the condition described by "W.," but those who know anything about plant culture have little difficulty in defining the reason why. And it is not on exceptional cases of bad management that an estimate of any value can be formed. What Mr. Crawshaw says about individual plants in private collections realising two or three hundred times more than they originally cost is simply in accordance with my own experience, and that of others who have had to do with Orchids, and who know the right way of obtaining the plants which they grow. But leaving lucky hits of this kind out of the calculation, and taking up the more reliable evidence forthcoming from the cultivation of these plants in greater or less quantities, I could name many instances where, after being grown for a number of years, they realised a handsome return when part or the whole came to be disposed of. One case in particular, where some two hundred pounds were spent in a selection of cool Orchids, newly imported plants, amongst which were a number of *Odontoglossums*, the collection was kept intact for several years, after which six hundred pounds' worth were sold, leaving quite as many more that would to day fetch another six hundred.

One cause through which many who have gone largely into the cultivation of Orchids ultimately find that more or less of their plants are worth less than they should have been is that insufficient knowledge was brought to bear on the purchases made at the commencement before they had learned to keep clear of the weedings out from the collections of others who have had experience, and have learnt the difference between good and inferior varieties. In this way many of those who form collections pay for their learning. Another cause which works in the same direction with those who are enthusiastic, and who can see more in rarity than it is worth, is that they give extravagant prices for any species that is new and supposed to be limited to a few examples, when somehow or other it oftener than not turns out that someone interested knows where the supposed rarities can be dropped on by hundreds or thousands. I well recollect seeing a single imported piece of *Pendrobium Wardianum* knocked down at a sale in London for 100 guineas. It was not long after that a wheel-barrowful would not have fetched so much money, and I could name scores of species that have afforded a like evidence of the mistake of giving extravagant prices for new Orchids, without taking into account the probability of there not long being any scarcity of them.

"W." says that Orchid culture is on the wane, giving as his authority for arriving at this remarkable conclusion the evidence of trade-growers who tell him that such is the case. The assertion is a fair example of the mistakes people fall into when their opinions have no better foundation than the one-sided statements they happen to hear. Those who are acquainted with facts connected with the subject will easily detect where "W." has been led astray by what he has been told. There was a time when Orchids which reached the hands of growers came wholly through the trade, except now and then when a private collection came to the hammer. Now all this is changed; in proof of which it is only necessary to point to the thousands of newly-imported plants, and of plants

that are making their first growth after being imported, that almost every week in the year are sold by auction in London, to say nothing of quantities of a like character that are similarly disposed of in large provincial towns, and which collectively in all probability represent three-fourths of the whole number that pass into private hands. The simple truth is that Orchids, consisting of many well-proved, sterling species, now cost little, if any, more than young plants of ordinary stove and greenhouse stock, the result of which—as anyone knows who moves about sufficiently to be able to form an opinion—is that in half the gardens of any importance throughout the country Orchids in considerable numbers are grown, and as often as not are better grown than anything else.

T. B.

Trichopilia laxa is not one of the common species, and is not mentioned in Williams' Manual. It is different from the rest, and reminds one more of a *Pilumna* than a *Trichopilia*. It bears a pendulous flower-spike about a foot long with the blossoms loosely arranged, hence the name. They are some 2 inches across with narrow sepals, petals and lip, and entirely ivory-white. In flower at Kew.

Sophrontis violacea is quite a little gem among Orchids, and the colour of its small flowers being so different from that of most Orchids makes it the more valuable. It is altogether smaller than its relative, *S. grandiflora*, and its flowers, each about 1 inch across, are borne singly on the top of the tiny oval bulbs. The colour is a bright violet, deeper in some forms than in others. It lasts a long time in bloom—several weeks, in fact. Being a native of the Organ Mountains, it thrives best in a cool moist house. Now in flower at Kew.

Oncidium falcipetalum.—It is well to record the name of this new, or, at least, rare *Oncidium*, as some growers may wonder what it is like. It is one of that puzzling section to which *O. superbium* and *macranthum* belong. In growth it much resembles *O. macranthum*, the bulbs being long and thin, and disposed in an irregular way. The flowers are nearly as large as those of *macranthum* and of similar shape, the broad rounded sepals are of a bronzy yellow, the side petals are curiously crimped, and are reddish yellow barred with yellow. It may be seen in bloom at Kew now.

Dendrobium luteolum.—There is something very pleasing about this *Dendrobe*, although there is no bright colour in its flowers. It is one of the few *Dendrobes* that retain their foliage throughout the year, and the cheerful green leaves of *D. luteolum* harmonise beautifully with the flowers, which are of a soft primrose-yellow. The flowers are from 1 inch to 2 inches across, and in well-grown plants they completely wreath the leafy stems, and as these naturally droop, they are most elegant. It is one of the very best Orchids that can be grown by those who do not want to make a speciality of Orchids, as it may be grown to perfection in a hanging basket in an ordinary stove-house. There was a specimen of it shown at South Kensington on Tuesday, but this did not show the elegant growth of the plant, and therefore was not certificated.

SOCIETIES.

ROYAL HORTICULTURAL.

FEBRUARY 8.

THIS, the opening spring show at South Kensington, was unusually bright considering the severe weather lately experienced. It was held in the East Crush Room of the Royal Albert Hall, an unsuitable position for displaying the rich and varied colours of many of the exhibits, notably those of the beautiful collection of *Primulas* staged by Messrs. Carter, High Holborn. A great many novelties were exhibited, amongst which the following were awarded first-class certificates:—

LYCASTE PLANA MEASUREIANA.—A beautiful variety, the labellum of which is white spotted with crimson; the petals and sepals are nut-brown. It is sweetly scented, and undoubtedly a fine variety. Shown by Mr. B. S. Williams.

ODONTOGLOSSUM CRISPUM LEOPARDINUM.—A beautifully spotted variety, the flowers of which are large and of good substance. Exhibited by Mr. H. M. Pollett, The Firs, Bickley.

PACHYSTOMA THOMSONIANUM.—A very pretty dwarf plant, bearing from one to three flowers from the base of the bulb. The lip is white marked with reddish purple streaks; the sepals and petals are pure white. Shown by Mr. Vanner.

PRIMULA SINENSIS SNOWFLAKE.—A Fern-leaved variety producing large trusses of pure white flowers of great substance. Shown by Messrs. Veitch.

PRIMULA WHITE PERFECTION.—This is, without doubt, a grand acquisition, producing strong and well-formed trusses of massive white flowers. From Messrs. Cannell.

PRIMULA PURITY.—The flowers of this are pure white, large and fine. Shown by Mr. James, Farnham Royal.

PRIMULA BRIGHTNESS.—A semi-double variety with bright red flowers and of fine habit. Shown by Mr. James.

Among miscellaneous exhibits, special mention must be made of the collection of *Primulas* from Messrs. Carter, to which a silver Banksian medal was awarded. It consisted of over 500 plants in nineteen varieties, and, taken as a whole, was very interesting. Conspicuous among them we noted *Elaine*, a variety with pure white flowers. This kind was also shown in the Fern-leaved section, the examples in both cases being good. Fern-leaved Red, flowers large and fine; White, a large, bold, white flower; Blue, flowers mauve, of fair size; Prince of Wales, flowers semi-double, rosy crimson; Fern-leaved White, trusses stout and dwarf, flowers of good form, slightly flushed; Gem, very similar to a variety named *Lilacina*; Vermilion, an effective and beautiful bright red; and Venus, white, spotted with crimson. Mr. W. Bull put up a very interesting group of Orchids, interspersed with Palms and similar plants. This collection was very noteworthy, as it contained such a variety of the *Cattleya Trianae* section in different shades of colour. These of themselves made quite a display. Amongst other noteworthy subjects we observed the chaste and beautiful *Lycaste Skinneri alba*; *Cattleya amethystoglossa marmorata*, carrying a beautiful spike; *Dendrobium luteolum*, well flowered; the pretty *Coleogyne cristata* and its variety *Lemoniana*; *Dendrobium speciosum* Hilli, *Cypripedium Haynaldianum*, and many other varieties. A silver-gilt medal was deservedly awarded. Mr. R. J. Measures, Camberwell, exhibited a collection of *Cypripediums*, including *Sallieri*, a hybrid between *villosum* and *insigne*; *insigne grande*, of the *Maulei* section, but having brighter violet markings, and more white than the original variety; *chloroneurum*, a cross between *venustum* and *villosum*; *insigne Richardi*, one of the finest of this section we have seen, the petals being distinctly marked with large violet blotches and lines; *Williamsi*, the result of a cross between *venustum* and *Harrisianum*, also *Odontoglossum maculatum* Donianum with forty-two flowers, very fine. Mr. B. S. Williams also exhibited *Dendrobium Fytchianum roseum*, a rose-shaded variety of this well-known Orchid, and *Primula Magenta Queen*. Mr. H. M. Pollett sent *Odontoglossum Marriottianum*, flower large, but of little merit. Mr. Tautz, Goldhawk Road, Shepherd's Bush, showed a variety of *Cypripedium* Boxalli named *atratum*. A plant of *Dendrobium Vannerianum* was shown by Mr. W. Vanner. Mr. F. A. Philbrick, Oldfields Bickley, sent a finely flowered *Phalenopsis Stuartiana*, also *Saccolabium bellinum*, and a plant bearing a spike of seven blooms of the beautiful *Phalenopsis casta*. Mr. A. Balstone, Timperley, near Manchester, sent a fine spike of *Calanthe nivalis*. Messrs. Masemel Bros., Ghent, Belgium, sent cut blooms of varieties of *Odontoglossums*. Mr. T. S. Ware made an imposing display with *Narcissi* and spring-flowering plants, amongst which were large masses of *Helleborus niger maximus*, *Helleborus colchicus*, *Crocus Imperati*, *Crocus nivalis*, very dwarf and pretty; *Chionodoxa Luciliae*, chaste and showy; *Lachenalia pendula* and *Nelsoni*. *Freesia refracta alba*, *Iris Histrio*, and *Primula floribunda* were also included in this group. Cut flowers of *Chrysanthemum* Mrs. C. Carey, showing what a useful late

variety this is, were also shown. A silver-gilt Banksian medal was deservedly awarded to this interesting and pretty group. Messrs. Collins Bros. and Gabriel contributed *Narcissi* and early-flowering spring plants, for which a silver Banksian medal was awarded. Messrs. Barr and Son also showed a very fine group of *Narcissi*, &c., for which a silver Banksian medal was awarded. Mr. Allan, The Gardens, Gunton Park, Norwich, sent two baskets containing profusely-flowered examples of *Violets Comte de Brazza*, *Marie Louise*, and *Neapolitan*. The white variety was especially noteworthy. A cultural commendation was awarded. Messrs. Paul and Son exhibited *Iris Histrio* from out of doors; its flowers are rich bluish purple, the petals spotted with very dark purple. Mr. W. B. Hartland, Cork, sent fine blooms from the open ground of *Narcissus Irish King*. Mr. W. Gordon, Twickenham, exhibited two unnamed varieties of *Camellia*. Mr. James showed two Chinese *Primulas* named *Mary James*, with large lilac flowers, and Faust, purple-flowered, also cut blooms of his strain of *Cinerarias*.

The labours of the fruit committee were very light on this occasion. Messrs. Saltmarsh and Son, Chelmsford, had a seedling Apple named *Lord of the Manor*, which the committee desired to see again. Mr. Ross, Welford Park Gardens, sent a seedling Apple named *Lady Alice Eyre*. Messrs. Rivers and Son, Sawbridgeworth, had several varieties of Apples, for which a vote of thanks was awarded. Mr. W. Taylor, Hampton, showed specimens of his fruit trees in pots, and also trained specimens. Mr. Troughton, Preston, sent *Cucumber Troughton's Prolific*, which was similar to *Rollisson's Telegraph*.

The Permanent Enamel Company, Pelly Road, Plaistow, exhibited samples of their imperishable plant labels on which the names of the various subjects are produced in conspicuous white letters on a blue ground. The committee considered them superior to any already in use of a similar make.

The annual general meeting was held in the East Crush Room of the Royal Albert Hall at 3 p.m., the president, Sir Trevor Lawrence, Bart., M.P., in the chair. He called the attention of the Fellows to the various paragraphs in the report, from which an extract was given in THE GARDEN last week, more especially to that, referring to the future of the society. He said that the council had been in correspondence with the corporation of the Royal Albert Hall as to the use of the conservatory for the purpose of holding meetings, shows, &c., but, he was sorry to say, without result. Mr. Harry Veitch said he could not see why the society should not have a freehold of its own, and that if this was secured, funds would soon be forthcoming to erect buildings, and thus form a permanent home for the society. He moved that a sub-committee of five or more be selected to co-operate with the council as to this matter—a suggestion which was adopted. A cordial vote of thanks to the chairman then terminated the proceedings.

Vine insects (G. Wood).—The insects found in your viney are small beetles, belonging to the genus *Aphodius*. They are quite harmless to vegetation. They bury small pellets of manure in which they lay their eggs; the grubs when hatched feed on the manure, with which they are surrounded. These insects were probably introduced into your viney when in the chrysalis or grub state with some manure, and the beetles have since been developed. When found on the wall plate they were probably trying to make their escape.—G. S. S.

Gooseberry caterpillars.—The suggestion as to the use of alum water for the destruction of these pests is so good a one, that I have made special note of it for the benefit of the market growers in this locality, who chiefly resort to the free use of soot, a dirty and noxious compound, and specially so when used on bushes bearing fruit. I assume that the alum produces no injurious effects upon the foliage of the bushes.—A. D.

Potatoes (E. B.).—If the ground is fairly rich do not manure. A sprinkling of bone dust put in the lines when the sets are planted would, however, be beneficial.

Names of plants.—C. T. J. — 1. *Asplenium lanceolatum*; 2. *Asplenium Belangeri*; 3. *Polystichum coriaceum*; 4. *Clematis cirrhosa*.—T. H. — 1. *Odontoglossum Ruckmannianum*; 2. *O. Rossi majus*; 3. *O. Cervantesi deora*; 4. *Masdevallia ignea*.—J. H. G. — 1. *Dendrobium japonicum*; 2. *Cattleya Percivaliana*; 3. *Pteris comans*.—C. de G. — *Galanthus nivalis procerus*.—J. C. L. — 1. *Helleborus niger angustifolius*; 2. *Helleborus colchicus*.

WOODS & FORESTS.

THE TABLE MOUNTAIN PINE.

(PINUS PUNGENS.)

Is looking over a recently purchased copy of London's "Arboretum," I was struck by the similarity between an illustration there given of this Pine, and a specimen of the same tree growing at Penrhyn. What renders this Pine so distinct and conspicuous from the generality of its fellows is the large yellowish brown cones which are arranged in whorls around the stem and branches, and which, from the scales being sharply hooked, have a very unusual as well as formidable appearance. The whole contour of the tree is irregularly spreading, with pale yellowish green leaves, $2\frac{1}{2}$ inches long, and placed rather thickly on the branches; cones without footstalks, nearly 4 inches long by 3 inches diameter at the base, and gradually tapering to a sharp point. They are produced in great numbers on the stem and branches, I having counted as many as a score in one mass, and all point horizontally. Unlike the generality of cones, those of the tree in question are remarkably persistent, and remain on the tree for many years. To remove them is a task that is by no means easily accomplished, for, as they are thickly covered with sharp spines, and grow closely together on the stem, they almost defy one to remove them without sustaining serious injury to the hands; indeed, I was obliged when procuring specimens for the Forestry exhibition, to have them removed by the back of a hatchet.

Although introduced to this country early in the present century (1804), few, indeed, are the specimens of this remarkably distinct Conifer to be seen, and I cannot remember having found any allusion to it in our forestry papers; but this may to a great extent be accounted for by its almost valueless character whether as an ornamental or timber-producing tree. As a Pine of very unusual appearance it is, however, well worthy of attention, and should certainly find a place in every well-arranged pinetum, and, being perfectly hardy and of free growth, it is well fitted for even high-lying grounds. Our largest specimen was, unfortunately, blown over a few years ago, and sorry was I, for a more distinct and attractive Conifer certainly could not be found amongst the fine collection of those amassed by the late Dr. Hamilton Roberts, of Brynmeing. Judging from its growth at Penrhyn, I should say give *Pinus pungens* an airy situation amongst rocky debris, and let the soil be of a free, half leamy, half peaty nature, and it will succeed well enough. Although cones were produced in great abundance here, I fancy that male flowers were wanting, for no seedlings ever appeared, although a good deal of trouble was expended not only in extracting them, but in sowing in what was considered a congenial soil and situation.

The popular name of the tree is derived from that high peak of the Alleghanies—Table Mountain—on which it is found, and it may perhaps be interesting to state that this is the only range on which, so far as I am at present aware, it has been discovered.

As regards the quality of the timber of so rare a tree, we cannot, and must not, speak with anything approaching confidence, for although the specimen above referred to as blown over was, no doubt, the largest of its kind in this country, still the giving of an opinion from the wood of one solitary specimen would be rather hazardous. "It was hard to cut, and still harder to remove

the branches from the stem when felled," at least so said the woodman. A. D. WEBSTER.

Penrhyn Castle, North Wales.

Firewood.—This subject is well worthy of consideration at present when so much fallen timber is lying about. The question is, Will it pay? In certain districts where there is a difficulty in getting coal, firewood comes to be a necessity, but in districts where coal is plentiful, it is very questionable if there is any advantage from burning wood. The chief points on which further information is required are: What will it cost to prepare a ton of firewood? What size should the blocks be for general use? Should the wood be sawn, or split with the axe? What is the best kind of wood and the best kind of grate for burning firewood?—BEECH.

Pinus rigida.—London's illustrations of this distinct and, to me, pretty Pine, as reproduced in THE GARDEN of last week, hardly do the tree justice, and I think most persons who have even a few specimens in their grounds will feel inclined to say likewise. The cone is much longer and differently shaped to any I have seen, while the wing of the seed is small and narrow, hardly half the width of that represented. To see this Pine from day to day is how one will best get acquainted with its peculiarities, for a good deal of the knowledge derived from books regarding it is faulty in the extreme. We were always under the impression that *Pinus rigida* avoids the seacoast, but we are now told that it is valuable for planting in such situations. We have known it to be killed outright in maritime places, and would be glad to know what is the composition of the soil where it succeeds so well as a seacoast tree.—A. D. WEBSTER.

Marketing home-grown timber.—The idea of selling direct to the consumer is a taking one no doubt, but before it can be carried out considerable changes in wood management would have to be effected in all that relates to the felling, cutting up, and storing of the timber. The timber merchants have it in their own hands at present, and they can afford so many facilities to buyers that it is doubtful if the producer could compete with them successfully. On large estates, with the aid of a sawmill, much of the home-grown timber can be and is used for common purposes, and in the busier centres of industry where coal and iron are worked large quantities are disposed of to the consumer, but these may be said to be exceptions. In the out-of-the-way parts of the country, where timber is often most abundant, the cost of transport comes in to reduce the profits. The only apparent course open to the producer is to use the timber at home as far as possible, and dispose of it to local tradesmen and manufacturers, but he would first have to cut it into convenient logs in many cases, as the timber dealer does, and that would involve changes in our present system of management. At present it is a suggestive fact that when owners of extensive plantations have to build a mansion or effect any repairs therein not a chip of their own timber is employed for any purpose. Some firm in London gets the contract, and imports every foot of timber which he requires at a great cost to the employer. I could name estates on which large tracts of forest exist where the window frames and wood-work for workmen's cottages and the like are procured from a wood merchant who imports them ready made from Germany. Not long since a gentleman wishing to renew the Oak wainscoting in his house and effect other changes would not use a bit of his own timber, although he had some acres of good Oak, from which a "fall" is cut and disposed of to the timber merchant annually. The fact is, estates are without the appliances to convert the rough timber into marketable form, and owners will have to combine in the disposal of their crops if they wish to sell to the consumer. In former times home-grown timber was almost exclusively employed in house building, as the joints and fittings in every old house testify.—J. T.

Timber of the deciduous Cypress.—The timber of this tree is very durable, even under water, and is finely grained and of a reddish colour. A peculiar property of the wood is its adaptability to

split straight, so as to serve for planks without the use of a saw. To cultivate this tree successfully it must have good, rich soil, a well sheltered situation, and abundance of moisture, not stagnant, which is probably the reason why a sandstone district is preferred, a chalk soil being too dry, and a clay subsoil defective in drainage. The tree is readily propagated from cuttings or seeds, of which latter a good supply is regularly imported from America. It is never planted for profit, but only as an ornamental tree for park or lawn decoration.—W.

SEASONABLE WORK.

If not already done, finish planting now, and renovate old hedges before the buds begin to burst. Young Oak trees two years transplanted into nursery lines should be planted out in the forest where they are to remain, as such plants always succeed better than those of a larger size, and if well handled at the time of planting seldom require to be cut back. In cases, however, where the soil is of a poor thin description resting upon hard till, such ought to be trenched from 16 inches to 18 inches deep previous to planting; and as I have always found it best to have this sort of work done by contract, I may state that I have had it thoroughly done at the rate of £8 per imperial acre.

Felling heavy timber and thinning young plantations will still demand attention when hands can be spared, and in doing so remove such trees as are of an unhealthy appearance, although it may sometimes happen that such are not the trees that could be wished to be cut with regard to distance and regularity, yet such a system of management is the best for the ultimate welfare of the plantation. As the work proceeds, collect and remove all branches and rubbish, which if left would only be a harbour for insects and vermin; clean out drains and repair the fences if necessary, so that everything may be efficient, and have at the same time a clean, tidy appearance.

See that all newly-planted trees and shrubs on lawns are properly fenced and tied to prevent wind-waving, and apply a good mulching round the roots, which will be useful in retaining heat and preventing too sudden evaporation in spring, and on exposed situations I have found it to be highly beneficial to erect a screen of branches to break the force of the wind till such time as the plants take to the soil, and get established. Young specimen plants of ornamental trees and shrubs will require to be protected with wire netting. In erecting the fence round the plant the netting is kept on the surface (not sunk, otherwise it could not be removed without tearing up and destroying the roots) and fastened to small upright posts, and made fast to the ground by small hooked pegs. The fence may be placed at such a distance from the plant as will be convenient for a person to weed and dress the surface from the outside of the cage, as this is highly beneficial for the growth and healthy development of the plants in early life, and should always be well attended to in the growing season. I have occasionally found that a young rabbit, about the size of a rat, could squeeze itself through a 2-inch mesh, but they rarely do any harm, as they are never at rest until they get out again to their freedom.

In many cases, where valuable ornamental trees have been partly blown down, such may be pulled up to their former position and properly tied, and by covering the roots with fresh soil mixed with leaf-mould to encourage the formation of young roots, they will soon re-establish themselves and be saved. When the weather is open and the ground sufficiently dry, tree seeds may be sown on well-prepared ground in the nursery, such as Elm, Sycamore, Ash, Beech, &c. Put in cuttings of trees and shrubs not usually propagated by seeds, such as Willows, Poplars, Elder, Privet, and Sea Buckthorn.

Examine all the principal drains in flat peat bog plantations, to see that they are in proper working order, as from the small declivity of such drains they are easily choked up and rendered useless. Repair bog roads where necessary by applying a good coat of Larch or Fir branches, which answer the purpose admirably.

"This is an Art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—*Shakespeare.*

ROSE GARDEN.

T. W. GIRDLESTONE.

GROUPING ROSES.

THE practice, once so general in large gardens, of planting only single examples of a great number of varieties of Roses is less prevalent than it used to be; but there is still room, even in many so-called roseries, for much bolder treatment in the matter of planting in order to take full advantage of the great capabilities of the Rose for making our gardens gay. A bed of Roses, in which each plant is different from the other, cannot produce a very striking or harmonious effect; the plants will all be of different heights and sizes, and their various flowers will never be expanded at the same time; as the number of varieties that have brilliant flowers and also a good constitution is not unlimited, there must be a considerable admixture of dull colours to mar the effect of those that are bright and pure; while if, as is generally the case in such Rose beds, the trees have in the first instance all been studiously planted at equal distances, there will, according to the varying vigour of the different individuals, be here a crowd and there wide gaps. If, on the other hand, six or more plants of a variety be grouped together, a brilliant display will be readily obtained. From a knowledge of the habit of the particular Rose, the trees may be planted at such distances apart as to ensure the furnishing of the bed without undue crowding; the flowers on all the plants in each group will expand practically simultaneously; and as by such arrangement fewer sorts will be required, only the very best and brightest varieties need be grown. In large beds irregular groups of from six to thirty plants of each variety make a striking display of colour, whether seen from close at hand or at a distance; but if the Roses are grown in numerous adjacent beds of less size and various forms, it is a good plan to fill each bed with plants of one variety.

Neatly all classes of Roses furnish some varieties that are first-rate subjects for massing in this way, whether Teas, Hybrid Perpetuals, summer or other Roses, and as east winds and frost have again stopped planting operations, already so long suspended during the severe weather, it may still not be too late in the season to suggest some of the most desirable for the purpose.

Beginning with the Hybrid Perpetuals as the most generally cultivated class of Roses, the best six sorts for the south of England are probably Alfred K. Williams, Baroness Rothschild, Charles Lefebvre, La France, Madame Gabriel Luizet, and Violette Bouyer. The first-named is unimpeachable on the score of colour and form, even the small blooms often produced on twiggy growth or late side shoots being as well finished as the finer flowers from the stout wood; the plant blossoms early and abundantly, is sufficiently vigorous, the flowers open well in sunny weather or in dull, and are developed in the autumn more freely than those of almost any other variety in the class. In fact, in Alfred K. Williams the late M. Schwartz may be said to have sent out a Rose more nearly answering to the French raisers' favourite description of "possessing all the merits" than any other Hybrid Perpetual.

Baroness Rothschild also is a very free autumnal variety, and its value is enhanced by the fact that the stoniness of its petals enables its charmingly fresh-tinted flowers to endure exposure to a considerable amount of rain and wet without loss of colour. The stiff, upright habit of growth of this variety causes the plant to occupy but small space, and the plants may safely be planted not more than 1½ feet apart. It would be unreasonable to object, on account of its want of fragrance, to a Rose selected for the purpose of making the garden gay rather than for supplying cut flowers; but if the Baroness's one reproach of scentlessness be regarded as a fatal objection, a worthy substitute may be found in Prince Arthur, the beautiful dark crimson form of General Jacqueminot, introduced by Mr. Benjamin Cant in 1875. Charles Lefebvre, as the catalogues have it, "so well known as hardly to need description," when at its best is still unsurpassed in its colour, and its happy propensity for not unfrequently producing late in autumn, flowers hardly less perfect in form and tint than those expanded in summer is worthy of note. La France, too, the freest flowering of all autumnal Roses except the pure Teas, truest of Hybrid Perpetuals as the most fragrant, hardly betraying when well cultivated the lurking lilac tint which seems to be the fatal heritage of so many Hybrid Teas, although clearly showing its mixed race by its habit, and by the great branching trusses of bloom which crown the sucker-like shoots that spring from the base of the plant, is deservedly placed among the greatest of "the great Roses," being fair in form, bountiful as fair, and strong as bountiful, flowering early and late, and bringing to a high perfection a larger number of flowers than any other Rose in cultivation—a number which might have seemed incredible for a variety whose blooms are liable to expand somewhat rapidly under a hot sun, and to which, from the texture and multiplicity of their petals, there accrues considerable danger from wet.

Madame Gabriel Luizet is an extremely vigorous grower, and produces an abundance of flowers of a tender and unique rose colour. This variety at one time did not seem likely to prove an autumnal bloomer, and some rosarians were disposed to regard it as a Hybrid China, an opinion strengthened by the liability of the plant to mildew; but established cut-backs flower a second time, and throughout the autumn of 1886 correspondence was frequent on the number and beauty of blooms of this Rose produced in various parts of the country. While none of the other varieties mentioned need be planted more than 2 feet apart, there should be 3 feet between the plants of Madame Gabriel Luizet in order that her "ample charms" may be satisfactorily displayed and thus generously treated she will afford an immense wealth of her peculiarly delicately-hued blossoms. Violette Bouyer, in addition to being one of the most good-natured of Roses, is by far the most attractive of the white Hybrid Perpetuals; not always so white, perhaps, as Merveille de Lyon (though a snowy bloom is now and then obtained), but in grace of form and growth it always excels the "Rothschild Ghost," whose complexion could hardly be expected to be otherwise than a somewhat dead white. It is undeniable that the flowers of Violette Bouyer are often washed with a faint tinge of pink on the outside of the petals, but they may be practically regarded as white, and are, beyond question, beautiful. The variety is described by its raiser, M. Lacharme, as a seedling from Jules Margottin, and it inherits its parent's good qualities of hardness, vigour, freedom in flowering both in summer and autumn, and fragrance; if it were only exempt from mildew, it would be without reproach.

If more varieties in the same section be required for effective massing in the garden, the following are all first-rate for the purpose: Alphonse Souperet, deep rose and very free-flowering; Alfred Dumesnil, a brilliant and handsome Rose far too seldom met with; Captain Christy; Catherine Souperet, a useful light Rose which often makes a greater effect in the garden than many other varieties of its colour, owing to the protection from the raids of fair fingers which is afforded to its blossoms by the numerous strong prickles that cover the wood; Duke of Connaught (Paul), a hardy and good dark crimson Rose which might well be more generally grown; Dupuy Jamain; Jules Margottin; Marguerite de St. Anand; Marguerite de Roman, very free-flowering and very lovely, though not a tall grower, and one which, like the four following, need not be planted more than 1½ feet apart; Marie Finger; Marquise de Castellane; Merveille de Lyon, a fuller flower than White Baroness, but not always more effective in the garden, owing to the greater ability of the latter to resist the effects of wet and to expand without being discoloured in rainy weather; Rosieriste Jacobs, a valuable dark Rose, flowering freely in autumn; and Ulrich Brunner, almost an Evergreen, growing like a Willow, carrying its handsome foliage through the driest summer, practically exempt from mildew and one of the few varieties of Hybrid Perpetuals which in the trying season of 1886 successfully resisted the attacks of Orange fungus, and produced flowers large and bright in abundance both in summer and autumn.

All these Roses, with the exception of White Baroness, are among those most highly prized by exhibitors as furnishing the perfectly formed flowers necessary for prize-winning at Rose shows in these days of keen competition; but there are three Hybrid Perpetuals, which, though lacking the regularity of form and outline demanded by florist-judges, cannot nevertheless be omitted from a selection of varieties intended for inspection in their natural position growing on the plant rather than in an exhibition tent. Two of these have already attained to a respectable age, having both been sent out in 1859, the third making its appearance exactly twenty years later. The first of the twins is Anna Alexiell, a most attractive, bright, rose-pink flower, abundantly produced early and late, and which, although it opens rather flat, does not lose colour on expanding; the plant is hardy and handsome, the bright green foliage being well set off by the brown stems, and for making a large, bold group, no variety would be more striking. The second twin, Eugène Appert, is one of the handsomest-foliaged Roses ever raised, and if its flowers are somewhat flat and short-petalled, their maroon-crimson colouring is unquestionably gorgeous. The third variety referred to is Préfet Limbourg, a very free-growing, branching plant, which produces—on shoots apparently too slender to carry anything much, but in reality very hard and stiff—a profusion of deep crimson, purple-shaded flowers, open and cup-shaped, but lasting well on the tree, and being exceptionally fine and well-coloured in autumn. In a cool season this Rose gives flowers sufficiently full and well-formed to admit of their being successfully exhibited, and it is further worth growing as being hardy and fairly exempt from mildew.

Any of the above-named Hybrid Perpetuals, if worked as dwarf plants upon Brier cutting or seedling stocks, will make handsome groups and a bright effect of colour in the garden; and though most of them produce flowers perfect enough in form to satisfy the keenest critic from the florist's point of view, this need deter no one

who is prepared to give his Rose trees any cultural attention from growing them, as they are also among the best-constituted, most constant, and most truly beautiful of all Roses.

ROSE ARCHES.

ARCHES and Roses are both so gardenesque, either singly or combined, that it seems a pity that the two are not more frequently linked together to the enrichment of modern landscapes. They were almost too common and mostly too heavy in the olden times. In many old-fashioned gardens it was no uncommon thing to find so-called Rose arches and arbours in which the timbers far out-bulked and overweighed the Roses, and doubtless such incongruous blendings of live and dead weights did much to clear away many Rose arches—good, bad, and indifferent. Like many another raid against abuses, the clearance of Rose arches was carried to extremes, and bore down before it many of the most charming retreats of old-fashioned gardens, from which the dust, din, and glare of the world were shut out, and all the sweetness of the Roses from myriads of drooping wreathlets was shut in.

From the pen-and-pencil sketches now appearing in THE GARDEN, it is obvious that not a few readers are ready to welcome back the charms, while leaving behind the faults, of the ancient Rose arches, or to construct and plant modern ones of yet greater beauty. We have a series of arches that run along one side and through the centre of a large flower garden. These are wide and high, the chief lines of arches running along one side and along each end of the garden as well. In the chief and largest series the sides of the arches are filled in with others, spanning the distance between the cross arch so that the arches are all multiples of fours. The artistic effect is rich and striking, and the mechanical advantages are very great, giving, in fact, the utmost solidity and virtual immobility to the entire series of arches.

The height of the main arches is 12½ feet, the width 8 feet, the distance between the arches the same as the width of the span, and the length of the longest series 320 feet. Some of the others that span the Grass walks are 13 ft. high by 12 ft. wide. They are formed of pipes, which are stronger, lighter, and cheaper than solid bars, the additional circumference also being a great practical advantage in the training and tying of the Roses. It is also thought that these hollow tubes are warmer and less liable to attract lightning than solid iron rods. If so, these are great practical advantages, as the extreme rapidity with which iron conducts the heat of the Roses out of the stems and shoots in contact with it during severe frost not seldom leaves frost-bites that result in gangrene and death; and no one but those who have had a considerable extent of rather lofty Rose arches under their care, and have noted the frequent and sudden deaths from lightning strokes, will be able to appreciate how welcome any promise of immunity from this real peril, through hollow pipes or otherwise, is to the zealous cultivator. Be all this as it may, hollow pipes are best, lightest, cheapest, easiest bent into perfect form, and strongest. The form of Rose arches is important. Due proportion of height to width, and of both to distance, proper relations to height of standard, and height and width of span all need due consideration. The main series of arches here are 8 feet up to the spring, thus giving a rise of 4 feet from the side to the crown of the arch. The ends and centre arches are wider and higher by about a foot, and maintain the same proportionate rise from sides to centre. For Rose arches, too, the round form is the best. Gothic or any imitation of pointed arches are less satisfactory. Nor should any attempt at all be made to fill in the arches with additional iron or wire for training. Not a few Rose arches have thus been ruined by an excess of training surface. Where this has been provided, it is the least of two evils to leave it unfinished, unless the bolder plan is adopted of clearing it away.

Rose arches are one thing, Rose arbours another; and whatever views are held about the latter, the conversion of arches into a sort of hybrid arbour, which is often done, is seldom satisfactory.

One of the great merits of Rose arches is the boldness and sharpness with which they stand out against the interstices between or from the connecting arches that may link two arches together and the sides, and the furnishing and form of the pillars that support them. By filling in the sides with iron and additional drapery of Roses, Clematises, Honeysuckles, and other climbers, we lower the dignity and grandeur, grace and beauty of our arches. Arches also add greatly to the effect of statuary, vases, fountains, and spiral trees and shrubs. The effects of such are marvellously enriched and enhanced—partially revealed and partially concealed—by the drooping drapery of graceful Rose shoots sweeping down from the crown or sides of lofty arches. As to the furnishing of arches, there is little to add to what has been so well said lately in THE GARDEN. A complete arch of a sort, and such a choice of varieties as will ensure a heyday of beauty at a given period, as well as a skilful blending of colours, are all essential to those who would reap the highest decorative results from Rose arches. Small rather than large-foliaged sorts should also be chosen, alike to save the leaves from being riven into ragged fragments by winds, and because they lend themselves best to either close or loose training over arches. Decided colours, too, should only be chosen. As a rule, purples and pale pinks are dead and useless for ornamental purposes over arches. A liberal use of whites is always telling, and these should be lighted up with as many brilliant pinks and fiery crimsons as can be had. Notwithstanding the Roses named for arches on pp. 93 and 94, and a good many others that have been found more or less useful, there is still a great want of Roses of brilliant colour, hardy constitutions, profuse and continuous flowering for this purpose. For while, as already stated, the once popular arch fell into dis favour and disappeared from our gardens very much by its sheer weight and massive ugliness, there can be little doubt that the insipid colouring and worthless character of many of the Roses used to clothe the arches largely assisted in their overthrow. Neither lightness of structure nor beauty of form could have withstood the dead colourless mixture that buried out of sight, rather than revealed with more distinctness, the beauty of the arches. D. T. F.

Her Majesty Rose in America.—I noticed that Mr. Mansfield Milton, like hundreds of others, is in bad humour with Her Majesty, but no one here is to blame. Mr. Evans purchased the stock from Mr. Bennett in 1884, and if it was then in the same condition as I saw it on Mr. Bennett's grounds in England in 1885, he certainly was not to blame for giving it the extraordinary praise with which it was heralded, for, with all my long experience in such matters, its merits as seen there so impressed me that I did not wait to come home, but ordered from London direct one thousand plants of it from Mr. Robert Craig. This was my judgment in the matter, mistaken as it proved to be. In all Mr. Bennett's stock of some 10,000 plants I did not see a speck of mildew on Her Majesty, and although the weather was hot and dry, the flowers shown were all that had been claimed for them. But it is evident Her Majesty will never reign in this democratic soil. She not alone besmears herself with mildew in a way that no other Rose ever did, but she seems absolutely to refuse to show her regal claim to beauty unless under the very best conditions. In the thousand plants that I got from Mr. Craig, only some five showed flower out of the whole lot. Almost any other Rose from such plants would have given 100 per cent. in flowers. And she does not seem to acclimatise either. Fine plants grown here, though fairly free from mildew, show the same shyness in blooming, so that Her Majesty's reign, in America at least, may be said to be completely over. But we should not complain of being bit now and then,

when it can be shown, as in this case, that it is not done to deceive, particularly when we know that in the William Francis Bennett Rose, sent out by the same raiser, we have a set-off that well balances the disappointment in Her Majesty, for our experience with the Bennett last winter, and up to the present time this winter, shows it to be by all odds the most profitable of all Roses grown for cut flowers in winter.—PETER HENDERSON, in *Gardener's Monthly*.

FLOWER GARDEN.

SPRING CROCUSES.

C. CAMBESSEDESI is a charming little Crocus, which, though in its native habitat is said to flower regularly in October and November, becomes very variable under cultivation, flowering in mild intervals from September to April, and making an interesting display during the dullest season of the year. Its flowers are, however, unfortunately small, the segments being not more than three-quarters of an inch long; they are, however, very bright in colour. The three outer ones are pale buff, handsomely marked externally with purple featherings; the inner three vary from white to pale lilac. It is a native of Minorea and Majorea, and is now in flower at Kew. **C. Imperati**, another beautiful species, is also in flower at Kew, being fully a fortnight earlier than it was last year, and a few days earlier than in the spring of 1885. Mr. Maw says it is abundant in the south of Naples, and it is said to extend into Calabria. It is, however, perfectly hardy in the open air in this country, and is one of the most useful species which we have for planting in turf. It excels even *C. nudiflorus* as regards profusion of flowers, and is also in robustness. With the exception of *C. biflorus* and its varieties, it increases much more rapidly than any of the other spring species. The flowers, both in their colour and markings, are extremely variable, as well as in the amount of sub-division of the stigmas, many being divided into fine thread-like appendages, while others are almost entire, thus relating it closely to *C. suaveolens*. The segments are about 2 inches long, and about half that in breadth; the outer three are buff, with pretty purple-feathered markings; the inner three bright purple, but sometimes they are rosy red, and even pure white. **C. Korolkowi**.—This species is also earlier than usual this year by a week. It is comparatively new, and as yet rare. It merits a place, however, in every garden, both on account of its beautiful orange flowers and the early season at which they are produced. Coming as it does from Western Turkestan, it is sure to be hardy in the open air. **C. vitellinus**, a handsome orange species, and one which we find to be amenable to cultivation on turf, is just now opening its flowers, and is really a very charming and desirable kind. **C. hyemalis** is also opening its flowers, and it will soon be followed by others, which are just pushing their leaves through the ground. K.

Narcissus cyclamineus.—This distinct little species, which I described in THE GARDEN (p. 127), was re-discovered by Mr. Johnston, of Oporto, and both he and Mr. Tait wished that if new it might bear the name of Professor Henriquez, of Coimbra, who takes much interest in the native plants of Portugal. Mr. Tait tells me that bulbs planted in his garden at Oporto opened their first flowers on January 28, and a few days after they flowered with us in a sunny greenhouse, and he adds that in its native habitat the wild plants will not bloom until a fortnight later—say about the middle of February. Seeds grow freely, germinating in about a month after being sown.—F. W. BURBIDGE, *Trinity College Botanic Gardens, Dublin*.

GLADIOLI AND THEIR CULTURE.

"DELTA'S" remarks on Gladioli (p. 144) will help us to arrive at a definite conclusion as to the best way in which to manage them. But one important item ought always to be included, although "Delta" has omitted it, and that is, the situation of the garden and the amount of the autumn rainfall. I find that at Cambridge the average for the year from six observers is only 22.34 inches; at Northampton the average from the same number of observers is 27.49 inches; at Southampton the average, from four observers, is 30.58 inches; at Hastings, from five observers, 35.83 inches; at Croydon, from seven observers, 28.94 inches; at Ashford, in Kent, from two observers, 31.20 inches; at Derby, about 35 inches; Warrington, 33 inches; and at Cardiff, 45.91 inches. It would thus appear that Cambridge is a comparatively dry district; besides, the position of Mr. Burrell's garden may also be otherwise favourable as regards Gladioli. I may add that in the same year in which the averages just quoted were taken, viz., 1878, I had many losses amongst our bulbs; indeed, we were quite disheartened, but our rainfall was 29.43 inches, or 7 inches more than that in Mr. Burrell's district. It might be safe for one so favourably situated as to rainfall, and perhaps temperature, to leave the bulbs out in the open garden until December; whereas if another under more adverse conditions was to act in a similar manner, the results might be very different. I cannot say what may be the amount of rainfall in "Delta's" district, but even at Ashford it is about 9 inches more than at Cambridge—a very material difference when we consider that probably an inch or two of rain more may fall in one place than it does at the other in the late autumn months. In our district it is impossible that there can be any ripening of bulbs after the last week in October. I have left them out until November, but they were always the worse for it. I may also say that we had no difficulty in growing large bulbs; in fact, those which we had from France became three times as large as they were when received after the first year's growth. The soil on which they grew was very light and over gravel. Probably a heavier soil might have suited them better, but I have always understood that the French growers cultivate their bulbs on light soils, and our own bulbs were generally better looking than the imported ones; but the flowering time invariably proved that the French bulbs were the best for producing long, handsome spikes. I have not grown any of the *gandavensis* hybrids for three or four years, but if I ever had the chance to grow them again my plan would be to purchase, say, a dozen of the best varieties, and, having obtained them, I would plant them in a warm position about the 1st of March. They would flower early—say the first week in August—when it would be interesting work to hybridise the flowers. Sufficient seeds could be obtained to raise about 2000 plants, which would not flower the next season, but they would do so the second year, and would produce vigorous plants and spikes of as good quality as those generally seen at exhibitions. The seedlings are generally as good as most of the named varieties. J. DOUGLAS.

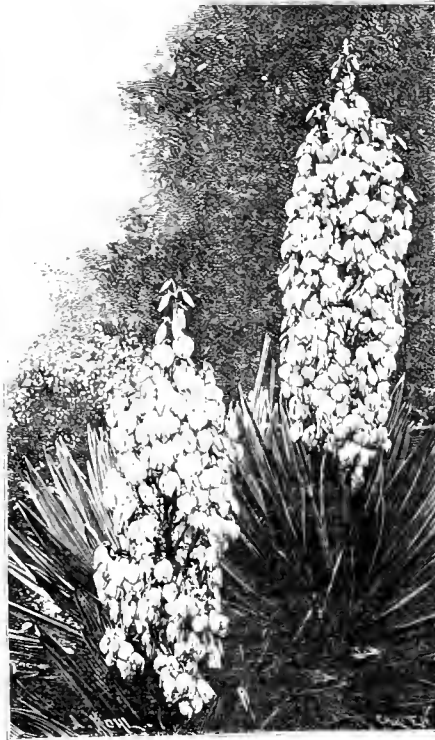
Iris stylosa.—This species was the first to bloom with us this year, and on the 29th of last month I. Histro, which is planted in the sunniest border we have, expanded its first flower under a bell glass, which was necessary for its protection against our uncertain weather. This is certainly a lovely plant, but a somewhat scanty bloomer, while the first mentioned is just the opposite, and well adapted for pot culture, as we get good results without any special attention as regards treatment. It continues blooming for a lengthened period. *I. reticulata*, figured in THE GARDEN, plate 503, is another very early one to bloom, and should be grown by all who have to keep up a continual display in the greenhouse.—W. H.

Utricularias.—On a recent visit to St. Albans we observed *U. Humboldti* growing freely; lovers of Bladder-worts may therefore feel assured that the blue flowers of this kind will soon be forthcoming

This plant grows naturally between the sheathing leaves of different species of Bromeliads, and every attempt to introduce it without its nurse-plant has been a failure. Ultimately the Bromeliads were brought home with the *Utricularia* associated with them, and with good results, as young shoots are pushing up all round their stems. Mr. Sander has also a scarlet Bladder-wort (*U. Campbellii*), said to cover whole hill sides in its native habitat. Its flowers are about the size of those of *U. montana*, but instead of being white they are scarlet. Only a few plants, however, have reached this country alive.—G.

YUCCAS AND THEIR USES.

YUCCA GLORIOSA, popularly known as Adam's Needle, is the most majestic of the genus. It grows in drifting sands along the coast from Florida to North Carolina. In favourable situations in this country it grows in some cases to a height of 15 feet, including the flower-stalk. We have seen it growing to the height here given in



Adam's Needle in flower. Engraved for THE GARDEN from a photograph sent by T. J. Couch, Swansea.

sand in a garden close to the sea at Musselburgh. This species flowers freely, and is a very picturesque object in gardens. After flowering the trunk throws out branches, and it is not unusual to see one many times branched. Yuccas are often planted singly, but better effects can be produced by arranging them in groups, the plants of which would flower at different times. The accompanying engraving is from a photograph sent to us by Mr. T. J. Couch, Tremont Terrace, Walter's Road, Swansea. There are other varieties of *Yucca* of great importance to cultivators. The gracefully recurved foliage of *Y. recurva* renders it peculiarly suitable for planting singly; and *Y. filamentosa* and *flaccida* rarely fail to give an abundant crop of ivory-white flowers every autumn. There are dozens of varieties, the use of which would give a distinct feature to a garden.

Helleborus altifolius.—Mr. Archer-Hind states that varieties of *Helleborus niger* do produce pink

stigmas, and I see no reason why the type should not do the same; the obvious difference of pollen-grains seems opposed to crosses with *altifolius*. I send you *niger* (type) from a frame with pink stigma and bud from the open also with pink stigma. I add flowers from seedlings of *niger præcox* with white and pink stigmas, the parent plant having white ones and out of flower when *altifolius* was only in bud; thus, a cross could not have taken place; the flattish flowers of my *altifolius* type, authenticated by the best living authority, have white stigmas. I cannot lay the proofs before you, because the respective flowers are fertilised. I observe that one of the flowers of *Helleborus altifolius* is injured by frost and is withering; so I have cut it and sent it. I hope it will arrive fresh enough to enable you to see that the stigmas are white.—MAX LEICHTLIN, *Baden Baden*.
* * * Clearly white.—ED.

THE PERIWINKLES.

It is singular to find that through all the thirty volumes of THE GARDEN there is scarcely a note about the Periwinkles, invaluable plants as they are, and by no means so commonly planted as one might suppose. To my mind there are few prettier sights in a garden than a shady bank covered with the different sorts of the smaller Periwinkle (*Vinea minor*). In a Sussex garden last year I saw a chalky bank completely carpeted with Periwinkles, the blue, white, and purple colours being intermingled in a charming way, while here and there were masses of the golden and variegated sorts. The smaller Periwinkle (*Vinea minor*) is a wiry little evergreen trailer of a shrubby nature, flowering from spring till autumn at no particular season, but most plentifully in early summer. It is found wild in some parts of England, always in shady hedges and damp spots, and is too common to need further description. The colour of the type is blue; the varieties are the white (*alba*), the violet (*violacea*), and there are also double-flowered forms of each of these colours. Besides these there are the golden-leaved variety (*foliis aureis*) and the variegated-leaved sort (*foliis argenteis*), both of which are very pretty.

The larger Periwinkle (*V. major*) is a much stronger grower than *V. minor*, larger every way, and produces its beautiful blue flowers all throughout the summer, but has not such variety as its smaller relative. It is more suited for clothing rougher places, such as shaded banks and bold rockwork, than the smaller variety. This is one of the very few plants that will grow well under the dense shade of *Beeches*; therefore it is valuable on that account. Like *V. minor*, it grows wild in various parts of Britain, and in the woods and forests in Central and Southern Europe it is abundant. The variegated sort (*elegantissima*) is a pretty plant, particularly when a mass of it is planted near the green variety. I have seen charming effects produced by the Periwinkles, and in one garden I remember seeing a bank densely clothed with *V. major*, as well as a dwarf trellis placed at the top of the bank, and a prettier evergreen screen could not be made. Periwinkles grow best in a moist soil, light or heavy, and they may be propagated easily by runners. W. G.

SHORT NOTES.—FLOWER.

Edwardsia grandiflora.—One of our readers, a cultivator of many hardy plants, tells us that he cannot procure any plants of this. Perhaps some reader will tell us of somebody who has a stock of this pretty wall shrub.

Narcissus pallidus præcox.—Our first bloom of this *Puffball* was gathered out of doors on the 9th inst. The plant from which it was cut looks well in spite of the biting easterly winds and snow, and we hope soon to make copious cuttings.—HERBERT AND MARYEN, *Gerrard*.

Longevity of the Begonia.—What is the experience of readers of THE GARDEN as to the length of time during which *Begonias* will live and flower well? We led them out here in the south of Ireland largely, chiefly the *Vesuvius* type, and I have some bulbs quite a foot in diameter. I believe indeed that some of the same bulbs have been grown here for the last ten or twelve years. Last spring I, however, found numbers of them b-d, and I fear many more will be wrong this year. The cause of their decay is, I think,

their old age. We keep them during winter in a cool Peach house spread on dry clay, fire-heat only being used to exclude frost.—YOUNG GARDENER.

STOVE AND GREENHOUSE.

T. BAINES.

AZALEAS AND INSECT PESTS.

THERE are two matters connected with the cultivation of Azaleas to which is chargeable much of the indifferent condition in which they are sometimes found, viz., the ravages of thrips and the practice of turning the plants out of doors at a time when their growth—wood and leaves alike—is in a soft and not half matured state. The worst effects of immaturity may be seen in the case of plants that have flowered late in spring, and that have not had time to complete the growth started under glass. As a natural consequence, when thus turned out, the shoots at once become hard and wiry, and not over half of them are strong enough to form flower-buds, and of the buds that are produced, many go blind in winter, whilst those that do not do so yield inferior flowers. If Azaleas were not able to bear bad treatment to an extent that few plants would stand, these prematurely exposed plants would fail to flower altogether. In the case of plants that have bloomed during winter or early in spring, and that after flowering have been kept in a genial growing temperature until the season's growth is fully matured and the flower-buds plump and prominent, no harm will follow their being exposed in the open air in summer, provided they are in every way properly attended to. The insects that attack Azaleas are black thrips and red spider, the latter to a much less extent than the former, the spider seldom making its appearance except where the atmosphere is kept too dry and the syringe not used sufficiently.

As soon as winter comes the affected foliage falls off before its time, and the effect of this is that when the time of blooming arrives the flowers are deficient in size and substance and wanting in colour. Nor does the mischief end there; the growth made the ensuing season is proportionately weaker than it should be. Of the various methods for the destruction of thrips on Azaleas, fumigation with some preparation of tobacco or washing with tobacco water, to which is added a little Gishurst, are the most common remedies. Either will kill the living insects, but the former leaves the unhatched eggs unaffected, which in summer come to life in twelve or fourteen days from the time the female insect deposits them and seals them up under the little black specks of varnish-like matter where they are secure until, coming to life, they escape from their covering. The advantage of dipping in or syringing with tobacco water rather than fumigating is that the liquid, when used sufficiently strong and allowed to dry on the leaves—not washed off, as someone was recently advised that it should be—will kill the eggs as well as the mature insects. But to destroy either it is scarcely necessary to say that the liquid must reach every leaf; if only a few insects or their eggs are untouched by it all the work has to be done over again. Those who are desirous of growing Azaleas so as to have them in the condition they should be must make up their minds to wage a continuous war against thrips, for even if the plants have been thoroughly freed from them and their eggs, by washing in winter, at which time they cease breeding, it is more than likely that the unwanted company will appear again when the summer comes round. One or two good washings during winter when the insects are not breeding and the hard mature

foliage can bear the liquid stronger is labour well spent, as there is less trouble with them afterwards. Red spider, as already said, seldom becomes troublesome; should it appear, dipping in or syringing with a solution of Gishurst, at about 4 ounces to the gallon of water, will effect a riddance.

Although Azaleas are fine-rooted plants, they, nevertheless, produce roots in immense quantities when healthy and strong; consequently to keep up the requisite vigour they require manurial assistance. As it is better not to add anything in the shape of manure to the soil they are potted in, it becomes necessary to assist them during the time the summer's growth is being made, without which it is useless to expect the plants after they have got a few years old to make shoots long enough to admit of the flowers being cut with sufficient wood attached to be of use, without which in these times, when flowers of all kinds are wanted in untold quantities, their value is much reduced. Half the Azaleas one meets with that have attained any size are in this condition, the growth annually forthcoming being not more than a few inches long; whereas, if the right varieties are selected and the plants are as strong and healthy as they should be, much of the growth which they make will be 6 inches or 8 inches in length. Weak, puny-growing varieties are not worth the room they occupy, however taking the flowers may be in appearance. The market growers who supply Covent Garden with Azalea flowers get unusual growth out of their plants every season, though in the case of several that I know the plants are from forty to fifty years old, running from 8 feet to 9 feet high by as much through, the shoots yearly made being from 6 inches to 12 inches long. A sight of these plants in autumn, with their flower-buds big and hard, shows that only a small per-centage of the shoots have failed to set, and of those that have set few escape the knife, the flowers being cut with three-fourths of the season's wood attached. Considering the age of the plants, with the comparatively little pot-room they have, and the severe cutting they are annually subjected to, it would not be possible to get such growth without constant feeding. The subject of manure is a wide and a very important one, about which it is not necessary to say much here, further than that the old notion which used to prevail, that if a manure was found to be the best for some particular kind of plant, it must be the best for all, and is fast giving way to a more rational idea. I have tried manure water made from the excrements, solid and fluid, of the various animals usually found in the farmyard, and most of the different concentrated manures, in either liquid form or laid on the surface to be washed down to the roots in the ordinary process of watering; but nothing that I have used was so good as Standen's manure for Azaleas, dusted on the surface of the balls. In addition to the growth it puts into the plants, there is the advantage that, whilst acting quickly enough to influence the growth as soon as it is applied, it is not soluble in water to an extent that admits of its being washed down to the roots at a greater strength than they can bear; whereas, when strong manures that at once dissolve as soon as water reaches them are applied to the surface of the balls, it follows that the first time water is given it carries the essence of the manure down to the roots at a strength which they cannot stand. Many a fine plant has been killed in this way, and at the same time a good manure has got a bad name, both mistakes arising through the obvious cause of the manure being used without due caution. It is generally looked upon as sound practice to defer the potting of any plant

until its roots are actually in motion, or just about to move. For this reason it is better to leave the potting of Azaleas until after they have bloomed, even in the case of those that have been retarded in the time of their flowering, so that they do not come in until the end of the spring, as the roots of Azaleas, unlike those of most plants, do not move at all till after they have flowered, although when strong and healthy they will have made a good deal of shoot-growth before the flowers have opened. I like to defer the potting of such as require shifting until two or three weeks after the flowers have fallen. Immediately this takes place, the seed-pods should be picked off, as if this is delayed even a short time, the formation of the seeds that goes on as soon as the flowers drop is so much of the energies of the plants expended to no purpose. When the plants get large, say from 4 feet to 5 feet high and as much through, occupying pots 16 inches or 18 inches in diameter, they may be kept in a vigorous, healthy state for years by the use of manure water whilst their growth is being made without additional pot-room.

Azaleas are light-loving plants and should be kept well up to the glass during the time they are making their growth, and no more shade should be used than a slight protection whilst the sun is powerful. When the growth is made under conditions of insufficient light the leaves are wanting in substance, and generally fall off in winter to an extent that has a weakening influence. Whilst growth is going on the syringe should be used once a day in the afternoons freely, so as to wet the foliage thoroughly on the under as well as on the upper surface. This helps to keep down insects as well as promote growth. The practice of pinching out all the young shoots that often precede the opening of the flowers is about as great a mistake as can well be committed, as it is highly injurious in its effects. The removal of the shoots in this way is usually done under the impression that if they are allowed to grow, the flower-buds will go blind, of which there is little danger if they have been properly matured in the autumn, unless the roots have been kept too dry in the winter, a condition that Azaleas should never be subjected to, as they do not like, even when at rest, to have the soil nearly so dry as some hard-wooded plants require it to be. If the shoots are weak and more numerous than necessary, it is a good plan to thin them well out, leaving the strongest untouched.

As to the newer varieties of Azalea that have appeared within the last ten or twelve years, their flowers are more perfect in shape, according to the arbitrary standard that requires a circular outline, but to those who see more beauty in a flower that has something of natural irregularity about it, they are the reverse of an improvement; there is, too, this about these newer Azaleas which is not pleasing—either they are wanting in that freedom of growth that enabled the older varieties, such, for instance, as the seedlings raised by Ivery, Kinghorn and others to attain size, or the growers that now take them in hand are incapable of getting them on, for many of the varieties in question have been growing long enough to have reached specimen size; yet, hitherto they have been rarely, if ever, seen in anything larger than the little bushy, Mushroom-headed examples such as continental growers produce.

T. B.

Uro-Skinnera spectabilis.—Among stove plants in flower at the present time this is one that will at once attract attention. Although it has been introduced into British gardens about twenty-five years, it is still quite rare, and that not from any difficulty attending its cultivation, for it is very

easily grown. This plant (the only one belonging to the genus as far as I know) was introduced from South America, and bears when out of bloom a certain amount of resemblance to some of the Gesneras, but the flowers are altogether different. The blossoms are borne in terminal clusters on stoutish stems a foot or two high, clothed as well as the foliage thickly with hairs. Individually the blossoms are somewhat like a *Penstemon*, the tube being about $1\frac{1}{2}$ inches long, deep mauve on the outside and white within, while the flower measures three-quarters of an inch or so across the mouth. As each cluster contains about a score of blossoms, they make a goodly show.—H. P.

HARDINESS OF *FICUS REPENS*.

FICUS REPENS is usually classed as a stove plant, but why this should be so I fail to understand. It certainly succeeds well in heat, and is admirably adapted for clothing the back walls of plant stoves and warm ferneries. In such positions it is fairly ornamental, but not enough so, nor so profitable as we like all the occupants of these walls to be, and over the *Ficus*, therefore, we trail *Asparagus plumosus nanus* and *tenuissimus*, *Cissus discolor*, *Selaginella cæsia* and *arborea*, and *Begonias*. It is quite as tenacious of life and as well able to penetrate to the outer side of a wall as the common Ivy. The north-east wall of our fernery is completely clothed on the inside, and partially so on the outside. During a moderately severe winter the growth on the outside is only slightly browned by the weather, this being usually effected by the cold frosty winds. This winter has severely tried it, but though injured it is far from being killed, and I have every confidence in its recovery. For a glass-covered, unheated fernery it is simply invaluable. Planted against any wall or rockwork it will soon spread in all directions, and is quite as able to take care of itself as the popular *Ampelopsis Veitchi*. It is very pretty while clothing the walls or rockwork, and later on when well established every bit of space is perpetually clothed, plenty of loose branches also being formed. I can also strongly recommend it for heated or unheated conservatories, and it is a favourite plant with us for covering the back walls of unheated verandahs, entrance porches, or any somewhat similar position where plants are grown or stood occasionally. In such positions it forms much larger leaves than it does in heat, and is altogether more effective. Instead of being classed as a stove plant it ought to be described as a hardy greenhouse species. Anybody can cultivate it. All that is wanted is a narrow trough disposed along the foot of the wall or other position to be clothed; this being filled with loamy soil will give the plants a good start and suffice to support them for many years. Like the Ivy, it clings naturally to either wood or walls, and a well-established plant soon gets almost independent of its original roots. Scientific observers are disposed to assert that air roots are of no actual service to the plants emitting them, the Ivy being quoted as an example, but I can point to a huge plant against a church tower that has been cut off near the ground for nearly four years and is still healthy, though not so vigorous as before. Some of our plants of *Ficus repens* must be quite as capable of existing independently of the underground roots, as they have gone for weeks together without any water being given them, and yet show no signs of having been neglected. W. I.

Primulas and Gold and Silver Ferns.—Last autumn I planted in a fairly exposed rockery a couple of plants of *Primula obconica*, whose hardiness is generally considered more than doubtful. Since then we have had two smart spells of frost, in which the grass thermometer fell as low as 13° and 16° Fahr.: the first on the snow, the second without snow. The old leaves are gone, but the crown is perfectly uninjured and is now sending up fresh leaves and looks more lively than

P. cortusoides or *P. Sieboldi*. The situation is well drained, and although we had on each occasion several successive nights of keen frost, none were so severe as those named. *Veronica Hulkeana* in an open bed is also quite uninjured. The powdered *Gymnogrammas* are usually considered to require a high temperature to grow them in any way satisfactorily, and the same remark applies to *Nepenthes*. I have two little houses usually kept at barely intermediate temperature, say 45° or 50° as a minimum in winter, and scarcely any fireheat in summer. In these I have several Golden and Silver Ferns, nearly all self-sown. A golden one about five years old has for some time filled an 11-inch pot cram full, and bears fronds over 2 feet long and richly powdered. A silver seedling (*tartarea*?) on a block is also growing vigorously. An accident occurred in December to the heating, and for a week during sharp frosty weather we had next to no heat, the temperature ranging from 35° to 40° for a week. These *Gymnogrammas* are entirely unharmed, though many other things suffered severely. As to *Nepenthes*, I have two which grow well in the same house; one has grown from a seedling in a $2\frac{1}{2}$ -inch pot to fill a large basket and produces plenty of fair-sized pitchers. Hence I contend these are not so delicate as has usually been supposed, although I admit I would prefer to give them more heat if I could. I have repeatedly tried *Allamandas* and *Clerodendrons* and *Fittonia argyrenæna*, but always lose them in winter. Nor can I flower *Calanthes*, though they make good growth.—GREENWOOD PIM, *Moulshottown, Dublin*.

Callas are now grown largely for market, and the ordinary plan is to use single crowns in 3-inch or 6-inch pots. In private gardens a few large specimens with from eight to twelve crowns in a pot make grand plants for conservatory decoration, as, when well grown, the foliage is very ornamental even when there are no flowers. I lately saw some that had been in the same pots three seasons: all the small offsets had been removed, and after flowering the old soil had been taken out as much as possible, and a good surfacing of rotten manure and copious supplies of liquid manure had been applied, and finer plants than were produced under this treatment could not be desired.—J. G. H.

Primula floribunda.—I sowed a pan of seed of this perpetual blooming little beauty in September last. The seed germinated like Cress, and for the last month almost every plant has been in full blossom. Few things bloom, especially in winter, so soon after sowing or are so bright looking. The seed was saved from a plant given me some time ago by "Veronica," and was raised in a warmish greenhouse. Some are now in a cold house and seem, I think, happier than those in the somewhat warmer temperature. The secret, as with many other *Primulas*, lies, I think, in sowing the seeds as soon as ripe.—GREENWOOD PIM.

Brugmansia suaveolens.—The most effective way in which I have seen this noble-looking plant grown was as a standard at Wynyard Park during Mr. Diek's time. It was at first, I believe, grown in a tub, but Mr. Diek had it planted out in a corner of the large conservatory there. The main stem was as thick as one's leg. It was pruned back every season like a Rose tree. It usually threw out from twelve to twenty massive shoots from 6 feet to 8 feet in length; these were kept in proper form by being looped with twine from one support in the centre. Thus treated, its effect when in bloom was grand, while its perfume filled the whole conservatory.—W. WATSON, *Englehurst, Farley, Hants*.

Boronias and their culture.—I was pleased to see attention directed to *Boronias* the other day in THE GARDEN. They are plants which should be in every greenhouse. They are by no means difficult to manage; cuttings of half ripened wood taken in summer and inserted in a properly prepared pot, filled with peat, leaf-mould, and plenty of sand, strike freely. They should be covered with a bell-glass and placed in gentle heat, taking care that they do not damp off. Pot them when

rooted in $2\frac{1}{2}$ -inch pots, and when established, they may be removed to the greenhouse, or to any cool airy position, where during winter they will require but little water. Young plants of *Boronias* should be repotted in April, and all others as soon as they have finished flowering; give them a good open compost, consisting of fibrous peat and plenty of sharp sand, taking care that the pots are well drained. Place them in a nice warm house, and keep them rather close, in order to induce them to make growth until August, when they should be removed to a cool greenhouse. *B. serrulata* is a useful species; it has smooth bright green leaves and rose coloured flowers, which are produced in May. *B. Drummondii*, a compact growing plant, has pink flowers, which are produced in great abundance during May and June. *B. elatior*, another fine kind, produces rosy carmine flowers in dense clusters towards the ends of the shoots. *B. pinnata*, the best known of all the *Boronias*, is also very pretty, as is likewise *B. megastigma*, a variety with chocolate coloured flowers and very sweetly scented.—C. C., *Horrick*.

THE NELUMBUM.

Mr. FRANK MILES, in THE GARDEN (p. 126), says that Theophrastus or somebody is making a mistake when they assert that the *Nelumbium* has thorns. I ought perhaps to have written "prickles" instead of "thorns," and translated Theophrastus *ἀκάρβα* "prickles" also. But perhaps Mr. Miles received his specimens from Japan or China, where this plant has been cultivated from time immemorial. These cultivated prickles, I am fully aware, only produce slender prickles approaching to stiffened hairs, but in the wilds of India and Burmah, where the plant grows in its greatest luxuriance, these prickles are much developed and quite worthy of the name "thorn," although that term is botanically incorrect. Mr. Miles asserts that the sacred Lotus of Egypt was the *Nymphaea Lotus*. This is quite a mistake. The Water Lily represented on the ancient monuments is the *Nymphaea cærulea*, as anyone can see. On the ancient mural paintings, in almost every instance where the colour of the flower is preserved, it is blue, and in numerous places, even where the colour has vanished, we can distinguish the blue species by its leaves. The leaf of *N. cærulea* has an entire margin, that of *N. Lotus* a dentated one. I only know of a single instance where the white species can be detected, and this occurs on a tomb at Beni Hassan, and is figured in the first volume of Napoleon's great work, "Description de l'Égypte," section antiquities.

It is curious that, although representations of *Nymphaea cærulea* occur so largely on the ancient monuments of Egypt, only one ancient author should mention it. This author is Athenæus (*Deipn.* xv., 6). He calls it *Lotinos*, and notes that it grew on the Nile near Alexandria.

The *Nelumbium speciosum* was introduced into Egypt probably about the time of the Persian invasion, and seems to have wholly taken the place of *N. cærulea*, so far as art is concerned. Representations of it are largely used on gnostic gems; and on an old mosaic known as the mosaic of Palestrina, illustrating Hadrian in Egypt, this plant is figured growing wild on the banks of the Nile.

Theophrastus (*iv.*, 10) notes it was produced in Syria and Torone, where it ripened its seeds, but he mentions that about Cilicia it did not come to maturity. Alexander (*Strabo xv.*, 1, 25) observed it growing in Akesinus (now called the Chenab). It was cultivated in Greece in a certain marsh by the river Thyamus in Epirus (*Athen Deipn.* iii., 2). If Pliny's *Colocasia* (*Bk. xiii.*, 51) was the *Nelumbium*, which it seems unreasonable to suppose otherwise, it was also cultivated in Italy. After Pliny, I believe the plant was not noticed by any European writer until the time of Clusius (1605), who has a figure of the true fruit in his "*Exoticorum Plantarum Historia*," p. 32. This fruit, so a later writer, John Parkinson (1629),

tells us, was brought to Amsterdam by Dutch mariners from Java.

P. E. N.

Upper Norwood.

Libonia floribunda.—This little compact-growing plant I find very useful at this time of the year as a vase plant, or in a cut state for the drawing-room, or for the embellishment of the conservatory. The treatment it receives here is most simple. When done blooming, which is about the end of February, the plants are headed back to within a joint or so of the last season's growth, placed in a temperature of about 60°, and kept dry at the root until such time as they show signs of growth, when a little water is given, but when growth has fairly commenced water is given freely. In April they are moved to cooler quarters and gradually hardened off. About the end of May or beginning of June they are planted out on a sheltered, sunny border about 2 feet apart each way; if the ground is dry they have a good watering as soon as planted. Here they soon commence to grow, and all the care they need until the time they are lifted is an occasional watering, should the weather prove dry. By the end of September they will have grown into nice stocky bushes about 18 inches to 2 feet through. Early in October they are taken up carefully, and any loose soil shaken away. They are put into as small pots as possible, leaving room for a little fresh soil to cover the roots, and to hold water sufficient to soak the ball through. They are then placed in a cold pit, watered, and kept close and well syringed for a week or ten days. They soon recover from the effects of lifting, and begin rapidly to show their flower buds. In November they are brought into a warm greenhouse, where they soon begin to open their orange and red flowers. By the middle of January they are, if well managed, one mass of bloom, and very effective. *L. perthensis* is also a good winter bloomer, but with me it does not do well planted out, as it apparently requires more heat than *floribunda*. Its flowers are brighter than the other, but the plant is of a more straggly habit, and requires tying to have shapely plants.—W. WATSON, *Englehurst.*

SHORT NOTE.—STOVE AND GREENHOUSE.

Rhododendron Duchess of Edinburgh.—This variety, on account of its bright orange-scarlet flowers, is now very conspicuous in the large collection of greenhouse Rhododendrons grown by Messrs. Veitch at Chelsea.

Citrus smensis.—Any one looking about for plants for table decoration would do well to try this Citrus. We saw the other day dwarf plants of it growing in 5-inch and 6-inch pots, and bearing on an average twelve beautiful fruits, which were set off to advantage by the bright green foliage with which they were associated.

Livistona rotundifolia.—Now that plants in rooms have become indispensable, and Palms are in greater demand for that purpose than anything else, this *Livistona* will undoubtedly command itself. It is very dwarf, of free growth, and on some plants we counted on an average from ten to twelve fully developed leaves.

Azalea Deutsche Perle.—This pretty little variety ought to be grown by everyone who has to keep up a supply of plants in flower during winter and early spring. The flowers, which are pure white, are produced very freely on small plants. It can also be recommended from the fact that it stands forcing well.

Monochaetum Lemonianum.—This species, at once the most robust and hardiest belonging to the genus, is now finely in flower in Messrs. Veitch's nursery. Its flowers, which are of a beautiful reddish violet hue, are produced in great abundance on dense bushy plants. They also have the merit of resisting the London fogs, which are as a rule so destructive to flowers.

Toxicophlea spectabilis.—We saw the other day very beautiful little specimens of this handsome stove plant in 3-inch pots one sheet of bloom and in addition to their being so abundant, they have also the advantage of being very sweetly scented. In habit the plant is very bushy, and produces its white flowers in corymbs at the point of every shoot, and also from the axils of the leaves.

Begonia Gloire de Sceaux.—This variety flowers during the dull season, and is easy of cultivation, two points greatly in its favour. The flowers, which are pink, are set off to advantage by the dark metallic hue of the foliage. Planted out in winter gardens it grows and flowers freely. In many cases plants of it have been seen 2 feet high and 2½ feet across, and covered with flowers. It also blooms in a very small state.

Kentia Fosteriana variegata.—The typical form of this plant is one of the most graceful Palms we have, especially for indoor decoration, its robust constitution enabling it to withstand a low temperature. We recently saw

this in the gardens at Heathersett, Streatham, in which half of each segment in its plume-like leaves is creamy yellow, rendering the whole plant bright and attractive. It has maintained this character from a seedling.

SEASONABLE WORK IN PLANT HOUSES.

GRAFTING CAMELLIAS.—Notwithstanding the numbers of fine sorts of Camellias now in cultivation, there are still to be met with here and there large healthy examples so inferior as to make them not worth the room they occupy. The remedy for this is to graft them with good kinds. Plants with large bushy heads may thus be obtained in a fourth of the time that young examples take to attain a useful size, with the still further advantage that where large plants have their tops removed and are grafted low down they form heads much more densely furnished at the base than plants that have been grown up from ordinary young stock. I have tried several methods of grafting plants of the description named, the stems of which were from 2 inches to 2½ inches in diameter; one was by taking three or four healthy young plants in pots, standing them on the ball of the plant about to be worked, and inarching their stems in the ordinary way to it, leaving the head of the stock intact until after the young plants were firmly united, when they were severed immediately below the union, at the same time removing the head of the stock. But though this method gives more material to start with than where the stock is grafted with a similar number of scions, still the grafted heads grow away better and freer so as to outstrip the inarched ones. For strong stocks, such as those in question, cleft-grafting is the best, putting four scions in each, covering in the usual way with the ordinary clay mixture. No time should now be lost in heading down any plants that are to be treated in this manner, as if this is not done some time before the sap begins to rise the stools will bleed much. Later on, when the buds of the grafts show signs of pushing, a little extra warmth will be an advantage. During the summer the shoots will most likely require stopping.

AZALEAS.—Most plants should be stood in a warm house or pit, so as to bring them into bloom to keep up a succession for conservatory decoration, and to furnish flowers for cutting. But anything approaching a high forcing temperature must be avoided; when these plants are hurried on into flower in a warm stove heat, the flowers are soft and tender, so that for cutting they are practically useless, as they flag immediately they are severed from the plants and placed in a cool, dry atmosphere. With the same object, there should not be more humidity in the atmosphere than is necessary to assist the flowers to open. Another evil that attends the use of too much heat in bringing Azaleas into flower before the weather gets warm is, that the plants, when in bloom, are usually moved to houses where the temperature is much lower than that in which they have been forced, the effect of which is that the shoot-growth the plants will have made in more or less quantity will receive a check that will interfere with its moving so freely as it should afterwards. Azaleas that were pushed into flower earlier and are now out of bloom should at once be placed in a genial heat, with a moderately moist atmosphere, where they will make growth. The practice of forcing these plants, and afterwards subjecting them to a much lower temperature at the time their growth should be moving freely, is about as inconsistent a course as could well be imagined. Especial care should be taken with plants that are started early to see that they are kept free from thrips, which, if allowed to gain a footing now, will do much injury and cause a deal of trouble afterwards.

ACACIAS AND GENISTAS.—Plants of these that have been forced should, as soon as the flowers are over, be cut in as far as is found necessary, and at once placed for a time where they will have a few degrees more heat than a greenhouse affords, for just in proportion as the plants are thus encouraged to continue the growth that has been excited in bringing them into bloom will they be

in a condition to flower satisfactorily the ensuing year. Any that require more root-room should shortly be moved into larger pots; but grown, as these plants are, for the production of cut flowers, by the removal of which their size is restricted, they require proportionately less root-room. Consequently, it is as well not to overdo them in this matter, especially as much may be done by the use of concentrated manure or manure water to keep up the requisite strength.

EPACRISES.—The long sprays of elegant flowers that these plants continue to produce through the winter months, and which are so well adapted for filling vases, baskets, and other receptacles of a like description, and the gay appearance that they keep up for a length of time in greenhouses and conservatories, entitle them to be much more generally used than they now are. These Epacrises are much handsomer and more useful in every way than the winter-flowering Heaths which, for what reason it would be difficult to say, often get the preference. A limited number of plants that include late as well as early blooming varieties will keep up a succession of flowers for six or seven months. The early-flowered sorts that have done blooming should now have their shoots shortened back previous to their making growth, after which such as require it may be moved to larger pots.

NARCISSUS.—Within comparatively recent times many of the different kinds of Narcissus have been grown as pot plants, and are found to succeed equally as well as the ordinary bunch-flowered sorts that have been so long grown in this way. The best of the large-flowered Daffodils and the different forms of *N. poeticus* succeed as well as could be desired with moderate forcing or with greenhouse treatment. These flowers are in every way deserving of the estimation in which they are now held. To come in before the outdoor supply is available, a sufficient number of bulbs that were potted before their roots began to move should now be placed in a growing temperature. From the time the leaves appear above the soil the plants must be kept well up to the glass, otherwise they get drawn. Henceforward these Narcissi will share favour with the Hyacinths that have so long held the first place, especially as the kinds in question, if well cared for after they have been flowered in pots, soon recover; whilst the Hyacinths, when once they have been forced, do not regain their wonted condition.

PREPARATION FOR POTTING.—Potting materials, including peat, loam, and sand, with a sufficient supply of clean pots and broken crocks, should be got ready for potting the principal portion of the hard-wooded greenhouse plants that require a shift, the greater number of the kinds of which are best repotted sufficiently early to admit of their roots getting hold of the new soil before the hot weather comes on.

STOVE.—It is now time to see to the propagation of the different autumn and winter-flowering plants that are usually grown up to a blooming state from cuttings struck early in the year. Of these the leading kinds are *Salvias*, *Justicias*, *Euphorbia jacquiniiflora*, *Sericographis Ghiesbreghtii*, *Apelandras*, fibrous-rooted *Begonias*, *Centradenias*, *Hebeclinium ianthinum*, *Plumbago rosea*, *Scutellaria Mocciniana*, and *Thyracanthus rutilans*. The chief matter in the cultivation of these plants is to get them sufficiently strong before the autumn comes on, otherwise they will not yield the full quantity of flowers. Quick-growing things like the plants named are, with few exceptions, easily struck from cuttings; of those mentioned, the *Euphorbia* is the only exception, not that cuttings of this plant are difficult to root, provided the young shoots of which they are made are secured in right condition. The plants intended to produce them should have been kept in a brisk heat, so that the shoots may be free in growth; these must be taken off with a heel when they are not more than 5 inches or 6 inches long. If cuttings are made of shoots that have attained considerable length, and severed in the ordinary way without the heel, it is more than likely that not 10 per cent. of them will strike. They must

be kept moist and covered with a propagating glass; the temperature should not be less than 70°. Cuttings of the other plants named prepared in the ordinary manner root freely.

CUTTINGS of Allamandas, Ixoras, Tabernaemontanas, Rondeletias, Clerodendrons (shrubby and climbing), Francisceas, Thunbergias, and Gardenias should now also be put in to strike, as shoots can be obtained in suitable condition. Needless to say that these, in common with most other rapid-growing plants, root and grow away afterwards quickest when the shoots of which they are made, as advised in the case of the Euphorbia, have been produced in a temperature high enough to have pushed them on quickly.

GLORIOSA PLANTI and G. SUTERRA.—The flowers of these plants are singular and effective. The roots should now be potted and stood in the stove, not keeping the soil too wet, until the tops have made some progress.

CURCUMAS.—Roots of these remarkable, but now seldom seen, plants should be turned out of the pots in which they flowered last year, and which have during the winter been kept dry and potted in good light soil; either peat or loam will answer. As soon as potted stand them at the warmest end of the stove, where they will soon begin to move.

T. B.

HERB PARIS.

(PARIS QUADRIFOLIA.)

THIS strange-looking plant, although it has no striking claim to beauty, is well worthy of culti-



Herb Paris (Paris quadrifolia). Engraved for THE GARDEN from a photograph.

vation in suitable places. It has an interesting, rather weird look, in harmony with its chosen home in cool, damp woodlands. In such places it is delightful to come upon this mysterious plant, with its four broad leaves and green flower. The flower is produced in early summer, and is succeeded by a rather large seed-pod. It is a native plant, but not common.

Eucharis mite.—This pest has been very troublesome in many gardens in this locality. A friend of mine who had his plants severely attacked, after having shaken the bulbs out and having washed the roots clean, dusted them all over with soot, and repotted them in fresh soil. He has since applied soot liberally as a top-dressing, the result being that his Eucharis are now in fine condition, both in pots and planted out. He has a quantity planted close to hot-water pipes, to utilise a spare piece of border, and they made grand growth, the foliage being very fine and dark coloured. Those planted out had been also liberally dressed with soot, washed in with copious supplies of moisture, and although they cannot be regulated as to time of blooming so well as under pot culture, yet they come in well when the blooms are most in request, as they continue

throwing up a few spikes at all times of the year.—G., Hants.

FRUIT GARDEN.

W. COLEMAN.

NUTS AND FILBERTS.

CONFRONTED by the fact that more than half the nuts consumed in this country are imported from abroad, and no one presumes to say the best are better than our Kent Cobs and Filberts, it is hardly likely that the depressed market grower can be told he is suffering from over-production. Prices last year ruled low, but the same may be said of other goods which consumers purchase in smaller quantities, or dispense with altogether when slack trade does not admit of their launching into luxuries. Still there always has been a demand for good quality at paying prices, and these might improve if, instead of confining the nut to Kent, its culture became more general, and dealers could be brought to look upon it as one of our staples, and not as a mere stopgap to be fallen back upon when the foreign supply falls short. But why, without an effort, yield the monopoly to Kent, when throughout Britain there are thousands of acres of land well adapted to the growth of the finest Filberts and nuts if the owners of property would only give them a trial? The common Wood-nut being so well known and

met with in almost every part of this country, to which it is indigenous, the most inexperienced person who has traversed our rural lanes in October can tell at a glance what kind of soil suits it best. On cold, damp clays the fruit is late, watery, and flavourless, but on the banks and hillsides composed usually of warm red loam, often very deep, always well drained, there the Hazel-nut is at home, there above the line of fog and frost, for it flowers early, the crop is good, and the quality superior. It is not, however, of the hard-shelled, beardless *Corylus Avellana* that I wish to speak, as this at best is inferior, but being perhaps the oldest member of the family its presence in a natural state may always be accepted as a safe guide to the selection of a suitable site for the cultivation of the Cob and

Filbert. Assuming, then, that a deep hazel loam in a warm sunny spot is at command, no matter how remote from London or other great marts, for the nut, unlike soft fruits, will keep and travel, there the planter may safely start his nut ground pure and simple, or, by way of variety, bush fruits for the first few years may form every alternate row. In Kent the Filbert is frequently found growing with Hops, Apples, Gooseberries, and Currants, but upon ground specially adapted to nuts, and perhaps far removed from cheap manure, mixed planting should be avoided, as deep trenching followed by light annual top-dressings will keep the trees in health for an indefinite number of years.

PROPAGATION.—Although all the varieties can be raised from seeds and some of them come true, stock generally is raised from suckers, which should be taken up in the autumn, transplanted in lines, and trained to single stems. Of these independent young plants, any number can be obtained from mismanaged plantations, and for this purpose a few old trees of each sort should be allowed to assume their natural habit of

growth, but once the properly prepared trees are transferred to their fruiting quarters, suckering should be repressed, a single stem only tolerated, and then even annual attention will be necessary.

PLANTING.—Like all other deciduous trees, the nut makes the best start when planted early in the autumn, but when raised at home and grown for two or three years in an adjacent nursery they may be transplanted at any time during the season of rest. The distance apart may vary, according to the sorts and the nature of the ground, but sun and light being so important, crowding should be carefully avoided. Where the whole quarter is devoted to nuts, 10 feet to 12 feet from row to row will not be too much, and 9 feet from tree to tree will be found sufficient. When planted in single rows or to form avenues, half this distance from stool to stool will favour the removal of every other plant, as more room is required.

PRUNING.—Where trees are properly formed in the nursery, it is often necessary to cut weakly suckers down to the ground to secure one strong clean growth, which in due course is headed back to the desired height; 18 inches is sufficient for front rows, whilst trees intended for the back may be shortened to 3 feet. If strong, these the following season throw out an abundance of shoots, but five or six being sufficient, all superfluous growths, especially those near the ground, are rubbed off or pinched, whilst those left are trained to form the main ribs of a vase or cup-shaped tree. If any of these take the lead, pinching will throw a flush of sap into the weaker growths, when an equalisation will reduce the next year's pruning to slight shortening, such as we shorten the tips of young Currants or Gooseberries. This shortening results in the growth of a number of short spur-like bits of wood with plump terminal buds, and as these produce the male catkins about January and the female flowers sometimes early in February, the pruning of established trees should always be deferred until the male catkins have performed their office and begin to shrivel. This may be about the end of March, much depending upon the character of the winter, but whenever this stage is reached all superfluous shoots may be cut out, the barren spurs being pruned back to a single bud near the main stems. When trees attain the height of 6 feet they require hard pruning every year not only to keep them well furnished with young spurs, but also to let in light and sun, and, provided they are kept free from stem suckers, they will remain marvels of fertility for a great number of years.

GENERAL CULTIVATION.—When young trees are planted the ground may be cropped with Potatoes or dwarf growing green crops, which will necessitate cleaning, manuring, and working until they come into full bearing and are capable of taking care of themselves. From this time forward the ground should be forked annually and hoed occasionally to keep it free from weeds, but cropping, no longer profitable, may be given up. Meantime, as has been suggested in the management of the Apple orchard, a snug corner should be selected for the manure store. In to this all scrapings and parings from roads, ditch scourings, and a fair percentage of lime should be carted and thoroughly intermixed, together with charred twigs and other refuse ready for the winter dressing. Kentish growers set great value on refuse rags for use in their orchards, but growers in isolated districts cannot conveniently get them. All, however, can adopt the plan I have suggested, and I question if a good top-dressing of fresh compost is not preferable to strong manures.

STORING NUTS.—Many people in this great Hazel district run away with the idea that salt is essential to the preservation of nuts, but this is a fallacy. The first point is thorough ripeness, not only of kernel, but of husk. Then, provided they are to be kept in the latter, they should be well dried in the sun and treated to sulphur fumes prior to storing away in air-tight earthen jars or clean flower-pots. A cool, but dry store room or cellar is a suitable place for the pots. Nuts, however, keep best out of the husk, as they can then be packed tightly and stored away in the cellar or underground, where they retain their fresh flavour and sweetness for many months. When long-bearded nuts have to be kept for a considerable time in the husk, sulphur fumes in a mild form are beneficial rather than otherwise, as they dispel all moisture and destroy the germs of fungi or mould before decomposition sets in.

VARIETIES.—Like all other fruit lists, that of nuts is growing fat, and some of the new kinds, notably those raised by Mr. Webb, of Calcot, near Reading, are said to be very good. For general market or private use the Red and White Filbert. The Cosford and large Cob stand unrivalled, and should be planted in quantity. The Purple Filbert forms a very handsome bush when planted out in the pleasure ground or shrubbery. It bears freely, and the nuts are excellent. If woodland planters would introduce the better varieties, which grow quite as well as the common Hazel, conspicuous parts of our coppice drives might be made more interesting, and certainly not less profitable than they are at present.

ENGLISH V. AMERICAN APPLES.

THE relative value of English and American Apples seems to be of so much importance at this season, that it should be a matter of some interest to all concerned in hardy fruit culture to have the matter tested. In point of colour and beauty we cannot hope to excel the Americans, but if we have other and better qualities in home-grown fruit, then we may claim the advantage. With a view to have the matter tested fairly, I send with this samples of four kinds of Apples, none of which have been specially preserved, and in other hands might have been perhaps better cared for. American Apples are so plentiful in London, that some of the best may doubtless be easily obtained and tried against the samples now sent. No. 1 is the Wellington, esteemed by us as one of the very best Apples for cooking: the fruits sent are from an old standard tree. No. 2 is either Brabant Bellefleur or the old Winter Pearmain. It is a good keeper, and generally a fine sample. The tree is a strong grower and very healthy. These are on the free stock, and eighteen years planted. No. 3 is the Herefordshire, or Royal Pearmain, the fruits of which are now getting rather soft. The tree is on the free stock, old, and never robust. No. 4 is Blenheim Pippin, from an old standard tree in a Buckinghamshire orchard, and, probably not being from the sunny side of the tree, is not so highly coloured as it often is.

A. D.

The Apples sent are very good of their kind, but the Wellington is purely a cooking Apple, which, however, cannot be excelled in its way. The Blenheim is beyond its season, and the others slightly "gone off." We have all the beauty of colour that we can desire in English Apples, but, of course, any opinion that we can express on a small sample like this would go for nothing in the face of the facts of the market. The great value of the scarce Newtown is its fine, high, and acid flavour. We have many excellent English Apples, but good late sorts are very scarce, and our raisers should turn their attention to them. An English Apple as good as the Newtown which would keep up to the present time in good condition would be worth

a king's ransom to the fruit growers of England. Our climate is admirable for Apples, but the fact is that growers generally have not yet begun to compete with the Americans, and there is no doubt that the freehold system of America encourages fruit-tree planting.—Ed.

GRAFFING VINES.

IN Mr. Coleman's admirable instructions on this somewhat difficult matter, page 113, the following sentence is likely to puzzle novices in Vine grafting: "If the stock is very young, the joining of the inner bark of the one to that of the other will not be difficult, but when the stock is old and rough some care will be necessary, otherwise the two will not meet, but overlap, when a perfect union may be doubtful." Now, it will perplex a good many old hands to find the inner bark of the Vine, in the ordinary sense of the phrase, to say nothing of the possibility, or impossibility, of making a perfectly mechanical join or fit between two such ephemeral substances as the inner bark of the Vine scions and stocks. In this phrase Mr. Coleman seems to have slid insensibly into the phraseology of the Apple orchard, to the mystification of Vine grafters, who may seek long without finding any such inner bark on Vines as we are all so familiar with in the case of Apples, Pears, Cherries, &c. It is a mere tautology to add that if there is no such inner bark, it can take no part in the uniting of the scions to the stocks of Vines. Hence it will be found that such union is chiefly or altogether effected through the wood rather than the bark, outer or inner, if such a distinction is permissible to Vine bark, or outer covering of the wood.

It is this vital difference of structure and mode of growth between endogens and exogens that gives additional force to the stress that Mr. Coleman, in common with all successful Vine grafters, lays on the importance of having the stock in full leafage before inserting or fixing the scion. We know that otherwise the scion would be washed off. It is therefore needful to have expanded leaves on the growing Vine as safety-valves for the rush of the sap. But this is not all; these growing leaves ahead of the scion perform an active as well as a passive part in the act, or process rather, of uniting the two parts into one. The outlet of the sap prevents the flooding off, or rotting of the growable rather than growing stem. The energy and what may be termed the adhesive or attractive force of the growing stock takes on and in the more semi-passive scion, and it is not until a later stage that the scion also makes advances to join the stock. No sooner has the latter stage of reciprocal reaction been reached, than the safety and security of the union between the two are ensured. But during the entire process the two woods are the active forces in accelerating the speed and ensuring the soundness and durability of the union rather than the two barks. Hence it is very desirable to have some further information on a question that is hardly important in the grafting of exogens in which the inner bark forms the chief factor, but which assumes vital importance in the grafting of endogenous plants like Vines, and that is the best depth at which to insert the scions into the stocks—a subject on which Mr. Coleman is altogether silent in his otherwise instructive and exhaustive article. On this point there is a wide diversity of opinion and practice. Not a few Vine grafters consider any portion of the stem of stock and scion from the outside to the pith as almost equally eligible and suitable. Others have been successful in cutting both scion and stock boldly down to the pith, and have been more careful to fit these two rather than one on both sides of the so-called bark of the Vine. Possibly most Vine grafters prefer to form their unions about half way from circumference to girth alike on scion and stock. Further information on this point would, I am sure, be gladly welcomed by not a few old hands, who have had considerable practice in Vine grafting, as well as the many "prince hands" whom his article or other circumstance may send knife in hand to try their skill, and maybe their patience also, on their Vines.

A provoking accident first sent me to graft Vines. A friend undertook to supply Vines for two new

houses, and sent plants abnormally strong, but suspiciously alike. But being a cultivator of great note, suspicion was lulled, the Vines planted, and the growths made were most satisfactory. But, alas! the varieties proved all sixes and sevens. It was decided to utilise the root and also the top force as far as possible by grafting the Vines, my friend supplying warranted scions, and giving me various lessons, by letter and illustration, in the true art of Vine grafting. His advice, which was followed, did not greatly differ from Mr. Coleman's, only in addition to whip-grafting the top of the strong rods, as recommended by the latter, one or two buds below the growing points, he strongly recommended the bud-grafting of the young Vines immediately under each growing eye, leaving from six to eight on each. The object was two-fold. As the Vines were to be trained and treated on the spur system, these buds would form spurs in any case for the next year. But by unusual skill and exceptional success, he stated that the strong buds put in would fruit the first year. To this end, he rightly or wrongly attributed great importance to the insertion of the stranger bud at the base of the growing one. So soon as the former took, the growing shoots were stopped, and when the former bud fairly broke into leafage the shoot on the stock was cut clean off. The result was that over 70 per cent. of the buds took, and about 10 per cent. fruited the first year.

I ought, perhaps, to add that these bud-grafts were segments of wood, about a third diameter and about 1½ inches long. They were firmly tied home, cloyed over, and the bud slightly shaded with Moss, and syringed twice or three times a day when the weather was bright. The Vines were grafted in April, and almost every leading shoot reached the top of the house the first season. The bud-grafts that formed the spurs were stopped and treated in the ordinary manner and fruited freely, as did the base of the leading shoots, the following season.

Of course, the growth of the Vines, their great vigour, and the amount of root force in the new borders were all greatly in their favour. But the case is noticed here, as this mode of inserting a sort of bud scion immediately behind the growing spurs has, so far as I am aware, been but little practised, and not previously described.

HORTUS.

Damsons.—In pruning standard trees of the Farleigh Prolific, I have been surprised to find how full they are of buds in spite of the heavy crop borne last year. It is true that the fruit may not follow, but in any case it is pleasing to note that the rudiments of a crop exist. Discussing the merits of the Prune Damson, it is said to hang longer than ordinary Damsons will, but an exception must be made in favour of the Farleigh Prolific, which retains its fruit remarkably well some time after being ripe.—D.

SHORT NOTES.—FRUIT.

Apple Blue Pearmain.—This is a late and useful Apple at this season of the year. It is thus described by Mr. Barron: "Dessert or cooking, large, round, streaked dark purple, with bluish bloom and very handsome."

Apple Starmer Pippin.—This variety, though small, is nevertheless worthy of attention as a late sort. The fruit is somewhat flattened and the skin when ripe yellowish-green, spotted with russet. The flesh is sweet and of first-class quality.

Apple Prince Bismarck.—This handsome Apple, stored in the ordinary way, seems to keep well. It has some resemblance to The Queen, but is superior to that variety. The latter, under the same conditions as to storing, was quite over, while Prince Bismarck was plump and firm, and that, too, after being exhibited at various fruit shows. It was awarded a first-class certificate last season.

Pear Olivier de Serres.—This Pear, which comes into use during February and March, is one of the best late Pears we have, and ought to be grown by everyone who has to keep up a late supply. The fruit is of medium size, skin yellowish, with russet spots, flesh whitish, melting, juicy, and finely perfumed. Some good examples of it were shown at the Pear Congress.

Bigarreau Napoleon III.—In the *Bulletin d'Agriculture* is figured a Cherry under this name. M. Theopoint, a cultivator of stone fruits at Eficbove, states that its fruit hangs long on the tree, which is tall and vigorous and a very good cropper. The fruits, which are generally produced in pairs, are large and roundish-ovate with the stalk inserted in

a deep cavity; the skin is deep red, and when thoroughly ripe of a dark shining purple. The juice is highly coloured, abundant and sweet—said to be a first-rate cherry.

EARLY FRUIT FOR MARKET.

Now that attention is being directed to the question of market fruit growing as a means of utilising agricultural land to greater profit, it may not be amiss to call attention to the claims of the southern counties on account of the great advantage they possess of supplying the earliest fruits of their respective kinds—in fact but very little behind the French, and certainly of superior quality. It has so long been the custom to speak of Kent as the fruit-growing county, that many seem to think that fruit culture is hopeless in any other place; and I grant that for large orchard trees to bear quantity, the deep soil of Kentish valleys can beat us, but certainly not in point of earliness. I need only point to the Strawberry fields here, that have had the first consignment in Covent Garden considerably in advance of any from Kent, and anyone who has experience of market knows that a few days make all the difference; in fact, it is to the very earliest and latest varieties to which growers must turn their attention, and by taking advantage of their climatic differences a great deal might be done to avoid the overstocking of the markets. On the south coast the soil is light and warm, and when the sun shines out brightly the stony land gets very hot, and although it might not look tempting to Kentish fruit growers as the right sort of soil for fruit trees, it is surprising how well they do if only reasonable care be taken to mulch them when drought prevails so as to prevent their suffering from dryness; and if only growers could get over the notion of relying so much on standard trees and would plant dwarf bushes, they might follow very closely on the heels of their French rivals with Cherries, Plums, Apples, Pears, Figs, &c., just as well as they do with Strawberries. Only the very earliest varieties should be grown, and in the best possible manner, and something more approaching garden culture is what is needed, as there are too many old neglected orchard trees already, and I would grow all the trees on the shortest stems possible, so as to be reached by means of a short pair of steps. The trees should be kept pruned in, so that the rays of sunlight can penetrate to warm the soil. This is quite impossible in the old dense-topped orchards, and, above all, the roots must be kept actively at work on the surface, for when they penetrate deep into the sub-soil, strong growth, and not early ripening, follows. This can only be done by annual top dressings of manure, so that the roots always find fresh food ready for them. It is not necessary to have such a dense mass of material as to prevent the warming influence of the sun's rays from reaching the soil, but enough to cover it lightly. In this sort of soil fruit trees make a quantity of fibrous roots, which, if protected, are sure to make fruitful trees or bushes, and only those that are really suitable for the purpose should be planted in quantity, as we have hitherto gone in too much for miscellaneous collections. What we want is some definite plan to proceed on. There is no fear of overstocking the markets with really good fruit, for if one only looks at the enormous imports of Williams' Bon Chrétien Pears alone, it would be acknowledged that there is ample room for home growers to compete for a share of the trade; and that we could grow these things as well as they do in France I am confident, provided we get rid of the idea that any sort of fruit is good enough for market. In Sussex there is fine soil, excellent climate, and within easy distance of the metropolis; and in many parts of Hamp-hire fruits flourish amazingly. Look at our Strawberry fields! why, the soil that produces the finest and earliest fruit is as different as possible from what one would select if guided by old treatises on this luscious fruit; and other fruits are by no means difficult to grow, provided the climate is congenial and the annual growth gets well ripened. Dwarf bushes with natural shaped heads are the ones to plant. On these Apples, Pears, Plums, and Cherries come to

great perfection: even without the aid of walls the colouring of the rosy-cheeked Apples, such as Lady Sudeley, Worcester Pearmain, and Red Quarrenden, is altogether superior to that of fruit grown in what many call more favourable places. As regards Pears, I am confident that the south coast can beat any other part of the kingdom, and I think, therefore, that fruit growing, if taken up in earnest and properly managed, would certainly prove a success.

J. GROOM.

Gosport.

Easter Beurre Pear.—Your note in THE GARDEN (p. 115) on this Pear selling in Covent Garden for 2s. apiece wholesale is certainly a gleam of encouragement to fruit growers in this country, considering the low prices realised for most kinds of hardy fruits this last season. It is not stated whether they were foreign or home-grown fruit, but I would imagine that they must be foreign, and grand samples from the prices realised. Be that as it may, if home-grown fruit of fair sample could be sold for half or even a third that price, most growers would think themselves well paid. The planting of this variety deserves to be encouraged, for, as a rule, it is a sure cropper, and when properly ripened is most delicious, but why it got the name of Easter I cannot understand. For these last eleven years I may say we have never missed a crop, yet have never been able to have it at Easter, be it early or late, as it either ripened about the end of January or beginning of February, or not at all. This often occurs when the months of September and October are very wet and cold. Leaving the fruit on the trees as long as there is no danger of frost does not appear to have much effect on it. But I found in dull autumns when I had reason to fear they would not ripen well, that, by placing them in thin layers in boxes and taking them into a warm room, they ripened about the usual time: while some that were left in the fruit room were hard and green in May. This season Beurre Diep and Passe Colmar have not ripened at all satisfactorily, being deficient in flavour and tough; while, on the other hand, old Crassane and Vicar of Winkfield, only second-rate Pears at best and generally used for stewing, are this year first-class, and used as dessert.—W. WATSON, *Englehurst.*

SEASONABLE WORK AMONG FRUITS.

THE ground during the whole of the month of January having been ice and snow-bound, many operations in this department have fallen into arrears. Snow, however, is a fine protective agent as well as a good fertiliser, and when a long spell of severe weather passes away, as this has done, without a drop of rain, the ground invariably turns up in splendid condition for the performance of all spade work, be it ordinary digging or late planting. Although the first fall of snow caught us before we had quite completed the rearrangement of a few young fruit trees, the latter, snugly imbedded in snow, took no harm, and during the past week were finally disposed of and well mulched, but only loosely secured, as the ground, deeply trenched, will settle gradually for some time to come.

PRUNING AND NAILING,

especially of Morellos, which, Peaches excepted, we always leave till last, are now finished, and in order to protect them from the ravages of aphids the trees and walls are well washed with soap-suds, driven with some force through the garden engine. When this work is accomplished, the four-foot pathway receives about an inch of old, finely-broken lime rubble—a most excellent fertiliser for all stone fruit trees—and further care is dispensed with until the time arrives for thinning the fruit. From the north we turn to the south side of the same wall, where Peaches, usually detached early in January, were this year allowed to remain undisturbed until the frost broke up. These, made quite free from shred and nail, have received the final dressing over with the knife—a very pleasant operation—and every twig has been carefully washed over with strong soapy water. This operation, owing to the forward state of the

buds, has been performed with extra care, and the trees are worthy of it, as they are thickly clothed with blossom; the wood is brown and thoroughly ripe, and the prospect of fruit is extra promising. Many people commence the nailing or tying in as soon as the trees are washed, but this garden lying low and subject to spring frosts, I prefer keeping them away from the walls, which now begin to absorb sun heat, until the flowers show colour. Then, with all hands capable of laying in the shoots and wielding a hammer, this work is quickly performed. Meantime other matters require attention. One of these is the removal of all old mulching from the 4-foot pathway, which is forked into the vegetable part of the border. This is replaced by a good layer of old lime mortar, which serves as the first mulch and produces clean, dry standing ground for the workmen. Last, but not least important, comes the washing of the walls with the old brick-red paint, composed of quicklime, soot, Venetian red, a small quantity of linseed oil, and boiling water. Our walls being very old, and a fine breeding and hiding cover for all kinds of insects, this wash is thoroughly worked into the holes and crevices, and we rarely see aphid until after the fruit is set. Fruit growers in new gardens do not have these difficulties to contend with. Neither, on the other hand, have they the pleasure of circumventing enemies whose name is legion; and after all, success in all gardening matters is valuable in proportion to that which it costs. I have just said we can reckon on immunity from aphid until after the fruit is set—a small matter apparently, but really and truly the pivot on which success frequently hinges, for how often does it happen, especially in cold, wet seasons, that the poisoning of the early growths by greenfly results in a check upon the fruit and trees at a most critical period, when the second set of shoots owing to the delay are neither good nor properly ripened. Viewed from this point, a clean start is of vast importance, as we all know that badly ripened wood is the first step down hill; and the last, which speedily follows, is canker.

Autumn planted Strawberries.—These demand immediate attention. These, although firmly planted in cubes of new loam and well mulched with short manure, are more or less loose, and the ground has absorbed the contents of their larder. The surface just now is dry enough for scuffling, and a few weeds having started into growth, an unusual opportunity offers for hoeing, thorough treading, and top-dressing. Over-manning being hardly possible on ordinary soil, good spit manure is generally recommended, but our soil being very old and full of humus, rich discarded Vine border compost is used in preference. This is preceded by a good dressing of soot, and the compost, left rough often in ridges between the rows, is levelled down with a rake at leisure. Established plantations are treated precisely the same, but the old leaves are allowed to remain until the pushing of young growths renders trimming and dressing off necessary to the maintenance of neatness. It is yet early to make new plantations, but the ground may be turned over more than once to get it into first rate tilth, and when thoroughly dry it must be made as firm as an old pasture field, set out in squares to save time, and blocked with fresh, heavy loam ready for the reception of the young plants when they show signs of starting.

BUSH FRUITS.

Currants and Gooseberries are now arriving at a tempting stage and will require careful protection from the busy bills of feathered friends. Bullfinches with us, as in all wooded districts, are sometimes very troublesome; but instead of descending to the barbarous practice of spoiling the trees by shooting, we make their favourite food distasteful by syringing with a wash composed of finely-sifted quicklime and a few handfuls of soot and soap-suds. At one time I used to defer pruning until late in the spring, but finding this wash so thoroughly effective, all the bushes are now pruned in due course, and two syringings suffice for the season. Another advantage is free-

dom from Moss and Lichen; the wash is manurial and has a composing effect on the larvæ of caterpillars. Cuttings of approved varieties may still be put in, although autumn is the best time. Still, well ripened pieces of wood will strike freely in any ordinary soil and situation. Gooseberries, also Red and White Currants, should always be grown upon clean single stems, not less than 12 inches in height, and the better to insure freedom from underground suckers all the buds likely to be buried in the soil should be removed before the cuttings are planted. Those above ground assist in the formation of roots, but they must be pinched the first season and trimmed off the stems to the required height in the autumn. Black Currants do not require this attention, as they are more fertile and produce the finest fruit when allowed to stool and throw up many branches from beneath the surface. The mode of pruning also is different, all that is needed being a general thinning of the oldest and cross branches to let in light and air, and to encourage young growths from the base.

GRAFTING.

The time is now at hand for commencing this work, of which I should like to see more going on; and if orchardists in the west, like growers in Kent, would make themselves conspicuous by grubbing some of their old trees, nay, whole orchards, they might well afford to laugh at the ignorance of flying travellers who rush into the daily papers. If not already headed back, not a day should be lost in sawing off the branches to within a foot or so of the intended point of union, and scions must be transferred to cool, shady spots, where they will remain comparatively dormant until the sap flows freely in the stocks. Vigorous young trees in gardens may be grafted through the months of March and April; large orchard trees generally work and take best when operated upon in May. Ordinary whip-grafting is the most expeditious and effectual mode of managing young trees, and in order to prevent a check and produce numerous channels for the pent-up sap, a superabundance of scions may be put on and allowed to grow freely the first year. All spray, too, from dormant buds on the stocks may have free license throughout the summer, but they must be thinned out or shortened back where their presence interferes with the ripening of the grafts in the autumn. Trees so treated last year should now be trimmed out, superfluous grafts cut away for future stock, and those left, shortened back to form the foundation and proper balance of the future pyramid or bush. Amongst Apples a sharp eye should be directed to the union, as there, if anywhere, will woolly apbis be found. Whether present or not, it is a good plan to clear away the remains of all old ligatures and clay, then wash with a strong solution of Gishurst or paraffin, and re-daub with fresh clay and cow manure. Where scions have grown very strong and the newly formed matter is not considered powerful enough to hold them against high winds, a few stout sticks should be tightly lashed to the stocks to steady the grafts for another season.

FIGS.

Where these were well protected with dry Fern, and a rough coping board was provided for throwing off wet and snow, there exists but little doubt that the youngest points furnished with embryo fruits are now safe and sound. How to keep them so is the rub, as many people tell us that covering is a delusion and leads to mischief on removal; so is warm covering on early Vine borders, if, having taken leave of our senses, we suddenly remove our heat preservers and leave the stems or the roots of our trees to their fate. Prudent men do nothing of the kind, as this course would expose them to the charge of gross abuse; they therefore remove the covering bit by bit. Growers of outdoor Figs in the midlands and the north know very well that the pitcher may go safely to the well for years, but a severe winter overtakes the venturesome, and the

work of years is lost, for they have to cut their trees down to the ground and start again. In maritime counties, be they east or west, this rarely happens, although at highly favoured Arundel I once saw large standard centenarians which had been roughly handled by the ice king. Covering these was, of course, impracticable, but owners of well-trained trees against sheltering walls, far away from the salt spray cordon, can and will fall back upon dry Braeken, which they can draw out frond by frond as the Chinaman throws away his jackets. April is the time to commence, and I venture to say those who proceed with caution will never have occasion to regret the use of covering. When outdoor Figs are allowed to grow into a wild mass of branches 3 feet or more from the wall, it generally, I may say always, happens that the roots also are neglected, but this system can hardly be called culture, certainly not creditable or even profitable culture, as nine-tenths of the trees I have met with swell to a certain stage thousands of fruits which fall off during the winter, but unless the summer is exceptionally hot the most forward fail to ripen. Thin these trees, nail in the best shoots, allowing plenty of room for the sun to strike the wall when they are in full leaf, prune the roots, and give them poor soil to grow in. Mulch heavily and water copiously in summer, and they will do all that outdoor Figs in this country can be expected to do. They will set a good crop of embryo fruits every autumn, and they will swell them to maturity the following season, always provided they are well protected through severe winters. Open-air Figs rarely give a second crop of fruit in our most favourable counties; consequently the pinching of young shoots so often practised under glass is not only unnecessary, but injurious, as this mode of treatment would lead to the formation of young growths which our seasons are neither long enough nor hot enough to ripen.

Good and bad leaf-soil.—The quality of leaf-soil varies very much. Some sorts are well adapted for encouraging the production of roots and nourishing young plants, while other kinds are almost useless, the roots formed in them being few and weakly, and the progress of the plants unsatisfactory. Leaves collected under trees of a mixed character never make good leaf-soil; the best is obtained from an Oak or Beech plantation, both of which are generally to be found in all large places, and now that selling timber of all kinds has become so fashionable, I am surprised that those in charge of woods have never offered leaf-soil for sale. It is as valuable and scarce near towns as peat or silver sand, and if good samples of it were offered, the demand for it would doubtless be great. Leaves which are formed into hotbeds, with the addition of a little manure, are excellent for putting on Potato and other vegetable ground when their work as heat-producers has ceased. Pure leaves, such as those put into Pine-apple houses and pits, become useful for propagating purposes, and for mixing with the soil used in the early culture of young plants. The best of all leaf-soil, however, is that which has never been subjected to fermentation. This is produced without any effort, as the leaves which accumulate here and there in hollows and other places decay gradually without heating, and leaf-soil of this description is soft, sweet, and quite free from worms, fungus, or other impurities. Such material is excellent for propagating, and for using in potting composts of the best descriptions. All who use leaf-soil for potting should secure it of this description if possible. Some of the best leaf-soil we can get for ordinary purposes is obtained from a pond, the feeding stream of which passes through a large Beech and Oak wood. A good deal of sand which is mixed up with these leaves prevents them being carried away; they generally form ridges, which show themselves above the water. The pond is cleared out annually, and when the water has drained from them they become the best of leaf-soil. This material is excellent for Carrot soil or Asparagus beds, and we find it much better for propagating and similar work than the soil from the old fermented beds, which proves that

leaves reduced to mould by heating is the worst of all ways of preparing it.—CAMBRIAN.

GARDEN FLORA.

PLATE 584.

AMERICAN VIOLETS AND HARDY BUTTERWORTS.

(WITH COLOURED ILLUSTRATIONS OF VIOLA PEDATA AND PINGUICULA GRANDIFLORA.*)

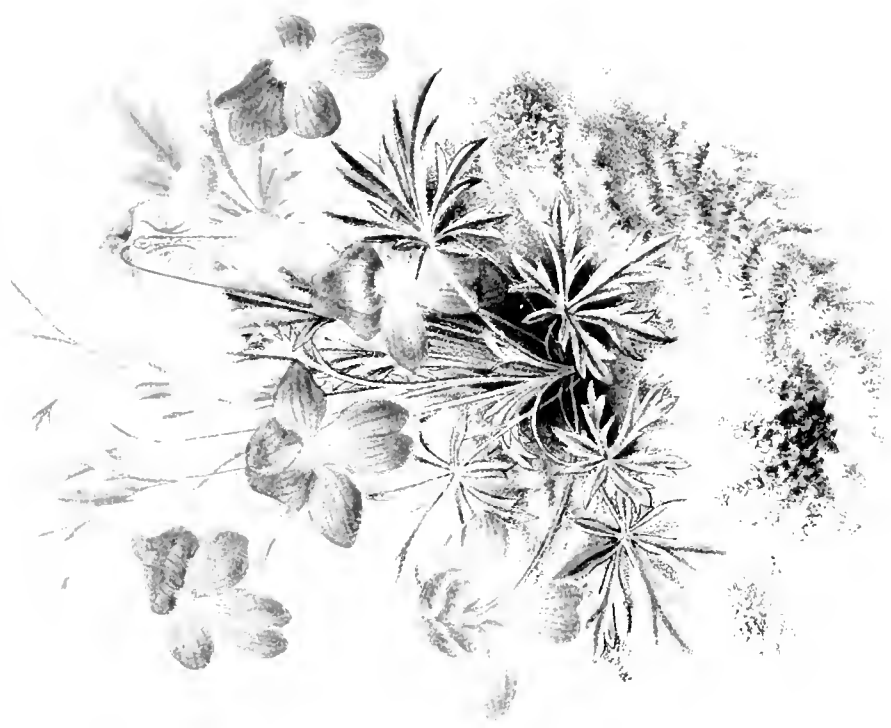
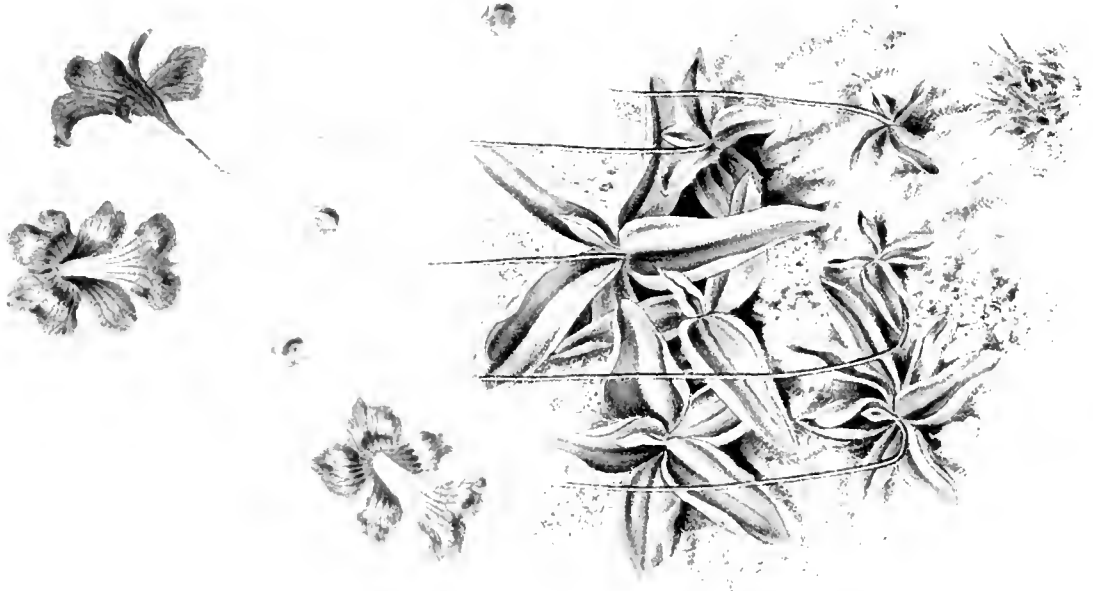
ACCORDING to an American botanist, *Viola odorata* far excels all the American species in fragrance, and we therefore hear of its becoming naturalised in many places near dwellings in that country. *V. tricolor*, though now plentiful there, is not indigenous to America. Although *V. pedata* has no connection with the Pansy or *Viola* as represented in our gardens, there can be little doubt that if the same attention had been paid to *V. pedata*, *bicolor* and *sagittata* as has been paid to the improvement of *V. tricolor*, we would now be in possession of an elegant race of cut-foliaged Violets, perhaps not far behind those we now have for flower-garden decoration. In addition to the kinds here noticed in detail, there is a large number of species—something like thirty-two—besides thirteen varieties, all natives of North America, which do much to render our gardens interesting all through the summer months. Among others worthy of notice may be mentioned *V. blanda*, *chrysantha*, a really charming species, *delphinifolia*, *lancoolata*, *Nuttalli*, *primulifolia*, *pubescens*, *Selkinki*, *striata*, &c.; all of these do well with ordinary care on the rockery, the chief consideration being a comparatively moist soil in summer. Some may also be accommodated in the mixed border or flower bed. They are all propagated by division of the roots in winter, or from seeds, which should be sown as soon as they can be safely gathered.

The following are among the best:—

V. PALUSTRIS (the Marsh Violet).—This is a well-known plant, being found in many parts of Europe as well as in North America; it varies in size extremely, more especially in Southern Europe; we have had plants brought from Valais only about an inch in height, while others from the United States have been nearly a foot in height. It affects rather damp situations, and on that account makes an excellent addition to our rather limited number of dwarf bog plants. It has stolons, but they are short, and do not run so freely as those of many of the more robust kinds. It is a good plant for lining the low edges of artificial lakes, ponds, &c., where dwarf plants are required. It yields from April to July a profusion of largish lilac flowers, which in some of the forms vary to white. They are scentless, and have very short spurs; the leaves are smooth, nearly round, and cordate, with crenated margins. It is increased by division.

V. PEDATA (the Bird's-foot Violet) and the variety *bicolor* are undoubtedly the handsomest and most useful of all the American species. *V. pedata* is not by any means the earliest of Violets to bloom; some few species flower as early as March and the first week in April, while *V. pedata* is seldom seen in full beauty before the beginning of May. It, however, fully compensates for its lateness by its superior attractions, being the largest and showiest of all the native kinds. Not only are its flowers beautiful, but, as may be seen by the accompanying coloured plate, its leaves are delicately cut and Fern-like. *V. p. bicolor* seems to be the only distinct variety of it we have in gardens at the present time, with the exception of the white-flowered form, but I am told that in Pennsylvania alone its variations are very great, ranging from pure white to purple. These variations are, moreover, not always confined to the colours of the flowers, for the petals also undergo considerable modification. In some of the forms they are broad

* Drawn for THE GARDEN by the late Noel Humphreys in the York Nurseries, and printed by G. Sovereigns.



and round, while in others they are narrowed into mere floral stripes, detracting much from its value as a garden flower. *V. pedata* is perhaps best adapted for choice positions on the rockery, where it does well in peaty sandy soil, half shady, and not over-moist. It may also be grown well in pots for exhibition purposes. It may be increased by seeds and division. It was cultivated by Miller at Chelsea as early as 1759. (Syns., *V. digitata* and *flabellifolia*.) Bicolor, though always requiring careful management, may be grown with a fair amount of success in most localities. It is an extremely interesting plant, not unlike our garden Pansy, the colour variation being most pronounced in the two upper petals, which change to deep rich velvety purple or crimson, the lower ones varying to pale lilac or blue. Excessive moisture during winter seems to be what this variety most dislikes; therefore any little extra attention in guarding against this will be well bestowed. It

1 inch broad at flowering time, enlarging to 3 inches or 4 inches towards the end of the summer, and generally closely pressed to the ground. It is found from Maine to Michigan and along the Alleghanies.

V. cucullata (common blue Violet).—This species, which is very variable in habit, somewhat resembles our common Sweet Violet, but is devoid of the delicious scent that makes *V. odorata* such a general favourite with all lovers of hardy spring flowers. *V. cucullata*, as seen in cultivation, is much larger than *V. odorata*. Its leaves, which are all long-stalked and upright, are usually heart-shaped, and have a broad sinus at the base; they are sometimes variegated, and in this state make an interesting display in the rock garden. Its flowers vary also considerably both in size and colour; they are deep or pale violet blue or purple, sometimes nearly white or variegated with white. It is common on low grounds everywhere, and flowers from April to June.



V. cucullata.

likes a rich rather light peaty soil, and we find it does best on a western exposure. It is figured in the *Flora des Serres* as *V. p. var. atropurpurea*, t. 1361. It flowers in summer, and may be increased by seeds and division.

V. rotundifolia (Round-leaved Violet).—Though one of the old North American species, this has been until lately comparatively rare in gardens, and, as far as I can judge, it is an undoubted acquisition, even considering the large number of Violets now grown. It forms a short rhizome or creeping stem not unlike that of *glabella*. Being dwarf and compact in habit, it is very useful both for the rockery and front of the herbaceous border. The flowers, which are light yellow, are produced in great profusion during April and May. The leaves are round or heart-shaped, with slightly crenated margins; they are about

It merges into *palmata*, the leaves being from three to seven-parted. *V. cordata* is also a variety.

V. sagittata (Arrow-headed Violet).—This is said by American botanists to be an extremely variable species, *V. ovata* and *V. emarginata* being forms of it. One or two of its varieties are always the first to flower in spring, even before *V. cucullata*, which usually blossoms towards the latter end of March or early in April. It makes a charming addition to the rockery, where it never fails to produce an annual crop of sweet-scented flowers. In ordinary borders it also blooms with remarkable freedom. In borders, however, we usually raise the soil about it by means of stones, as it seems to prefer a rather dry situation. In the vicinity of Philadelphia I am told it is always found on dry slopes, and in this country it produces flowers more freely in well-drained beds. It is rarely

ever more than a few inches high, and it produces numerous rather large purple-blue flowers. Its leaves, which are oblong heart-shaped, half-bell-shaped, or arrow-headed, the latter form being the most prevalent, smooth, but often hairy, especially in the case of plants from high altitudes. It is fairly common in the Northern States in open fields and hill-sides, Canada, Michigan, and Florida; increased readily by division.

V. biflora (twin-flowered Violet).—This is really a charming little plant for half-neglected spots, &c. on rockwork. It is widely diffused over Europe and



V. biflora

Asia as well as America, and is now pretty well known in our gardens, where we find it particularly useful in filling up chinks in old walls and junctions of old steps, &c., in shady positions. We are told that in many parts of the Alps every crevice between the moist rocks is densely packed with it; its long roots and stems even crawl under great boulders, and it is frequently found lining shallow caves with its bright green kidney or heart-shaped leaves and bright yellow flowers. Perhaps the best clue to its treatment where conditions just named are not available, will be found in the fact that it grows intermixed with *Soldanellas*, and that where we find the latter do well, this Violet will also be found to flourish. Like *Arenaria balearica*, *Saxifraga Cymbalaria*, &c., there will be no difficulty with it when once fairly established, as it is well able to take care of itself. It is easily increased by division of the roots. The flowers, which are borne in pairs, are small, but bright, the lips streaked with black lines. They are produced throughout the summer months.

V. canadensis.—This is quite a different stamp of Violet from any of those enumerated in detail, having more or less of an arborescent look about it, although it dies down in autumn with the others. It is very easily accommodated in the ordinary flower border,



V. canadensis.

and is also useful in shady spots on rockwork, flowering, when well treated as regards compost, more or less from April until September. It grows from 1 foot to 2 feet in height, branching towards the top, and producing numerous whitish flowers, of medium size, and slightly tinged with purple underneath. The leaves, which are mostly on the stem, are heart-shaped, sharply pointed, and serrated at the margins.

It is found in moist woods along the Alleghanies. *V. striata* is nearly allied to it; it grows from 6 inches to 10 inches high, is branched, and bears numerous cream-coloured flowers, the lower petals of which are prettily streaked with purplish lines.

V. CLABELLA.—This pretty little species somewhat resembles *V. biflora*, inasmuch as the flowers are about the same size, and have the dark lines running from the eye, but it is only one-flowered instead of two, as in the case of the other. It forms thickish creeping rhizomes, which lie half-buried on the surface, and which are thickly covered with scales or leaf-scales. These rhizomes, when the plants are in robust health and any accident happens to the primary bud, produce buds which eventually throw up leaves and flowers on their own account. It is a charming plant for dry, sunny situations on the rocky, and grows freely in a light sandy soil, free in winter from stagnant moisture. It rarely grows more than a few inches in height.

BUTTERWORTS.

The *Pinguiculas*, or Butterworts as they are popularly called, are nearly allied to the Primworts, from which they differ among other points in having irregular flowers and also in the stamens being alternate with the segments. They are chiefly natives of temperate and cold regions, where they inhabit marshy places. Seven are natives of America; two, besides *P. grandiflora* and *lusitana*, are found wild in our own country in company with *Droseras*, &c. In the north of Scotland, and Ireland especially, they are pretty plentiful, one or two of the species being very abundant in Ross-shire, in many instances completely carpeting small tracts over the moors. The peaty ground in which they are found is naturally moist and spongy, and in cases of even prolonged drought the plants flourish and flower in quite a surprising way. In many places, however, in which they are plentiful, they are shaded by scraggy Heath. The treatment which they receive during winter in a wild state seems to be somewhat at variance with that which they receive under cultivation, the stations where they were most abundant being entirely under water at that season and impassable on foot. *Pinguiculas* are very interesting plants, and well worth cultivation where they can be accommodated. Their cultivation in pots is very simple, and I know of no sight more interesting than that of a well-flowered plant of the species figured in the accompanying plate.

In growing Butterworts out of doors it will be necessary to have a specially prepared bed for them, *ic.*, if there is no natural bog. It must not be too damp, and, above all things, it must be well drained. Peat to the depth of a foot or so must be provided, and a good sprinkle of Sphagnum, living if procurable, to keep them moist during the summer. If in a shady position, so much the better, as *Lycopodiums* may be introduced as well as *Droseras*, *Dionaea muscipula*, and other interesting alpine. During winter buds are formed in the same way as in the case of some of the Primulas; they are easily displaced, and birds in search of food often do a large amount of damage to them by stirring them up and leaving them exposed. The bed should never be cleaned or raked over in winter except with the greatest possible care. *P. grandiflora* (the Irish Butterwort) is, as may be seen by the accompanying plate, a handsome plant and one well adapted for cultivation in our gardens. It is apparently variable, even in a wild state, both in size and colour. It is found in Ireland, and is also abundant near Penzance, but is said to have been introduced. It is plentiful, however, in the west of France, on the Alps, Pyrenees, and other places, a rose-flowered one being found in the Alps of Dauphiny. For garden purposes *grandiflora* is perfectly distinct from *vulgaris*;

although often quoted as a sub-species, it is far more showy than *vulgaris*; indeed, few plants present a more charming appearance early in the year than a well-grown group of *P. grandiflora*; the mass of large, deep, and rich purple or rose-coloured flowers which it produces contrast well with the bright hue of the leaves. Next to *P. caudata*, a large, bright-coloured species, the Irish Butterwort is by far the showiest. *P. caudata* is not hardy in the open air; although it stood uninjured until well on into December, it succumbed at the first approach of severe frost; it is possible, however, with the protection of a hand-light to get through the winter safely. *P. vulgaris* is much smaller in every way than *P. grandiflora*, and useful only in the way of variety. *P. alpina*, a little white species with a yellow throat, is rare in cultivation. *P. lusitana*, which is also small, bears pretty lilac flowers, with a yellow throat; others worth growing are *lutea*, *villosa*, and *elatior*. D. K.

FERNS.

W. H. GOWER.

DORYOPTERIS.

THE charming small-growing Ferns belonging to this genus are nearly related to *Pteris*, from which they can readily be distinguished by their netted veins. The fronds of *Doryopteris* when mature are nearly all palmately or digitately lobed; in some instances, however, the immature fronds are quite different in form from those that are mature; they are thick and coriaceous in texture and deep green, whilst the continuous marginal band of brown sori is very conspicuous. These plants do not require a great amount of pot room, nor would they be so available for indoor decoration if they did. Although they enjoy tropical heat, the leathery nature of their fronds enables them to withstand with impunity a comparatively cool temperature, and consequently they may be used effectively in Wardian cases. This is the best time for repotting or surface-dressing them. If in Wardian cases, and the drainage is in good order, then a little fresh soil is all they require; in repotting care must be taken not to injure the roots; when that happens the fronds become deformed. For compost use a mixture of peat, loam, and sand. *D. nobilis* is a bold-growing kind—by far the largest species in the genus; when young the fronds are sagittate, but when mature, they become large, broad, and palmately divided, from 12 inches to 18 inches high, and about 9 inches broad; their colour is bright shining green, and in all stages of growth the divisions and segments are ornamented with a central band of white. *D. sagittifolia* is a free-growing plant with simple spear-shaped fronds, from 6 inches to 1 foot high, of a rich shining green. *D. aleyonis* is considered by some to be a miniature variety of the preceding; it is, however, we think, thoroughly distinct; for whilst in a small state the fronds are simple and spear-shaped, they ultimately become palmate, a change not seen in *sagittifolia*. *D. palmata* may be considered a miniature of *D. nobilis*, being much smaller in all its parts, the fronds seldom reaching more than 9 inches or 10 inches high. *D. pedata*, whilst resembling the preceding, is thinner in texture and more distinctly lobed. *D. collina*, again, is dwarfer and less divided than any of the other members of this genus.

SHORT NOTES—FERNS.

Fern album.—Having dried part of a collection of *A. Hartwegii*, *Pteris*, and *Schizandra*, I now wish to put them in some kind of album or book made specially for Ferns. Will some reader of THE GARDEN inform me where to get

such a book? or if not able to get one specially for Ferns, what kind of a book would be most suitable to put them in? —F. C.

Pteris Mayi.—This is a crested form of the well known *Pteris cretica albo-lineata*. It is very dwarf and compact in habit, and a plant that stands well in sitting-rooms.

TASSELLED AND CRESTED FERNS.

I OBSERVED some correspondence in THE GARDEN of August last on the subject as to whether the British Ferns are more prone to become tasselled and crested than the exotic species. Having had a little experience in collecting Ferns both in New Zealand and in the old country—say, about thirty years in New Zealand and nearly as long in Scotland and England—my experience may possibly be of some little service in the matter, as I observed that New Zealand Ferns are mentioned by at least one of your correspondents. In my experience I find more of the New Zealand Ferns than of the British have a tendency to become tasselled in their natural habitats. We have in one locality near Dunedin *Lomaria fluviatilis* so much crested and tasselled, that it would be difficult to find a plant that is not more or less tasselled at the ends of the fronds; and in other gullies in the immediate neighbourhood to all appearance as favourably situated, the difficulty would be to find a plant to sport at all of this the Fern most prone to do so of all our New Zealand Ferns. We have several very fine tasselled specimens of the *Lomaria* family, such as *L. discolor* and *L. alpina*, which, I understand, are both introduced into England. We have also a very fine tasselled variety of *Asplenium falcatum* and of *Aspidium aculeatum* var. *vestitum*, also of *Todea hymenophylloides*. And one of our small Tree Ferns, *Asplenium Colensoi*, is found with the pinnules all forked or branched near the midrib of the frond, which causes the pinnules to cross each other, giving the massive frond a fine appearance. Many others we have with forked or slightly crested fronds, but if left to Nature they soon disappear, as the normal forms soon choke them out if some of our hunters for those tasselled varieties do not find them and carry them off. A. C. PURDIE.

Otago University, Dunedin, N.Z.

The Parsley Fern (*Allosorus crispus*).—Two or three of the statements acent this pretty native Fern, as made at page 139, are, in my opinion, rather misleading. It is by no means easily cultivated, as every grower of our native Ferns knows right well, for you may imitate soil, position, and aspect, but you cannot introduce to your garden the pure mountain air in which this Fern above all others seems to delight. Instead of the broken bricks and peaty loam recommended for its culture, take my advice and substitute smashed-up slates freely commingled with a free, sandy, red loam, and nestle the plant away below some overhanging boulder where no raindrops can bedew its peevish crown, and you will succeed best—at least you will be imitating as nearly as possible its natural position and soil, minus, of course, the clear bracing air of its native hill-sides. If you cannot do this and must plant on the level, place a flat stone or piece of slate directly on top of the crown, for rarely, save in either of the above ways, or else projecting perpendicularly from an old stone dyke, do we see the Parsley Fern in its wildest luxuriance. You say it dislikes lime. That cannot be: for some of the finest tufts in that spot where it flourishes in greater plenty than in any other part of the British Isles—where the whole hill-sides and quarry faces are literally carpeted with it—are peeping out every here and there from the old Cambrian walls of stone and lime. It may not be partial to lime, but I question much if it dislikes it. Again, it is said that the Parsley Fern occurs in great plenty in a quarry in Perthshire; well, I have collected it in two of these, but it is not plentiful either in Ledriaskie or Ballindalloch slate quar-

ries; in fact, in Central Perthshire (Strathbearn district) it is considered quite a rarity. In Lediarskie quarry I only found one sizeable tuft, and I have visited this quarry on several occasions since that time, but the tufts of Parsley Fern were few indeed.—M. A. W.

KITCHEN GARDEN.

W. WILDSMITH.

VEGETABLES, OLD AND NEW.

THOUGH I do not class myself amongst those who accept for granted without inquiry all that is written, or all that certain persons may say for or against any particular variety of vegetable, I at the same time have at least as strong an objection to join the now fashionable class, namely, that which abuses all and sundry new introductions, apparently for no better reason than that they are new. I consider that the advancement made as regards novelties has been very great, and might have been greater had there been less rivalry amongst seed firms. Let us, for instance, take Potatoes. The best kinds a very few years ago consisted of Regent and Scotch Champion, which were excellent in quality, late in the season, but so ugly and deep-eyed that a lot of waste occurred in the dressing, and of time, too, in peeling. Now we have at least a dozen kinds of better quality, with a smoother surface, double yield, and less liable to the murrain. Amongst these are Magnum Bonum, Reading Hero, Prime Minister, M.P., Reading Russet, and others. As with Potatoes, so with Peas, not that the quality of such varieties as Ne Plus Ultra, British Queen, and Champion of England has been, or indeed is likely to be exceeded, but in robustness of growth that battles with drought and keeps mildew in check, a vast improvement has been effected by the introduction of such varieties as Telephone, Gladiator, President Garfield, and Duke of Albany; whilst as regards early varieties, we now get nearly as high quality as in the late Marrows in such varieties as William the First, Alpha, and Advance. To allude to the improvements made in other sections of vegetables would be but a reiteration of the foregoing, and as for obvious reasons the names of firms or introducers cannot be mentioned, I close by advising the sceptical to stick by their old favourites so long as they serve them well; but, at the same time, I exhort them to be charitable, and believe that improvement as regards varieties is possible, and not only that, but that it has already been accomplished.

SOWING SPRING ONIONS.

ONIONS may follow any crop that is cleared off early enough to permit of the land being trenched up before the winter is too far advanced. Manure should be liberally used, and if the land is light the chief dressing of manure should be given now in a well decomposed condition, night soil that has been worked up into a compost being specially effective. In manuring light soils for Onions it is best not to bury the manure too deeply. If lightly forked in, it will have more influence upon the crop than if buried deeply with the spade. The strength or essence of the manures being easily soluble in water, is in non-retentive soils carried deeply down with every spring shower, and though doubtless the roots follow and arrest some, still, I think, a loss has to be submitted to if the manure is laid too far from the surface.

THE MAGGOT is the great curse to the Onion crop on light soils, and in a dry season no certain remedy has yet been discovered. A dressing of salt, at the rate of 8 ozs. to the square yard, applied now will be useful. Nitrate of soda, at the rate of 6 or 7 lbs. to the rod or perch, may

also be recommended, not to kill the maggots or to prevent the flies from depositing their eggs on the plants, but the stimulating effect of the nitrate often enables the plants to make a rush past the period during which they are susceptible to the attacks of the maggot. Soot, again, is a most useful agent employed as a dressing now, and once or twice about the time the Onion fly is laying its eggs. A dusting of soot over the young plants, at the rate of half a bushel to the rod of land, about the end of April and again towards the middle of May will probably, by making the plants distasteful, cause the flies to lay their eggs elsewhere. Whenever the maggots do attack the plants all those infested should be removed and destroyed every two or three days, as, although it may not make the present crop any better, it will be the means of destroying large numbers of the insects, and so reduce the number of our enemies next year.

THE LAND MUST BE FIRM FOR ONIONS.—This is absolutely necessary to secure large, bright-skinned, well-matured bulbs with small necks, and this of course implies that the cultivating operations should be done during dry weather, even if we have to wait beyond the usual day for sowing, for it will never do to tread the soil when the surface is wet. If the land has been well worked and the surface made firm by treading or rolling, the drills should be drawn 10 inches apart and not more than half an inch deep. Onion seeds will grow if buried deeper, but thick necks and imperfectly formed and badly ripened bulbs are mainly caused by deep covering of the seeds. The latitude of the place should have some influence upon the time of sowing. In the south of London the earlier in March Onions are sown, if the land is in good condition, the better, but north of London from the middle to the end of March will furnish suitable opportunities for sowing. When we are quite sure that a large percentage of the seeds we are committing to the ground will grow, it is not wise to sow too thickly. It is perfectly true Onions can easily be thinned, but when sown thickly it is not an easy matter to draw those not required without disturbing too much those which are to be left for the crop. It is not necessary to grow many varieties; a true stock of the advanced type of White Spanish, such as the Sandy Prize or Nuneham Park, and a good type of the Globe, such as may be had in the Magnum Bonum, will supply every real need. E. HORDAY.

GLOBE ARTICHOKE AND THE FROST.

THOSE who neglected to protect the crowns of their plants either with rough strawy manure, or, better still, mounds of ashes, will in many cases find that the frosts have destroyed them. Even where they are so protected, considerable numbers are apparently either dead or so much weakened as to be rendered comparatively worthless. At any rate, I shall be surprised if half our stock of plants do us any good service this season without any extra trouble being taken with them. If they were of so little worth, as many seem to imagine, we need not concern ourselves about them; but as it happens the Globe Artichoke is considered a high-class vegetable in most large establishments, and not a few of the less wealthy classes have acquired a liking for it: consequently some method of renovating the plantations will have to be adopted. Luckily, it is no new experience, nor is there much room for regret, seeing that new plantations produce much the finest and most succulent, therefore the most valuable, heads. Many are content to depend on the old plantations till they are really obliged to renew them. So much superior in every respect are the young plantations, that we annually destroy two long rows and re-plant two others, none remaining undisturbed longer than three seasons. Globe Artichokes should be well grown, or not at all. Supposing a few strong clumps survive, they will soon push up a number of weakly leaves, and before these are far advanced the time has arrived for lifting and dividing. They may be split up roughly with forks or spades if necessary, every crown with a

portion of the old stem and roots attached being suitable for planting singly. In any case it will be late in the season before many of these arrive at a flowering stage, and in order to gain time I would advise that some of the old clumps be lifted and bedded in good soil somewhere in gentle heat, say an earlyinery. This will cause them to start quickly, and they may then be split up and potted off singly into 8 inch pots, or larger if need be. Any rich, loamy soil is suitable, and the plants should be kept in gentle heat till they have partially filled the pots with fresh roots, when they ought to be gradually hardened off preparatory to planting out. This may appear a laborious and uncalled-for proceeding, but it is no more than many of us find necessary in the case of Cannas and various other bedding plants. On no account ought Artichokes to be allowed to become badly root-bound, this causing premature flowering, and therefore the loss of so much labour. Planted out before they receive any check to their growth, they will, if properly attended to in dry weather, soon take to their fresh quarters and not be long before they are productive.

SEEDLING ARTICHOKEs are not often grown, this being partially due to the fact that no seedsman, at any rate that I have yet tried, is in a position to supply a good stock. A good percentage of the seedlings usually more closely resemble Cardoons than Artichokes, and, in all probability, the seed is saved in the neighbourhood of the former. These Cardoon-like Artichokes form strong branching flower-stems, and abundance of spiny worthless heads, which make us wish that good varieties were equally as prolific. Those seedlings, presumably of the Purple Globe variety, are the most uncertain, and if we find it necessary to sow any seed this season, the Green Globe only will be tried. Each time we previously grew seedlings we obtained several that produced extra fine distinct heads, and these were both succulent and good in quality. About half the plants were useless, the rest did good service at a time when Globe Artichokes were scarce. The seed may be sown in pans of fine soil, and placed in heat any time in March, the seedlings being potted off singly into 3-inch pots, and kept growing for a short time in gentle heat. Before they are root-bound they ought to be gradually hardened and finally planted out, some kind of protection being afforded when spring frosts prevail. These should produce heads early in July and last till September. Those who do not possess the facilities for raising plants early may yet rear plenty in the open ground. Early in April the seed should be sown, one long shallow drill perhaps being ample. The seed soon germinates. The seedlings require to be lightly thinned out at first, and eventually be left not less than 2 feet apart. If a second row of plants is required, some of the thinnings may safely be transplanted with a trowel. From seedlings raised in this manner we have cut very fine heads that were fit for use late in August and during September, or at a time when Globe Artichokes are not often seen in good condition.

PREPARING THE GROUND.—Artichokes, whether obtained by division of old stools or from seed, are gross-feeding subjects, and more than ordinary pains should be taken in preparing the soil for their reception. Where the nature of the sub-soil permits, bastard trenching should be resorted to, this, I may add for the benefit of the uninitiated, being the technical phrase for describing land dug two spits deep without reversing the positions. Plenty of rough manure ought to be mixed with the bottom spit, and a good dressing of partially rotten manure be well forked into the surface soil; the latter gives the plants a good start, and the roots find something to feed on when they reach the sub-soil. In the case of gravelly, chalky, or solid clay sub-soils, it is advisable to increase the depth of good surface soil by adding to it rather than resort to trenching, which is not always such an unmixed benefit as we are frequently led to believe. On light sandy soils we have prepared trenches as for Celery, and in these Artichokes grow most luxuriantly, especially if well supplied

with water during hot and dry weather. On well prepared land the rows of plants ought to be 3 feet apart, and ours are the same distance asunder in the rows. Starting early with single strong crowns, obtained by dividing the old clumps, these soon touch each other all round, and produce an extra strong branching flower-stem, and the plants last in a profitable state, as before stated, for two more seasons, always supposing they are not damaged by frosts. All vigorous old stools require to be freely thinned out both in the spring and autumn, otherwise a number of weakly crowns are formed, few of which are productive. Two or three strong growths only are requisite, these, if the roots have plenty of food and moisture about them, yielding abundantly. Last season we had a regular supply of good heads from June till late in November; and to prove, if proof be needed, how much Globe Artichokes are appreciated hereabouts, I should add that, out of the many hundreds of heads formed, not 10 per cent. were spoilt. Both these and Cardoons are of an ornamental character, and when planted in thin or newly-formed shrubberies and other positions in the pleasure grounds they are as effective as the majority of sub-tropical plants. The soil in which they are planted ought to be well enriched, otherwise not much progress will be made.

W. I.

MUSHROOMS FAILING.

I FIND many fail to get Mushrooms to grow satisfactorily, although professional gardeners contrive to grow them in all sorts of places, and even to get a continuous supply from open-air beds; and although we find Mushrooms springing up spontaneously, yet if we want a supply at a given date there is hardly a crop that comes under the gardener's care that needs more attention. The following are a few failures I have lately traced as being clearly due to want of the commonest precautions, viz. :—

Too shallow beds.—A gentleman who has been trying in vain to get Mushrooms to grow lately called on me, and said he had made his bed up exactly as described in treatises on their culture, but that no Mushrooms appeared. On inquiry, I found his beds had only 9 inches thick of manure, consequently it was impossible for the heat to be retained long enough to be of any service in the winter time, and had it been in the months when Mushrooms grow out of doors, there is little doubt that he would have been successful, but to put spawn into beds less than 1 foot thick is to court failure.

Too cold quarters may also be credited with plenty of failures during the winter. I lately went to look at some beds that the owner had taken great pains with, but as the Mushrooms did not appear he concluded that the spawn was bad. The reason, however, was obvious. The roof was made of corrugated iron, and the wind was driving in at every crevice, so that the beds were chilled worse than if in the open air. The owner said he had read of Mushrooms being grown in unheated sheds in winter. I have grown them myself in unheated places, properly speaking, but they have been close and warm, either by means of thick thatch or ceiling, or else in underground cellars, and in such places where beds are being constantly renewed the fermenting material will keep the temperature from ever falling below 60°. Many other causes might be cited, but the above are samples that frequently occur. Without going minutely into details, it must be obvious to anyone who observes the weather we get when Mushrooms are springing up on our pastures, that unless we give them treatment somewhat analogous as to moisture, temperature, &c., we shall look in vain for a crop. It is only as long as the latent summer heat lasts, and especially after droughts, when the soil is moistened by copious rains, and the nights are still and the Grass dripping with dew, that we get Mushrooms to spring up as if by magic. We cannot exactly fulfil these conditions, but we must copy Nature as near as we can, or failure must follow.

J. G. H.

Broccoli is generally good up to Christmas, but from then onwards to the beginning of March

such is unfortunately not the case. The fact is, that it is next to impossible to obtain Snow's true, and we have no good Broccoli to fill the gap between Veitch's Autumn, Leamington and Sprouting Broccoli. In succession to these come Cattell's Eclipse, Carter's Summer, and Veitch's Model, and these carry us on till the earliest Cauliflowers come in. These late kinds come into use at a time when vegetables are scarce. Nor do they make unprofitable crops for marketing, coming in as they do before the Cornish Cauliflowers, Ledsham's Latest of All, though very fine, is, I fear, rather tender.—J. R.

KITCHEN GARDEN NOTES.

CELERY.—It is now time to make the first sowing in pans to be raised in frames in which there is a temperature of about 60°, and if a second sowing be made a month hence there will be no occasion to sow again, as by pricking out the largest seedlings from these two sowings at various times a regular supply of the right sized plants may be had as ground becomes vacant on which to plant them permanently. I know of no vegetable that is more susceptible of failure from premature seeding or, as it is technically expressed by gardeners, "bolting." But this defect being solely the result of neglect in the earliest stages of growth, the remedy is obvious, namely, to be cautious that throughout the earlier stages of growth a check of any kind is occasioned to the plants, such as results from overcrowding in the seed-pans, a too sudden change from warmth to a colder temperature, lack of water, or by transplanting being done carelessly, with little or no soil adhering to the plants, and neglect to water them till well established in growth. When once that stage has been reached without the occurrence of any one of the causes of failure enumerated happening, a long continued drought, or the advent of the Celery fly, will find plants in such robust vigour as to effectually baffle their power to injure. Of course, if time can be afforded to mulch and water during prolonged drought, the produce will be proportionately larger and of better quality, and even if the fly does put in an appearance, an effectual exterminator will be found in dustings of soot, or wood ashes, or of both in mixture, applied in the early morning whilst the dew is strong, that the materials may adhere to the plants. I have occasionally met with amateur gardeners that do not grow Celery, owing to the prevalent idea that it can only be grown by applying manure in prodigious quantity, and though there can be no doubt that too much of this commodity is preferable to having too little, circumstances have many times compelled me to use so small a quantity, as with perfect truth to call it a mere apology for manuring, and yet our first scoring of failure to have moderately good produce has yet to be recorded. Given deep cultivation with free admixture of the refuse vegetable mould and ash from burnings of scraps from the clearings of hedges and ditches, and good produce may be had without a particle of manure being put in the rows or trenches. The best manure for this vegetable is old Mushroom-bed dung and rotted cow manure well mixed together; this should be spread in the trenches about 4 inches in depth and then deeply dug in with long steel forks. We prefer to plant in double rows, the width of the trenches being 30 inches, and the plants put in angularwise at a foot apart. If planted with good balls of earth attached, the watering they should receive as soon as planted ought to suffice till they are well established, when, should the weather be dry, watering would be advantageous, but if impracticable, apply all over the trenches about 3 inches depth of droppings or fine soil, which will keep the roots at work till rain comes, by preventing the too rapid evaporation of moisture.

Earthing up.—Only in respect of a small quantity that may be required for very early use, before the general lot is well blanched do we earth up, till the plants have nearly or quite completed their growth. To do this sooner is labour worse

than wasted, as, in the first place, the soil gets into the hearts of the plants, the great depth of soil militates against heat, air, and moisture, having due effect on the plants; and lastly, there is really no occasion for expending the great labour a half a dozen earthings involve, when, by one only, the blanching is just as perfect in a month's time from the process being done as it is in the case of plants that were earthed up three months earlier. Varieties are too numerous; those that I prefer are Dwarf Incomparable, synonymous with Sandringham, Sulham Prize Pink, and Major Clarke's Red.

TOMATOES.—The demand for these grows, and being used in so many different ways, one begins to feel some amount of hesitancy as to whether to class them as fruit, salad or vegetable, for really and truly they are all three in one; but the balance of preponderance being, as I think, on the vegetable and salad sides, I claim allusion to them in this department of the paper. Our first sowing we have just potted singly into 5-inch pots, and placed on shelves in an earlyinery. This batch is intended to be fruited in pots, and they will be grown on as rapidly as is consistent with the securing of sturdy, short-jointed stems. Each plant will be allowed to have but one main stem, and suckers springing from the base of it will be persistently pinched off; on the side or lateral shoots the fruit is formed, and soon as it is set and about the size of large Peas, the points of the shoots will be pinched out, and as further growth is made repeated pinchings will be continued till the fruit is ready to gather. This constant repression of wood growth materially aids the early ripening of fruit, but it is, of course, at some expense of size of single fruit as well as loss in bulk of general crop, but to get a few dishes extra early it is worth while to make some amount of sacrifice. Later plants that are required for succession will be grown on more leisurely, and will have but a small amount of pinching; the object being to obtain the largest amount of good sized fruit, there must of necessity, therefore, be more shoots, and as this batch will also be allowed to fruit in pots, what I call a natural process of repression of growth will begin the moment the pots get full of roots. We shall make the last sowing for the present season forthwith, and from this sowing shall select a last batch for indoors fruiting in pots immediately previous to obtaining supplies from the open air, but the bulk of the seedlings now to be raised will be grown on in pots with a view of having extra strong plants fit for open-air planting early in May. Later sowings may do in favourable seasons, but the odds are in the other direction, and I would therefore advise immediate sowing.

PLANTING ONIONS FOR SEED.—No reflection is intended or implied on any seed firm, or on the trade in general, when I say that, as a rule, the best seeds are those saved by the cultivator himself. The reason is obvious: there is constant personal supervision, and on pet objects no pains are spared to keep the stock true. Still, I would not be understood as advocating that everyone should be his own seedsman in everything, for were that to happen a very few years would suffice to land us in a fine muddle of mongrel stocks, occasioned by one neighbour going in for saving Cauliflower seed, and another neighbour's bees and the wind together would carry the pollen from his seeding Cabbage, and thus the round would continue. It is, however, a very different matter to grow only one or a couple of favourite stocks of seed for one's own use, and my hobby in this direction for a considerable period has been Onions, and out of it I manage to extract a large amount of pleasure and some profit (not cash, but learning), and the principal lesson has been demonstrative proof that by regular selection of the most perfect types for seeding is, if not the royal road to perfection, very nearly in that direction. Our bulbs have just been sorted ready for planting as soon as the weather will admit of our doing it. They fully appreciate a well-drained and deep, rich soil, and a position with full exposure

to the sunshine. We plant a foot apart each way, and, the bulbs being large, we make holes with a trowel, and well press the sets up to the base of the stems in the soil, and till well rooted they are, after each recurrence of sharp frost, again well firmed in the soil. We used to be troubled with the bulbs rotting off after the first flush of growth, notwithstanding all our care to plant only such as were perfectly sound, and for several seasons, the affection not being serious, took no heed of the matter. But at length the awakening came by the collapse of more than the ordinary number, which on examination were found to have made new roots, but which were in process of being eaten up wholesale by the ordinary Onion maggot. This attack of voraciousness had due effect on our memory the following season when preparing the ground, as to cause us to apply an antidote in the shape of a somewhat free use of soot and lime, the end of the matter being that the maggots' loss was our gain, both as regards peace of mind and seeds.

CUCUMBERS.—For growing in pits during the summer our plants are new in rough leaf, and the fermenting material for bottom-heat is in course of preparation, and consists of two-thirds leaves and the other of stable litter. We hope to make up the beds within the next few days, when the compost—light fibrous loam only—will be put on at once in hilloek fashion, and of sufficient width to admit of putting out two plants to each light, and additional soil will be added as soon as the roots are seen on the surface, and, meanwhile, the surface of beds not soiled will be of the greatest service, aiding as it will our scant supply of hot-water piping to maintain a temperature of 65°, which, except on very cold nights, will be the minimum temperature aimed at. Nightly coverings of mats, or some such material, is essential all through the spring months, and is better for the plants, even if the weather be sufficiently mild to do without it. We prefer to dispense with the fire-heat. Our favourite varieties for frame culture are Telegraph, Master's Prolific, and Cluster.

GENERAL WORK.—Marking out and labelling the various plots for seed-sowing as soon as weather conditions are favourable. Digging and manuring the borders recently occupied with Autumn-protecting Broccoli, Endive, Lettuce, and Parsley, part of which ground is immediately required for planting out Garlic, Shallots, sowing Radish, and a first small patch of Turnip. When the ground is hard through frost, manure and soil-wheeling is pushed forward; the latter material has been applied with a free hand over Raspberry and bush-fruit plots, which we never dig; indeed, the ground is such a complete network of roots that digging could not be done without serious damage to the bushes. The same remark applies to Asparagus plots, the top-dressing of which we have just done; also the lifting of remainder of Parsnip crop. W. W.

SHORT NOTE.—KITCHEN.

Chou de Burghley—I have grown this every season since its introduction, and I must reluctantly own that it has greatly disappointed me. The flavour is perhaps all right, although I think it inferior to that of good sprouting Broccoli, but the appearance of a quarter of it, looking as it does like a very inferior strain of Sugar-loaf Cabbage, is not at all creditable in a well-kept garden or select vegetables.—J. R.

Decorative purposes.—Those who use this expression somewhat freely may be glad to know that it originated with the floral committee of the Royal Horticultural Society. Some few years ago the committee, when confronted with plants in flower which could hardly be judged by florists' standards, and yet were so beautiful and so useful for all ordinary purposes, that, fearing to encounter an outbreak of criticism from the florists, compromised the matter by terming them decorative plants or kinds; hence the introduction of a descriptive term which means anything or nothing. Perhaps the term "decorative" has obtained some additional force by being applied to certain kinds of plants used in dressing houses, windows,

halls, and similar places. Some plant groups are also termed decorative groups.—A. D.

TREES AND SHRUBS.

W. GOLDRING.

THE CUT-LEAVED BEECH.

THERE is an airy lightness about the cut-leaved varieties of such trees as the Beech, Alder, Birch, and others, that renders them invaluable aids in producing a pretty effect in ornamental planting, an effect entirely different from that derived from other cut-leaved, or, to speak correctly, pinnate-leaved trees, such as the Ash, Walnut,



A form of the Cut-leaved Beech.

Ailantus and others. I know of few trees more beautiful than a Cut-leaved Beech as you see it in May after its leaves are unfolded of a tender sap-green colour, and if it happily associates with a Copper Beech, glowing at that early date with ruddy foliage, greater beauty is added to it. The Cut-leaved Beeches are simply forms of the common Beech, and differ in no other respect from it except in the cutting of the leaves. The fineness of the cutting of the foliage varies considerably, some forms being much more finely cut than others,



Another form of the Cut-leaved Beech.

and distinct names have been given to the sorts, according to the difference of cutting. There are several names, the commonest being heterophylla, asplenifolia, incisa, filicifolia, laciniata, and comptoniaefolia, but these are mere names for simply the Cut-leaved Beech, and in proof of this I have seen at least three of the so-called forms growing on the same tree. At Shopwyke, near Chichester, I saw last autumn a tree half of whose foliage was of the normal broad-leaved Beech, the rest cut-leaved, and this

did not result from grafting, as the cut-leaved branches were in parts intermixed with the other. Sometimes a whole tree of the cut-leaved form has been known to revert to the common form. The two illustrations herewith given represent two twigs with variously cut leafage. There is a distinct sort called salicifolia, or Willow-leaved Beech, that has the leaves long and narrow like a Willow, and not incised at all; but this is not constant, as the leaves will often appear cut on the same branch. But what concerns us most here is the value of the Cut-leaved Beech for ornamental planting. Like other good things among trees, one can have too many of them about a place. The position for a Cut-leaved Beech to show itself to the best advantage is on the outskirts of a heavy group of broad-leaved trees, such as the outermost point of a bend in the group. You then see the full beauty and gracefulness of the tree, its delicate green and distinct rounded outline. A good spreading Cut-leaved Beech makes a capital shade tree on a lawn, not being so dense as the common Beech. A Cut-leaved Beech does not associate well with the common Beech; they are too much alike, and the difference in foliage is not so apparent as when seen in company with entirely different trees; but, as before remarked, the copper Beech goes admirably with it, and there is a multitude of ways it can be used with telling effect. Little need be said about the culture of the Beech, as everyone who knows anything about trees is aware that Beeches of all sorts grow finest in chalky districts or in deep sandy loams. They do not thrive well on peaty soils; they grow certainly, but are very slow, and never develop characteristic growth. But there is scarcely any kind of soil on which one may not plant Beeches with successful results. Those who are making lists of trees to finish the planting season should bear in mind the Cut-leaved Beech, and they invariably do the copper or purple Beech.

The Myrtle-leaved Portugal Laurel.—The common Portugal Laurel, fine Evergreen as it undoubtedly is, may become very monotonous if planted too plentifully in small places, but its monotony may be relieved if a few of the small Myrtle-leaved variety is associated with it. This variety has a very neat appearance, as it is more compact in growth, has much smaller leaves, but of the same rich shining green. In small gardens where a good winter effect is wanted it would be found useful.

Ilex dipyrrena.—London classed this Holly with the species "that may probably be found half-hardy." But when he wrote this thirty years ago, *I. dipyrrena* was scarcely known in gardens; now it is known to be as hardy as our native Holly, and, moreover, a very handsome Evergreen, different from any variety of *I. Aquifolium*. The leaves are of a very dark, dull green, quite smooth-edged, and show a tendency to droop. It is not without value in ornamental planting where variety of effect is sought. In the best tree nurseries it may be bought, and specimens as much as 15 feet and 20 feet high may be met with. It is somewhat pyramidal and compact in growth, and reminds one of the Japanese Evergreen Oaks, such as *Quercus Euergeri*. This Holly grows wild in Nepal and Chinese Tartary.

The Chequer Berry, called also the Partridge Berry by the Americans and *Gaultheria procumbens* by botanists, is a diminutive little trailing shrub which I should like to meet with more frequently in private gardens, as it is one of the few precious shrubs that one can depend upon for winter effect on a rockery or rootery. It makes a dense creeping carpet of small leathery foliage of a deep green, and during autumn and winter the foliage is studded with bright scarlet berries about the size of Peas. It has a charming effect, especially when growing among old tree roots, where it seems most at home. It blooms in May, but the flowers, being so tiny and white, are not worth taking into account. It likes a

peaty soil and half shady spot. It is a Canadian plant, and also reaches the sunny mountains of Carolina. It grows wild in dry woods, mostly in sandy soils, and is strictly a cold climate or mountain plant. It may be seen at Kew in the rock garden.

LEYCESTERIA FORMOSA.

THIS is one of the many beautiful shrubs introduced to our gardens from the mountainous regions of Northern India. It is without doubt one of the handsomest hardy shrubs we have, possessing a beauty peculiarly its own. It is a medium-sized shrub, growing to a height of 6 feet or more in places most adapted for it. It is of elegant growth, as each long shoot takes a graceful curve. The bark is of a singularly bright green and so are the leaves, and these contrasted with the flowers and berries have a fine effect in autumn. The flowers are white, but the floral leaves or bracts are of a deep vinous purple, and these are really the showiest part of the inflorescence. The berries, too, are very ornamental, being of the same colour as the bracts. For several weeks towards the close of summer and far into autumn the Leycesteria is one of the most attractive of open-air shrubs, and the fact that it grows well in almost any soil adds to its value. It cannot be called a perfectly hardy shrub, because even in the south it is liable to be badly injured during severe winters, but it is rarely killed outright. During the terrible winters of 1880-81 it was killed to the ground in many places, but by May it again threw up vigorous shoots. It is an unsafe shrub for a heavy soil in a low spot, but the finest specimens I have seen were growing on heavy clay in mid-Sussex. These were planted on a high exposed bank by the side of the public road, and were fully 10 feet through and 6 feet high. I conclude, therefore, that the Leycesteria likes a strong soil and a dryish spot. Shade or even partial shade is not essential, though it is a capital shrub for forming an undergrowth under tall trees, provided that the shade is not too dense. It has been advocated even for covert planting, but it has not been used much in that way, probably on account of its not being grown on a large scale for the purpose in nurseries. Some beautiful effects may be obtained by it in pleasure grounds by planting large masses of it, with here and there an outlying isolated specimen cultivated so as to induce luxuriant growth. It is beautiful, too, when a few plants of it are seen rising out of a low undergrowth of such Evergreens as Mahonia, for then its bare winter effect is not so much noticed. There are many ways of planting this shrub with others so as to show off its beauty. In many old-fashioned gardens I have seen luxuriant specimens growing against warm walls, or conservative walls as they used to be commonly called. It has been, no doubt, planted in such places under the impression that it is tender. Other perfectly hardy shrubs used often to be grown on conservative walls, and a beautiful effect they produced. The Leycesteria was introduced about the year 1824, so that it is quite an old garden plant. It grows wild on the highest mountains surrounding the valley of Nepal, at elevations of from 6000 feet to 8000 feet. It grows there in forests of Pine and Oak. W. G.

Californian Wax Myrtle (*Myrica californica*).—In this North American shrub, commonly called the Californian Candleberry Myrtle, we have a most valuable Evergreen for English gardens, a shrub almost unknown beyond the limits of botanical collections, but it is assuredly one that would pay tree nurserymen to grow, propagate, and make it better known, as it is a first-rate Evergreen, hardy beyond a doubt, and grows and thrives in the poorest soils. It is a crooked-growing shrub, but in no sense an untidy-looking bush. It may be best described as being similar to the common Sweet Gale (*M. Gale*) in growth, but far superior to it, because its foliage retains a fresh green appearance throughout the winter, and it always forms a dense thicket of green, old plants being as much as 8 feet high. The leaves are narrow,

about 3 inches long, coarsely toothed, and are disposed in tufts on the branches. Unlike the Sweet Gale, there is no pleasant odour to the leaves when bruised. For dry, sandy mounds there is not a more suitable shrub, as it grows naturally on hill-sides. In the neighbourhood of San Francisco it grows into huge bushes. Another American *Myrica* (*M. cerifera*), is called the Wax Myrtle on account of wax being obtained from the berries. These abound in wax, and when boiled the wax is extracted. In the parts of North America where the shrub grows plentifully in a wild state the wax is used as a substitute for tallow for candles; these give a brilliant light, and while burning give off an agreeable perfume. The Wax Myrtle grows wild over a wide range in America. It is found in Carolina and Virginia, and extends northwards to New England and Pennsylvania. It is a very old shrub in English gardens, having been introduced so long ago as 1699, but even now one only meets with it in very old gardens and botanical collections.

The Butcher's Broom.—Mr. Wilks (p. 154) appears to doubt the hardness of this native shrub, but my impression is that there is not a hardier shrub in gardens than it. The most luxuriant growth I have seen of it is that at the foot of the chalk hills of Surrey, Sussex, and Hampshire, notably about Box Hill, near Dorking, and if I remember rightly it is one of the chief features in the open-air garden at Sir Trevor Lawrence's residence at Burford, which nestles snugly at the base of the hill; at Kew it grows admirably on the light soil, particularly along the bottom of the large mound near the Cumberland Gate entrance. It is doubtful if it would succeed if protected, as Mr. Wilks suggests, in a conservatory or winter garden, for, like other hardy plants under glass, it would soon become a prey to thrips and other pests. The observations of others in different parts of the country would, I am sure, be valuable to many readers. It is important to state the nature of the soil as well as the situation the plant is growing in.—W. G.

Variiegated Wellingtonia.—On the lawn in front of our conservatory there is a strong tree of the golden variegated *Wellingtonia gigantea*. Although it has not reverted to the green form in the slightest degree and grows freely, I have never been much enraptured with it, and at the present time if allowed to do as I liked with it, this winter would be its last. On the whole the variegated or most golden portions are not much damaged by either frosts or winds, but the leader is evidently badly injured, and a *Wellingtonia* without a good centre is far from being ornamental.—W. I. M.

Chimonanthus fragrans and Jasminum nudiflorum.—These useful wall plants have braved the cold of the winter so far well, and have been in flower here for these last five weeks or more. Although the individual flowers of the *Chimonanthus* are not very imposing in the way of colour, they make up for that deficiency by their fragrance. A small handful of flowering sprays of this plant placed in a vase will scent a whole room sweetly for days, while the *Jasmine* can be cut and used effectively amongst other flowers. Our plant of *Chimonanthus*, which is an old one, covers 25 feet of a 12 feet-high east wall. It would extend a good deal further, but that is its allotted space. When done blooming it is pruned hard back to last year's wood; all suckers that come up about the main stem are also cut close in, and the strongest shoots are shortened back about halfway. This is all the treatment it receives, except keeping it fastened to the wall, and when flowering time comes round the shoots are clothed with bloom like the shoots of a well managed Peach tree. The *Jasmine* is treated in the same way, except that it is not cut back in summer. It is allowed to grow freely and to assume its natural drooping habit, and when in flower in winter it has a cheerful appearance. We have it on a west and north-west aspect, and it does well on both.—W. WATSON, *Englehurst, Farley, Hants.*

The Algerian Silver Fir (*Abies baborensis*) is without question one of the handsomest Conifers

yet introduced, as it embodies all the points constituting a first rate ornamental tree. It has very handsome growth, is symmetrical in outline, yet not too stiff; the foliage is a bright cheerful green; it is a rapid grower and is thoroughly hardy, the late spell of cold having had no effect upon it. It is a strong grower, even on the poor soil at Kew, where by its luxuriant growth it may be at once singled out from the rest. Its affinity is with the common Silver Fir (*A. pectinata*), but nobody would mistake the one for the other. We have not seen any specimen in this country bearing cones, but Carrière states that the cones are borne erect, and from 5 inches to 8 inches long. This Fir is a native of Algeria, where it grows on the mountains at an elevation of from 4000 feet to 6000 feet, and, according to Veitch's Manual, is accompanied by the Mount Atlas Cedar (*Cedrus atlantica*). It was introduced to Europe about twenty years ago, M. de Lannoy having brought it into France. It has been till lately known as *A. numidica*, and is still grown under that name in nurseries.—G.

RAINFALL IN 1886.

SUBJOINED is the rainfall of 1886 here (Belvedere House, Mullingar) and at Belvoir Castle, Grantham. Belvoir is 237 feet above sea level, and Belvedere 367 feet. Both are in midland counties.

BELVEDERE, WEST MEATH.

Rain gauge: diameter of funnel, 5 inches; height of top above ground, 1 foot; above sea level, 367 feet.

Month.	Total depth.	Greatest fall in 24 hours.	Date.	Number of days on which '01 or more fell.
	Inches.	Depth.	Date.	
January...	3.66	.80	26	15
February...	3.62	.52	6	10
March...	3.88	.76	27	15
April...	1.97	.50	4	8
May...	3.07	.73	12	12
June...	1.55	.75	9	5
July...	3.23	1.10	17	12
August...	2.37	.45	13	10
Sept...	3.82	.83	25	13
October...	4.88	1.48	15	16
Nov...	2.20	.52	11	11
Dec...	4.21	.80	21	16
Total.....	37.95			146

JAMES BAYLISS.

BELVOIR CASTLE, LEICESTER.

Rain gauge: diameter of funnel, 8 inches; height of top above ground, 1 foot; above sea level, 237 feet.

Month.	Total depth.	Greatest fall in 24 hours.	Date.	Number of days on which '01 or more fell.
	Inches.	Depth.	Date.	
January...	2.69	.34	24	22
February...	0.36	.10	1	14
March...	2.62	.75	31	18
April...	1.86	.49	29	19
May...	4.28	1.09	14	20
June...	1.82	1.30	2	13
July...	2.71	.70	14	16
August...	2.08	.58	10	16
Sept...	1.36	.38	2	13
October...	4.23	.58	21	20
Nov...	2.26	.51	12	17
Dec...	3.56	.67	15	21
Total...	29.83			200

W. INGRAM.

The rainfall in Ireland exceeds that at Belvoir by no less than 8.12 inches. There are, however, sixty-three more days on which rain fell, entered at Belvoir, but that is probably owing to the fact that rainfalls only reaching '01 inches are registered there, and that these are probably due to local evaporation. In both places herbaceous plants, Roses, and bulbous plants do well. Evergreens do better at Belvedere, but the

striking difference between the two places is in fruit growing. While at Belvoir all hardy fruits are remarkably successful, at Belvedere even Apples are an uncertain crop. A striking exception is the *Pyrus Maulei*, which has fruited well in the open. It makes a most excellent preserve. It would be very desirable if the success or failure of the same plants in different parts of the United Kingdom could be carefully noted. There is nothing so misleading as a nurseryman's catalogue, and the arbitrary distinction of hardy, tender, and semi-hardy. The presence of limestone in the soil, of moisture in the atmosphere, of prevailing bursts of wind, of elevation, render a plant hardy in one place and tender in another. If a catalogue was properly drawn up, the conditions under which plants grew in their native habitat should be stated, and new introductions should not be supposed to thrive under conditions totally dissimilar to those under which they have been discovered.

BRINSLEY MARLAY.

PROPAGATING.

FERNS—This is the best season for sowing Fern spores, as if done now they pass rapidly through their more critical stages, which are, generally speaking, after they have been sown from one to two months, that is when the surface of the soil becomes thickly covered with their small mossy-like growth, and before any signs of young fronds can be seen. With regard to the composition of the soil on which the spores are to be sown, there are many different opinions, but I prefer a mixture of good yellow loam, peat, and sand, the whole sifted fine before using. Many choose a rough surface on which to sow the spores, and under these conditions they germinate just as well, but when necessary to be pricked off, that operation is rendered far more difficult if they are growing on lumpy soil. Before using, the soil should be thoroughly baked, in order to destroy all signs of life in it, whether animal or vegetable, for if this is not done, very frequently on the soil being placed in a position favourable to the growth of the spores, the whole surface will be overrun with coniferæ. This evil will be greatly lessened if the soil is baked beforehand. Whatever sized pots are used for sowing the spores in, they must be perfectly clean, and filled to within 2 inches of the top with broken crocks, then over these may be placed a thin layer of fibrous peat, and after that the above-mentioned compost. This must be pressed down moderately firm, and when finished should present a perfectly smooth and level surface. After that a good watering, or rather a succession of waterings, sufficient to give the entire contents of the pots a thorough soaking, must be given, and when this is the case all is then ready for the reception of the seed. The fertile fronds required for sowing having been gathered a little time previously, and laid in white paper in a dry place, will discharge their spores, which, owing to the colour of the paper, are very easily seen. All that is then necessary is to sprinkle the fine dust like spores as thinly as possible on the still moistened surface of the soil, to which they will readily adhere. They will then need to be so situated that a uniform state of moisture is maintained, and to ensure this a good plan is to place them in a close propagating case, and, in addition, to lay a pane of glass over each pot. Thus treated, they will need but very little water before germination takes place, but should they become dry, the better way to moisten the soil is to stand the pots in a pan of water sufficiently deep to reach about half-way up each pot. The moisture will, in this case, percolate through the whole of the soil, and thoroughly moisten it, without in the least disturbing the surface. As soon as the young Ferns make their appearance in the shape of a Moss-like carpet of green on the soil, the glass laid on the pots had better be taken off, and at the same time each pot should be examined, and any Moss that may be forming on the surface at once removed, for it is not done directly, the future growth of the Moss and Fern becomes inseparably associated, and in the end

the Moss will choke the remaining vegetation. Even after the glasses are removed from the pots, the young Ferns make more satisfactory progress if kept in the humid atmosphere of a propagating case, but constant supervision will be needed to see that they do not damp off, for should any signs of decay make its appearance a certain amount of air must be given to the case by tilting the lights, and if that does not stop the decay, or the spores become too much crowded, they must be pricked off.

To succeed with this operation, the pots and soil must be prepared as for seed sowing, except that, instead of being pressed down moderately firm, it is left quite soft, though level at the top. Then with a pointed stick take a small cluster of the growing spores and place them in position on the surface of the soil in the newly prepared pot. The soil being so light, a gentle pressure with the forefinger will keep them in position without in the least bruising the growing spores. After a pot is filled with these little tufts, each standing well clear of its neighbour, the whole should receive a good watering through a fine rose, which will settle everything in its place. After this the pots may be returned to the case, when, if the operation has been carefully performed, they will grow away without check.

Some kinds are far more liable than others to damp off during their earlier stages, the Maiden-hairs being, as a rule, among the more vigorous, while *Pteris tremula*, which is such a strong-growing kind when established, is, when first germinating, as subject to decay as any. Many kinds will need pricking off two or three times before fronds are pushed up; indeed, from one good clean pot of young seedlings in its first stage it is often easy to make a dozen pots all full of growing plants. By the time the fronds are seen, the curious Liver-wort-looking prothallus of a Fern will, in some cases at least, spread out to quite a considerable size and produce several young plants around the edge. The spore of a Fern differs widely from the seed of a plant, as this latter contains the future plant in embryo; while in the case of a Fern the spore may be rather regarded as a flower, for the organs of fructification are undeveloped when first sown. Owing to this, the possibility of raising hybrid Ferns has been frequently demonstrated, the mingling of the spores of two distinct species or varieties before sowing having resulted in a very mixed crop, the greater part of which would be simply a reproduction of the two kinds sown, while not unfrequently some individuals, exactly intermediate in character between the two, will make their appearance. This is especially observable in the genus *Adiantum*, for where several kinds are raised in this way, some very curious forms generally result therefrom. The temperature at which Fern spores should be kept when sown will, of course, depend upon the natural requirements of the plant, but, generally speaking, the better plan is to keep them a little warmer than the temperature required for the adult plant.

DIVISION.—This in various ways is also available for the propagation of many Ferns, especially those of a tufted growth, such as several kinds of Maiden-hair, the smaller *Pteris*, and a host of others. Another class amenable to this mode of increase is represented by those kinds with creeping rhizomes, such as *Gleichenias*, *Davallias*, many *Polypodiums*, and others. This latter class, even when the rhizome is above the surface of the soil, frequently produces roots on their own account, so that no further care is necessary than to take them off, and after potting place them under conditions favourable to growth. In the case of those of a tufted character, the usual plan is to shake them out of their pots as carefully as possible, and then divide the plant to the extent required. Any that may be obtained in this way are all the better if kept close for a little time till root action recommences.

This method was at one time much employed for the propagation of the cuneatum section of *Adian-*

tums, but those raised from spores are now generally preferred, especially where needed in the shape of small plants, as they are when young better furnished and of a more pleasing outline than those obtained by division. A great many Ferns, again, are prolific, that is to say, they produce perfect plants on the fronds, and in that case all that is necessary is to bring them in contact with the soil under conditions favourable to growth. This may be effected in two ways, either by bending down the fronds while still on the plant, or cutting them off and pegging them down on pots of soil. In this latter case especially they are better if kept close for a time; indeed, most Ferns make far more rapid progress if nursed during their earlier stages.

One caution to be particularly observed in sowing Fern spores is that, owing to their minute character and lightness, they float readily in the air, so that should several sorts be sown at one time the pots required for any one kind must be isolated, and the actual sowing carried out at some distance from the pots prepared for others, as if this is not carefully followed out a confusing mixture will in most cases be the result, and then the stronger growing kinds are very liable to destroy the weaker ones. Another precaution is to wipe the hands on a towel after each sort is finished and before commencing another. A good illustration of the way in which the spores of Ferns are transported from place to place is to be observed in most structures devoted to their culture, as young plants may be seen springing up in all directions, and often clothing a damp wall or some such spot with quite a mass of greenery. Though many kinds grow thus readily, there are, on the other hand, numbers that require very great care to raise them successfully from spores. T.

ORCHIDS.

W. H. GOWER.

CATTLEYS ALL THE YEAR ROUND.

ORCHID BLOSSOMS, owing to their singularity of form, variety in the way of colour, and often delicate perfume, are always appreciated. They are also remarkably persistent, some kinds retaining their beauty for months together. This to a great extent may be attributed to their not being fertilised by insects, for Orchid flowers, as well as those of other plants, quickly fade when fertilised. Certain genera of Orchids become now and then fashionable. At present *Lady's Slippers* carry the sway. Of these we have nearly two hundred species, varieties, and garden hybrids—an enormous number when one considers that some forty years ago they might have been counted on the fingers. At that time one who could successfully grow air-plants, as they were then called, was deemed a clever plantsman; and we fear the notion that they are difficult to cultivate has not yet been got wholly rid of. Be that as it may, it be may safely asserted that the majority of Orchids are as easily grown as ordinary stove or greenhouse plants. Much depends on the way in which their culture is commenced. Many begin with small imported plants, but these are just the plants on which the most skill and attention require to be bestowed in order to restore them to health and vigour, and years may elapse before they make a good display; therefore beginners should always start with fair-sized specimens of typical forms. Amongst these the selection should be confined to the most showy kinds, as, for instance, to the *Cattleyas*, which are all strikingly beautiful, although their flowers, as a rule, are not so long-lived as those of many of the *Odontoglossums*; nevertheless, they will keep in good condition for three or four weeks; therefore, anyone possessing from twelve to eighteen varieties of *Cattleya* may reasonably hope to have flowers the whole year round.

In January and February *C. Trianae* and *C. Percivaliana* will be in bloom; the flowers of the former measure about 6 inches across, and consist for the most part of some shade of blush or lilac, with a rosy purple lip, stained in the throat with some shade of orange or yellow. In *Percivaliana* the sepals and petals are deep blush, and the lip, which is prettily fringed, is deep magenta-crimson, with a paler margin, the centre being more or less mottled and streaked with velvety crimson and gold. In March *C. amethystoglossa* and *C. Mendeli* come into bloom; the first grows about 3 feet high, and usually produces from six to ten thick fleshy flowers upon a spike, sometimes many more; the sepals and petals are white, suffused with rose, and profusely dotted and spotted with purplish magenta, the lip being rich purple, flushed with magenta. *C. Mendeli* is a somewhat variable plant as regards colour, but in all forms it is extremely beautiful; indeed, it may be considered to be one of the best of *Cattleyas*. Its flowers measure from 6 inches to 8 inches across; the sepals and petals are white, or blush-white, suffused with pink, and the lip is large, and more or less magenta or magenta-purple. In April the two kinds just named will still remain in flower and be supplemented by *C. Skinneri*, which produces from five to ten rich, clear, rosy purple flowers on a spike. In May we have *C. Mossiae*, *C. intermedia*, and *C. Leopoldi*. Of these the first bears from three to four flowers upon a spike, each bloom measuring about 6 inches across; sepals and petals pinkish; lip crimson or purplish crimson. In *C. intermedia* the flowers are not so large, but they are numerous; the sepals and petals in this case are white, tinged with rose, and the lip is deep rosy purple. *C. Leopoldi* produces many flowers on a spike; the sepals and petals in this species are yellow, flushed with green and dotted with crimson, the lip being white and purple. In June, in addition to the last-named kinds, we have *C. Warneri*, a kind with flowers measuring upwards of 6 inches across; their sepals and petals are deep rose; the lip intense deep crimson, and beautifully frilled on the edge. This will continue well into July, when *C. crispa* and *C. Harrisoniana violacea* will maintain the display. *C. crispa* bears from three to five flowers on a spike; the sepals and petals are white, and the lip, which is also white and deep crimson in front, is much crisped or curled on the edge. In *C. Harrisoniana violacea* the sepals and petals are soft violet, the lip being a deeper shade of the same hue, with a stain of yellow on the front lobe. In August comes *C. Gaskelliana*, a very variable plant as regards growth; the flowers of the type are large, and their sepals and petals are rosy lilac, the lip being blotched with orange or yellow. *C. Dowiana aurea*, which also flowers this month, has golden-coloured sepals and petals, and a very large lip which is velvety purple, flushed with crimson, and beautifully veined with lines of gold. *C. labiata pallida* has pink sepals and petals, and a purplish crimson fringed lip. In September some of last month's flowers will still be in good condition, and to them may be added *C. bicolor* and *C. Eldorado*. The first, a tall, slender-growing plant, bears on a spike many flowers, the sepals and petals of which are coppery green; the lip is rosy purple edged with white. The sepals and petals of *C. Eldorado* are pale pink with a deep orange and purple lip; these two plants will keep in flower until October, and will be succeeded by *C. Harrisoniana violacea*, a variety which produces a second crop of blooms on the young growth made since August. In November *C. maxima* comes into bloom; its flowers, eight or ten on a spike, are bright rose, more or less heavily veined in the lip with crimson. With this may be associated *C. guttata*

with its many-flowered spike of flowers, the sepals and petals of which are greenish yellow dotted with red; the lip is white, flaked with purple. Both these sorts will continue into December, by which time *C. Trianae* will be ready to again come into bloom, and also the variety *delicata*, in which the flowers are white faintly tinged with blush and stained in the throat with yellow. There are many other beautiful species and varieties of *Cattleyas*, but the above will be found a good selection to start with, and if success is obtained in their culture, choicer kinds may be added at pleasure.

These *Cattleyas* are, with but one or two exceptions, profuse blooming kinds, and may be grown in pots or baskets as shown in the annexed illustration. An intermediate house suits them best—that is to say, a temperature which does not

or they may become permanently disfigured. *Cattleyas* do not require much water at their roots, but a genial moisture should always be kept rising between and through the plants. When growth is finished they should be kept somewhat drier, but never so dry as to cause shrivelling of the pseudo-bulbs. When the flowers begin to push through the sheath the plant should be watered freely, for if starved at that particular time the blooms are apt to open either small or deformed. Plants belonging to this genus do not like much soil about their roots; the pots in which they are placed should be drained in such a manner as to remain in working order for two or three years, and the compost should consist of fibrous peat from which all fine particles have been shaken, some nodules of charcoal, and Sphagnum or wood Moss; the



Cattleya Trianae.

fall below 60° at night, and rises during the day some few degrees higher. In summer the night temperature should not fall lower than 65°; an abundant supply of air should be freely admitted whenever possible, but cold draughts must be avoided, and a moderate amount only of moisture should be kept in the atmosphere. *Cattleyas* grow naturally upon the exposed branches of trees and upon rocks, a sure indication that they enjoy strong light; consequently they should be placed near the glass, and shading should be resorted to only during the hottest part of the day; it must never be forgotten, however, that the action of the sun's rays upon the foliage under glass is very different from what it is in the open air; therefore under glass the leaves should never be wet when exposed to sunshine,

latter will be found equally as good as Sphagnum for mixing with the peat. Plants at rest should be kept at the coolest end of the house.

***Cattleya Trianae* at St. Albans.**—This *Cattleya*, like the majority of plants that exist in widely distant localities, varies considerably in the colours and markings of its flowers; indeed, no two separate plants can be found to produce flowers exactly alike. It is a robust and free-growing kind, and generally begins to open its blooms about Christmas or early in the new year. *Cattleyas* indeed, if properly selected, can be had in flower all the year round, and they are, moreover, especially manageable even under Vines if these are kept properly stopped and thinned, so that they do not unduly monopolise the light. *C. Trianae* produces large flowers, which range in

colour from the purest white (which is even now extremely rare) through all shades of blush, mauve, lilac, rose, and purple to rich crimson, and hundreds of its gorgeous blooms are now to be seen at Mr. Sander's nursery, St. Albans.

Odontoglossum blandum.—This is by no means a common species in our collections, being very difficult to import alive; even in its native country it is not plentiful. It is found in very moist forests in New Grenada at an elevation of from 6000 to 7000 feet; consequently it requires to be kept both cool and very wet. At first sight it reminds one of *O. navium*, from which, however, it is very distinct. The spike is nodding, dense, and the flowers have a sweet perfume, somewhat resembling that of honey. The sepals and petals are pointed, white, and spotted with reddish purple; the lip, which has a spreading front lobe, tapers to a point, and is serrate at the edges. It is white, spotted sparsely with reddish purple near the base, and more or less dotted with the same colour in front. We recently saw this beautiful form in Mr. Measures's garden at The Woodlands, Streatham.

Cypripediums at Cambridge Lodge.—This genus is a specialty with Mr. Measures at Cambridge Lodge, Camberwell, and is represented by nearly a hundred and seventy species, varieties, and hybrids in luxuriant health, many of them possessing such strikingly handsome foliage, that flowers are scarcely necessary, so great is its beauty. Amongst the many fine forms, however, which are now in bloom we specially noted *C. Meirax*, with vinous purple flowers; a very fine form of *C. nanthum superbum*, in which the whole flower is richly suffused with crimson; a distinct form of the rare *Cypripedium Sallieri*, and a remarkable variety of *insigne* called *grande*, in which the dorsal sepal is large, and even whiter than in *Cypripedium Maulei*; another beautiful variety of the *insigne* type is *Richardi*, which, in addition to its other attractions, has the petals streaked and blotched with violet. *C. Williamsianum* is a very handsome cross between *C. villosum* and *C. Harrisianum* (the latter itself a hybrid); the peculiar markings of the leaves of this variety are perpetuated, whilst the flower is a happy combination of the colours of the parents. *C. melanophthalmum* is a pretty plant, the ruling colour in its flowers being Indian purple; *C. Haynaldianum*, which may with propriety be styled the winter-flowering *Cypripedium Lowi*, and many others are all here.

Moth Orchids (Phalæopsis) at Clapton.—Amongst the enormous quantities of Orchids in Mr. Low's nursery, at Clapton, especially noticeable at the present time is the great houseful of *Phalæopsis*, where thousands of spikes are just unfolding their buds, and, in the event of the weather being bright during the next fortnight, they will present a sight which has seldom been equalled in this country, as by that time many thousands of flowers will be open which at present are undeveloped. In looking over these plants it is no easy task to decide which is the fairest, as they each and all present so many charms to the eye. Of kinds expanded we noted *P. Stuartiana*, of which there are innumerable forms. The leaves when young are marked and streaked with silvery grey, but become almost plain when mature. The flowers are borne upon much-branched panicles; the upper sepal is white, the lower ones white or creamy white, dotted and freckled with cinnamon or chestnut, the markings varying much in density in the different plants. The central part of the lip is marked similarly to the lateral sepals, the margins and the recurved horns being white. *P. Schilleriana* is now well known for its beautifully marbled and transversely banded leaves, but with the return of each flowering season it appears to reveal fresh beauties. Amongst the numbers now flowering with Mr. Low it is not surprising that distinct varieties have appeared from those having flowers with deep mauve-coloured sepals and petals, through all shades to almost pure white; the mauve lip, ornamented in front with two recurved points resembling buffalo horns, is more or less spotted with reddish purple and stained with yellow. Another kind is *P. leucorrhoda*, which would appear to be a

hybrid between *P. amabilis* and *P. Schilleriana*. The leaves of this are marbled, but in a less degree than those of *Schilleriana*, whilst the beauties of both flowers are charmingly blended. *P. rosea*, although one of the smaller-flowered kinds, is a most desirable species, especially on account of the profuse way in which the blooms are produced, combined with the great length of time during which they continue in perfection. *P. Sanderiana*, now also open, appears to be another variety raised between *P. amabilis* and *P. Schilleriana*, the beauties of the two commingling and producing a totally distinct flower from that of *P. leucorrhoda*. In *P. Sanderiana* the sepals and petals are white suffused with a charming tinge of rose, whilst the lip is more or less marked with purple and yellow. The large snowy-white flowers of *P. amabilis* and *P. grandiflora*, the lip of the former being stained inside with rosy pink and purple, and that of the latter yellow or orange, are also opening in countless numbers, and go to make up a display which will amply repay a long journey to see.

SHORT NOTES.—ORCHIDS.

Cattleya bicolor.—From Mr. Marriott come flowers of a magnificent variety of this fine old species, large masses of which are flowering in his Edmonton nursery; the rich deep, rosy plum-coloured lip, having a broad marginal border of pure white, renders this *Cattleya* very effective.

Lælia alba.—This charming plant is now flowering freely in various nurseries round London, notably in those of Mr. Williams at Holloway, Mr. Bell at Chelsea, Mr. Lang at Forest Hill, Mr. Shuttleworth at Clapham, and Messrs. Horsman at Colechester. We would specially direct attention to the fact that it, and also various other Mexican kinds, such as *L. anceps* and *autumnalis*, grow and flower well if superceded in a sunny window.

Lælia flava.—This brilliant-coloured species is now in bloom in Mr. Measures's garden at Streatham, the brightness and distinctness of its flowers rendering it very conspicuous. It is a dwarf-growing plant, bearing upon a rather long scape a dense head of brilliant yellow flowers, the front lobes of the lips of which are heavily fringed.

Saccolabium bellinum.—This small-growing variety belongs to the same section as *Saccolabium eucoloræ*. The sepals and petals are pale yellow, irregularly blotched with blackish brown; lip pouched, white, with a large flat-spreading middle lobe, which is beautifully spotted with purple; disc yellow, dotted with red; edges prettily fringed. This is a Burmese species, which we recently saw in Mr. Southgate's choice collection at Streatham.

Pilumna nobilis.—This plant belongs to a small family which is closely related to the *Trichopogonias*. It is a dwarf plant of easy culture, and its fragrant blooms are produced freely during winter and early spring. The sepals and petals are pure white, as also the lip, which is stained in the throat with an eye-like spot of deep orange. We saw this recently in great profusion with Mr. Sander in his nursery at St. Albans.

Odontoglossum Ruckerianum.—This is considered to be a hybrid, *O. crispum* being one of its parents; its flowers are paniculate; the sepals and petals white, faintly suffused with blush on the margins, and spotted with chocolate-brown; lip creamy yellow, blotched with chestnut. This is said to be an early summer bloomer, but we saw it with Mr. Measures at Cambridge Lodge, Camberwell, early in February, where it had then been in full beauty for upwards of a month.

Cattleya Trianae (P. J.).—The *Cattleya* sent is one of the many forms of the variable *C. Trianae*, and is often named *alba*, which is misleading, the albivariety being pure snowy-white, with a slight stain of yellow in the throat. There are plenty of plants that produce white sepals and petals, and the lip is also white when it first appears; but in the course of a few days the front portion becomes suffused with pale mauve or blue, as in the flower you send, which is a good form, but not the *alba* variety.

Odontoglossum coronarium.—We recently saw this plant in bloom with Mr. Measures at The Woodlands, Streatham, under the name of *Odontoglossum brevifidulum*, a mistake we invariably see made in gardens. The flowers are produced from the pseudo-bulbs when just mature, and measure some 2 inches or $2\frac{1}{2}$ inches across, having the appearance of being varnished; sepals and petals reddish brown, with narrow yellow border, slightly serrated lip, with a spoon-shaped blade, bright yellow.

Cologyne cristata Lemoniana.—A well-grown plant of this lovely orchid now bears upwards of forty spikes of snowy blossoms in the gardens at Straffan, Co. Kildare. As this seed strong and healthy and laden with its pendant sprays, there are but few Orchids more beautiful at this season. At Mount Merrion there are several good and well-flowered plants of the typical *C. cristata* with large egg-shaped bulbs and a profusion of flowers. So fine are they, that they remind one of the Chatsworth and Bowden specimens of years ago.

Lycaste Skinneri.—These are largely grown by Mr. Sander at St. Albans in suspended baskets, in which position they show even to more advantage than in pots. Baskets full of these plants, bearing scores of bloom, have been conspicuous in the cool houses for upwards of a month, and yet to all appearance they are as firm and fresh as if they only opened yesterday. The ease with which these plants

may be grown, the great variety in their colours, and the length of time during which the flowers remain in good condition cannot be too strongly impressed upon the attention of our readers.

Orchid culture.—The arguments brought forward to prove that trade in Orchids is thriving are somewhat amusing. I have said that Orchid culture is on the wane, and given evidence to that effect, but the best evidence on that head is that furnished by "T. B." "At one time," he says, "desirable kinds realised more pounds than they now do shillings," and although this is given as a proof that trade in them is increasing, no one will accept that view. It would be the first time in the history of trade that a steady reduction in prices indicated a brisk business in anything. No doubt extensive importations have helped to bring this about, but the fall to shillings from pounds in price shows that the supply exceeds the demand by a hundred per cent., and that is exactly what Orchid dealers say. "T. B." has clearly not reckoned the significance of his admission on this head. Another cause of low prices is the numbers of private collections that have been thrown back upon the market of late years. I am not striving to render Orchid culture unpopular, but only stating facts. When purchasers disappear, trade is on the wane; and who, knowing the unparalleled reductions that have taken place in gardens all over the country lately, can pretend to say that the culture of the most expensive plants in the garden is on the increase. I could record facts that would demolish "T. B.'s" figures if I was at liberty to mention names. One private grower seeking a purchaser for his collection, consisting wholly of fine plants in good health, was obliged at last to part with them for about one-tenth of what they had cost him, and only one party could be induced to take them on these terms. Another grower parted with a similar collection on similar terms after offering his plants privately to reputed Orchid fanciers, none of whom were, however, buyers. A third grower, one of the best known, parted with a large collection of grand plants on equally easy terms.—W.

SEASONABLE NOTES ON ORCHIDS.

WHEN February comes in Orchid-growers carefully look over their collections, and every plant that ought to be repotted is seen to at once. Some may not require repotting, but they will need surface-dressing. During winter they will have been kept comparatively dry at the roots, and the Sphagnum dies; therefore, now that growth has in most cases begun, a little fibrous peat and some live Sphagnum pressed on to it will cause a mass of healthy roots to push over and into it. We began with cool Orchids; the first operation was to carefully sponge the leaves from dust, and to brush off any greenfly hanging upon the flower-spikes. When this was done the plants were ready for repotting or surface-dressing. Except in very exceptional cases, none of them are repotted in autumn, as they have to be kept comparatively dry at the roots, and in a dry atmosphere subsequently, which causes the Moss on the surface to die, and the plants must have a surface-dressing in spring. Many repot their *Odontoglossums* in autumn, and some continue the work through the winter. We are now repotting most of ours; the roots are not disturbed more than is necessary. Their state in the different specimens varies a good deal, being healthy in one case and in another decayed. Plants that have healthy roots will be repotted into larger pots. The others will have all decayed roots, and their surrounding compost removed and be repotted in pots one, or even two, sizes smaller than those in which they were previously. If the case is a bad one, the old potting material is washed off with rain-water, the roots are shaken dry, and the plant is at once repotted. We fill the pot half full of clean potsherds arranged very loosely, and the plant is potted firmly in the usual Orchid compound of fibrous turf, Sphagnum, and broken potsherds. These remarks apply to most of the *Odontoglossums* and *Masdevallias* of the M. Harryana, M. Veitchi, and

M. ignea types. Some species of valuable cool-house Orchids, such as *Oncidium maeranthum*, *O. Marshallianum*, and other *Oncidis* of this class, which push their roots more out of, than into the potting soil, require more careful handling. The last-named species does best in baskets suspended near the roof of the cool house. Under these circumstances, the roots twist out and in around the teak rods. *O. maeranthum* does well in pots, but it is best not to disturb it too often. Repotting once in two or three years will be sufficient. When repotted or surface-dressed the surface must be regularly watered with rain-water to encourage the emission of roots near the surface, and to keep the Moss in a healthy growing condition.

CATTLEYA HOUSE.—Inmates of this house should be attended to at the end of the month and in March. The handsome *Cymbidium eburneum* is pushing up its flower-spikes freely. We generally pot *Cymbidiums* in May once in two years. They have been surface dressed with turfy loam and decayed manure, for in potting or surfacing these we use very little or no peat in the soil. *C. Lowianum* requires much the same treatment. *Cologyne eristata* is also coming freely into flower, and at this time a little weak manure water applied to the roots is a useful stimulant. *C. Massangeana* and *C. barbata* are now pushing up their new growths; indeed I have potted these in peat and Sphagnum. *Aerides* also ought to be seen to as well as *Vandas* that succeed best in this house; all are grown in pots, as they are more convenient than baskets. These are filled up to two-thirds of their depth with clean drainage, and on the top are placed some Sphagnum and drainage in about equal proportions. *Vanda cerulea* has not yet been repotted. It seems to be quite at rest, so far as one can judge by the appearance of the roots. It does not take to pot culture so readily as the *V. suavis* and *V. tricolor* type do. We have always had the greatest success with it when potted in teak cylinders three-parts full of drainage. The cylinders become firmly interlaced with roots, which are also coiled round the insides of the pots. Rather than disturb these roots we merely remove the Moss from the surface and replace it with fresh material when the plants appear to be starting into growth. After that both Moss and roots are kept comparatively moist. *Cattleyas* are all pushing growths in various stages of development, and over-dryness would probably give them a check; but, on the other hand, watering them too freely might be even more injurious. A large specimen *Cattleya* might not require to be watered more than once in two or three weeks, even in the growing season, and much will depend upon the character of the material in which it is potted, and also as to its depth. Some give a greater depth of potting material than others.

IN THE EAST INDIAN HOUSE plants of *Odontoglossum Roczi* are throwing up their flower-spikes, and it is as well to look over them carefully with a lamp at night to prevent them from being injured by slugs, &c. I am inclined to attribute any success we have had in the culture of these plants to keeping the leaves quite clean by dipping them in tobacco liquor and keeping them in a minimum winter temperature of 60°. They are also repotted in June or July when the flowering period is quite over. *Oncidium ampliatum majus* has now pushed up a plentiful supply of flower-spikes. Slugs attack these most persistently when just pushing out from the sides of the bulbs, and destroy great numbers of them. These plants require to be placed at the warmest end of the house, and to be plentifully supplied with water when making their growth, and even when at rest water must not be withheld to the same extent as may be deemed essential to the well-being of some species of *Oncidium*. Plants of *C. gigas*, *C. Dowiana*, and others of this type have been kept in the *Cattleya* house in a comparatively dry state; they have not shown as yet any signs of growth, but as soon as they do so they will be placed in the warmest house quite close to the glass, and will also receive a good

supply of water at the roots. I fancy that all Orchids kept in quite a dry state at the roots during winter may be more freely watered after the resting period is over than others not so treated. The very remarkable *Cologyne pandurata* is a plant that ought to find a place in every warm house, and as it has been imported rather plentifully during the past year, many may be glad to know that it succeeds best in the warm house, and the best time to repot it is when the flowering period is over. Large specimens occupy a considerable space, and it is probably not adapted for culture in small houses; but the green and black flowers of large size produced on vigorous spikes are very remarkable. The handsome *Oncidium Lanceanum* succeeds best suspended close to the roof and grown in teak baskets. As the season advances and the leaves feel hot to the hand during sunshine, it is best to place it on the stage, hanging it up close to the glass again in winter. It ought not to be much disturbed at the roots; I would rather pick out any decayed material and replace it with fresh than turn the plant out altogether. The plants of this and other kindred species, such as *O. hamatophilum*, are now starting into growth, and require more water than they have hitherto had.

J. DOUGLAS.

NOTES OF THE WEEK.

The Crystal Palace exhibitions of plants, flowers, and fruit to be held during this year are as follows: Spring exhibition, March 26; great summer exhibition, May 21; Rose exhibition, July 2; fruit and National Dahlia show, September 2 and 3; great autumn fruit show, October 6 to 8 inclusive; and Chrysanthemum exhibition, November 4 and 5.

Royal Horticultural Society.—A special meeting of the council of this society has been summoned for Tuesday, the 22nd inst., when part of the business will be to appoint a sub-committee of the council to confer with the committee nominated at the annual general meeting to consider the future of the society's affairs. The following dates have been fixed for the meetings of the Narcissus committee, viz, March 22, April 12 and 26. Should the season be backward, it may be found desirable to hold another meeting on May 10.

The London parks.—According to the Public Parks and Works Metropolis Bill, it is proposed to transfer on the 1st October, 1887, the following parks and places, viz, Victoria, Battersea, Kennington, Bethnal Green, and Westminster Bridge, to the jurisdiction of the Metropolitan Board of Works, who are to maintain them, such maintenance (as far as is not met out of the income of properties transferred with the above places) to be paid out of the consolidated rate, and no part of the metropolis to be exempt from whatever rate may be levied for such maintenance.

Spring flowers in the Isle of Wight.—I send you a few spring flowers which have not appeared in your lists. Their names are as follows: *Colchicum luteum*, *C. vernum*, *Leontice Alberti*, *Iris Sophronitis*, *Muscari lingulatum*, *Helleborus colchicus formosus*, *Crocus Sieberi* and *C. damascenus*. The yellow *Colchicum* is a very pretty flower, and does not belie its name. The *Leontice* is closely related to *Bongardia Rauwolfi*, which Mr. Elwes declares to be "so choice, that no garden should ever be without it." I am indebted to the kindness of Prof. Foster for *Iris Sophronitis*, which is a most valuable little possession, as it bridges over the comparatively dead time of the year just before *Iris reticulata* makes its appearance. I plucked the first blossom of *Iris reticulata* in the open ground yesterday, which I send to you; it is just in time to shake hands with *Iris Sophronitis* before the latter disappears from the scene. *Anemone blanda* is an old friend, and not at all behindhand this spring. *Muscari lingulatum* came to me from Herr Max Leichtlin, and is certainly both precocious and very pretty. I wonder why *Niphion Histro* is not much more generally known than it is. It is invaluable during the winter months, and astonishes the beholder who sees it for the first time. Mr. George Paul seems to get on very well with it at Broxbourne, and it would, I think, do well any-

where in a light sandy soil. I have come to think that it seeds over my borders, as I have some flowering bulbs this year in places and patterns which neither I nor my gardener would have chosen for them. *Helleborus colchicus formosus* is one of the handsomest varieties I have ever seen of this delightful Hellebore. A whole array of Christmas Roses are in blossom here now, but I will not trouble you with their names. Of the Snowdrops mentioned by Mr. Webster, I cannot understand why *Galanthus latifolius* is so much later here than with him. I have no sign of bloom yet; all the rest are in blossom or they will be so in the course of a day or two. *Galanthus virens* was most kindly given to me by Mr. Allen. If fogs and snow still hang over the regions about London, it must be some consolation to you to know that in two or three weeks' time you will be as we are now. Though east winds still prevail, I can safely tell you that, so far as flowers are concerned, the winter is over and gone.—H. EWBANK.

National Chrysanthemum Society.—On Monday evening last the new floral committee of this society was elected, and the dates of meetings were arranged as follows: October 12 and 26, Nov. 9 and 23, Dec. 7. The society's exhibitions of early flowering varieties will be held on Sept. 14 and 15, the November show on Nov. 9 and 10, and that for late-flowering Chrysanthemums on Jan. 11 and 12, 1888. The new schedule was then submitted for the consideration of the committee, and various rules and regulations altered and amended.

Erythrina marmorata.—Unlike the common Coral plant and its varieties, this requires stove temperature all the year round, but under that treatment it is undoubtedly a free-growing kind. It is a plant of erect habit, shrubby in appearance, and has brightly-coloured variegated leaves, which, although of the same form as those of other kinds, are much broader. Their ground colour is dark green, heavily blotched and spotted with creamy white, the two colours forming an agreeable contrast. It was introduced, we believe, from the South Sea Islands some ten years ago, and since then its elegant and cheerful aspect has been noticed favourably on several occasions. Unfortunately, it is deciduous, remaining leafless during the winter months, and in that state it is now in flower in Messrs. Veitch's nursery at Chelsea, a small plant only a few inches high bearing one spike, consisting of about a dozen flowers, which, though smaller than those of the *Erythrina Cristagalli*, are disposed in the same way, and, indeed, are equal in brilliancy to those of a *Vesuvius Pelargonium*. If full-grown plants produce flowers in comparison to their size, it will prove to be one of the best plants which we have of recent introduction.—G.

Violets (A. D. P.).—The varieties sent are very fine flowers of their respective kinds.

Stephanotis (J. B.).—This occasionally produces fruits, but we do not remember to have heard of their ripening in this country.

Old yellow Rose.—If "F. W. Y." cannot obtain *Rosa sulphurea* at Rodger, McCalland's, of Newry, by next autumn, I will give "F. W. Y." a cutting of my plant.—FRANK MILES, *Shirchampton, Bristol.*

Narcissus seed.—Mr. Barr, King Street, Covent Garden, desires us to state that he has a quantity of *Narcissus* seed which he will be happy to distribute in small packets to anyone who cares to apply for them, and who will send their name and address on a stamped envelope. It should be sown, he says, where it can remain undisturbed till the bulbs get to flowering size.

Names of plants.—*A. Chelidonium.*—You *Cattleya Trianae* is an ordinary form only, but very handsome; *Odontoglossum Rossi majus*, good form; *Laelia anceps*, typical form; *Dendrobium Wardianum*, will probably improve.—*J. B., Rochester.*—Send leaf or specimen.—*G. S. B., Weybridge.*—*Cryptomeria elegans.*—*Falcata* 1, *Dendrobium Pierardi* 2, *Chelidonium elegans*; Orchids should be gathered when their growth is completed.—*G. B., Dunfermline.*—*Odontoglossum triumphans*, *Cypripedium venustum*, *Oncidium maculatum*; we cannot say where seeds of *Ambonia fragrans* can be obtained, but should think large seed firms could supply you.—*E. H. S.*—*Eupatorium riparium*, *Rhynchospermum jasminoides*; greenhouse.—*Leiberg.*—*Onoplosides verna*—*J. S., Cornforth.*—*Reineckia carnea.*—*Rondeletia.*—1, *Scleria aurea*; 2, *Eriola glauca*; 3, *E. sp.*; 4, *E. comosa* var.; 5, *E. campanulata*; 6, *E. lutea*; 7, *E. urceolata*; 8, *E. brunneata*; 9, *E. albicoma*; 10, *E. Monsoniana*; 11, *E. sp.* Will the sender of these specimens state in what district, and by whom they were collected? Seeds of 2, 5, 6, 7, 9, 10, and, indeed, of almost any of these *Eriolas*, would be acceptable.—*J. M.*—Without flowers we cannot name your *Araca*.

WOODS & FORESTS.

"YORKSHIREMAN."

WOODS THAT PAY.

AFTER all is said and done, I think it can be shown that the reason why English woods do not pay in these days is not because of the cost of management and culture on the whole, but because of the poverty of our woods in the matter of saleable timber of the right sort and size. Estates generally are greatly deficient in quantity and quality of timber. The ground planted has not been planted with the right sort of trees, and has not been allowed to produce as good a crop as it might have done. In the colliery districts of England foreign prop-wood is delivered in millions of feet annually at about as low a price as it is ever likely to reach, to the almost total exclusion of English timber, but low as the price is it would have paid any estate near these districts to produce the same kind of timber; $\frac{1}{2}$ -inch to 6-inch prop-wood, such as is used, could be grown here at the rate of about 5000 feet to the acre, which at 5d. per foot in the wood would give a return of from £2 to £3 per acre. I see no difficulty whatever to produce colliery poles of Larch at that rate, and I am estimating at the price of foreign Spruce poles as delivered here, which are inferior to Larch, and can seldom be used more than once, as they give way at the ends or in the middle. Corsican Fir would return even more. This is allowing room to grow poles 6 inches square in forty or fifty years or less time, according to the land. Spruces that I assisted to plant less than forty years ago in Scotland now girth more than that, but having been too freely thinned out have too many branches and knots for colliery purposes, and are useless for anything else. Of all the fallacies ever taught on the subject of forestry, that which inculcates giving timber trees room to produce more than a fair top only of branches is the worst, and it is a fallacy that has been freely acted upon. For those who are prepared to plant Ash, Sycamore, and Corsican Fir extensively, and to grow it as thickly on the ground as it should be grown, there is yet prospect of remuneration to themselves or their children, and the man who now plants freely and in proportion can afford to turn his mature crops into money at the same time. This is the right way to regard estate forestry at the present time. Fell what is ready for the axe and plant in proportion. This would give a good income from the wood and provide a future supply of timber; and after all, thriving young plantations are just as good to look upon as old ones, not to speak of woods that are both old and useless. Money without end has been lost on estates through neglect to fell and sell timber when it was good and in demand, and to plant an equivalent. On every well-managed estate there should be crops of trees of all ages and sizes, and a complete succession of crops regularly kept up, and so provide a regular return without impoverishing the estate.

Pinus rigida.—Mr. Webster's impression (p. 158) that this Pine will not succeed by the seacoast would be removed were he to see how it grows along the whole line of the south coast, where it stands better than most other Pines. He may see fine trees of it in the various arboretums from Devonshire to Sussex and the Isle of Wight, while a little way inland it thrives on the most exposed places. As to the composition of the soil it grows best in by the sea, I cannot inform Mr. Webster, as it never occurred to me that such a hardy Pine as *P. rigida* refused to grow in any ordinary soil; nor does it, as far as my experience goes. As regards the illustration given in THE GARDEN, which Mr. Webster criticises, I contend that it represents the tree well as far as the outline and

branching go, though it may not be the best example of the engraver's art. I see this Pine perhaps not "day by day" (as Mr. Webster says he does), but often, and not merely in one place, but in various parts of the country in old arboretums where it has developed its true growth, and I am well acquainted with the tree's peculiarities. Minute details as to the wings of the seeds being a fiftieth of an inch broader or narrower, or the cones being larger or smaller, are matters more for botanists than foresters, for whom we write. Mr. Webster has come to the conclusion that a good deal of the knowledge derived from books is faulty in the extreme. I grant this, but from what source did he get his? Life is too short to begin at the beginning of such a wide subject as trees, and not avail ourselves of what others have done for us. There is faulty information in books certainly, and in old ones this must necessarily be so, but it is only by comparing the observations of others with our own that we can hope to get knowledge on such wide subjects as gardening and forestry. There is happily a good storehouse of information about trees, which in the main is as true now as when written fifty years ago. We have to add to this knowledge, and the more we endeavour to do so, the less danger is there that we will look at things in a narrow-minded kind of way.—W. G.

COST OF RAISING FOREST TREES.

AMONG the various arguments that have been advanced in favour of planting, there is a rather important one not yet touched upon, and that is, the reasonable prices at which forest trees can in these times be obtained from public nurseries. As most readers will know, nursery stock, at least the forest tree department, increases in value until it is four or five years old, and if not disposed of then, it must be pulled up and burned. In dull times, such as those we have passed through during the last few years, a large proportion of the nurseryman's profit has been swallowed up in this way. It is not easy for those who have no experience of the cost attending the rearing of forest trees for the first four or five years to realise the expense and risk incidental to it. Take, for example, a crop of Larch. I shall suppose the seed to have been sown in May, 1885, and to have produced a good crop of healthy one-year seedlings which would last autumn be worth from 2s. to 3s. per 1000. Instead, however, of clearing them off during last winter or spring, suppose it was determined to leave them another year in the beds, they might then be expected to be worth 5s. per 1000 in the trade, or from 6s. 6d. to 7s. 6d. retail. But the temperature falls a few degrees below the freezing point in the end of April or in May, as it did last spring, nips the tender tops of the seedlings, and the nurseryman's hopes are blasted, so far as these are concerned. It is, however, a very much more serious matter when seedlings that have been planted out and grown in nursery lines for three or four years have to be burned on account of there being no demand for them. The expense incurred in the rearing of them is very considerable. In the first place, there is, as we have seen, the cost of the seedlings, then there is the rent of the land, which in different parts of the country varies from £5 to £12 per acre, the manure which will cost from £5 to £6 per acre, the cost of planting say 9d. to 1s. per 1000, the weeding, which will cost about £5 per acre, at least during each of the first two years after transplanting. If, then, after all this expense has been incurred the trees cannot be disposed of, but have to be burned, as many hundreds of thousands have had to be during the last two or three years, there still remains to be added the cost of the burning. This may be thought to be an insignificant item, but when I mention that I know one nurseryman who last winter paid £40 in wages for the mere pulling up and burning of unsaleable stock it will be admitted that it is an item not to be altogether ignored. I know also that the nurseryman I allude to had to purchase a portion of that stock as seedlings some four years ago at 4s. per thousand, from which fact the inference may fairly be drawn that the farmers have not a monopoly of hard times. The natural consequence of this is that nurserymen are, as a rule, curtailing their stock of forest trees, and I do not

think I am exaggerating when I state that there are at least 200 acres less of land under nursery crop in Scotland alone than there was five years ago. On the not extravagant computation that an acre should produce 100,000, this represents 20,000,000, which, at 3½ feet apart, would plant 5264 acres. The quantity of nursery stock that has been in recent years sold by auction is also a pretty clear indication that the supply has been considerably in excess of the demand. The moral to be drawn from all this seems to be that the nurseryman's necessity is the planter's opportunity. N.

THE LARGE-CONED PINE.

(PINUS MACROCARPA.)

IF only for its remarkable cone, this Pine is well worthy of attention, for certainly in the specimen before me its huge size and pretty colour are not surpassed by those of any other species with which I have come in contact, or had the opportunity of examining. That it is a tree in every way well adapted for planting in this country I need only refer your readers to the noble specimens at Bayfordbury, Knap Hill, Pampesford, Kew, and many other places we know of; yet for all this, and considering that it has been introduced to us for upwards of half a century, few indeed, save in the collections of connoisseurs, are the trees to be met with, even at the present day. Scarcity and the high price of young trees may to some extent account for the absence of this Pine in our woodlands, or it may be that its hardihood and value in an ornamental and commercial sense are not so well known as the merits of the tree entitle them to be. It grows well in a variety of soils, as has been proved in this country, that of a limy or chalky nature having, however, preference for its particular wants; but on the London clay it is one of the few trees that really do well, while in good dampish loam and in a free, sandy soil we have likewise found it to grow in a fairly satisfactory manner. As to whether or not well-reclaimed peat—that specific for most miffy Conifers—will sustain and bring to perfection specimens of *Pinus macrocarpa*, I am, unfortunately, not in a position at present to state; but that young trees have survived and flourished in such a soil for a considerable length of time may be made mention of.

Speaking widely, or rather as a casual observer, I might say that in appearance *Pinus macrocarpa* approaches very nearly to *P. Sabina*, but is usually in young trees not so crooked in growth, and of a more pleasant green tinge in the foliage. The leaves are usually arranged in threes (this is, however, not always the case, for on the same tree we have found them in fours and in fives), 10 inches long, stiffish, rounded on the outside, and sharp-pointed. The cone now before me is conical-oblong, hard as a piece of carved work, and of a pleasant yellowish brown colour. It is 8 inches long, by fully 5 inches in diameter at the base, and weighs about 2 lbs.—small certainly when compared with the four-"pounders" and 12-inch-long specimens said to be found in its native wilds. The footstalk is 1½ inches in length, by three quarters of an inch in diameter; while the scales of the cone, which are much hooked, are fully 1½ inches wide, as seen in the unbroken specimen. Seeds, wing and all, 1 inch long—not large, comparatively speaking, and of a colour almost approaching the surface of the cone.

The nursery management of *Pinus macrocarpa* is simple enough, for I am informed by a continental friend who has raised it in some quantity that in their younger stages seedling plants are stout of growth and robust in constitution, and may be planted out permanently at an earlier stage than almost any other Pine. The seeds are heavy and with an unusually

hard outer coating, only 1360 being included in a pound weight, while of other Pine seeds—take, for example, *P. Laricio*—no less than fully 43,000 are required to turn the same scale. Like the *Pinus Laricio*, *P. macrocarpa* produces a strong tap root or usually two or three stout roots, and is, unless frequently transplanted, wanting to a great extent in the numerous fibrous rootlets that are so valuable an adjunct to young trees of the Pine tribe when planted out permanently. Plenty of room for perfect development should be allowed to this tree when planted out, more particularly where a well-furnished standard specimen is required, for when grown in a confined situation the usually tufted foliage and bare branches, which, by-the-bye, are not very ornamental features of the tree even when in the best of health, are rendered conspicuously ugly, and remind us much of the appearance, wretched in the extreme, of an ill-grown specimen of *P. ponderosa*. Our largest tree has a north-eastern aspect, is growing in loamy leaf-mould, and sends its roots far in amongst the broken, shingly rock that crops out every here and there through the woodland in which it is planted. It is in perfect health, but I do not class it as even second-rate amongst the Pines as an ornamental tree, although its distinct tufted or massy glaucous foliage and pretty warm brown bark, which is well set off between the widely-placed whorls of branches, have peculiar charms for the lover of our Pines in general.

In this country the growth of *Pinus macrocarpa* is not by any means slow, for a tree at Bayfordbury planted in 1845 was in 1885 39 feet in height and 6 feet 6 inches in girth of stem at a yard from the ground, while another that was brought under my notice recently, is now fully 10 feet in circumference, although only planted in 1839. A section of the wood of English growth in the Royal Horticultural Society's garden is fully a foot in diameter, and shows from its wide annual rings that the tree which produced it must have been quite at home in Surrey. At Blenheim, Dropmore, Castle Ashby and Nettlecombe, as well as the various places before mentioned, there are goodly specimens of the Pine in question. In company with *Pinus Lambertiana*, *P. macrocarpa* inhabits, in fair abundance, a few of the high-lying Californian mountain chains, notably Santa Lucia, where it was discovered by Dr. Coulter and named, in compliment to him by Professor Don, *P. Coulteri*, a name which, so far as we can trace, has priority of right over that of *P. macrocarpa* given by Lindley.

A. D. WEBSTER.

VARIOUS SYSTEMS OF PLANTING.

THE serious havoc sometimes made by storms in artificially formed plantations is so disheartening to proprietors, that we may well pause, and ask, Can nothing be done to remedy this state of things? In the formation of young plantations three different systems are practised; first, by sowing the seeds; second, by slit or notch planting; and third, by pit planting.

THE SOWING SYSTEM.—This, the natural method, is best adapted for heather moor, bare wind-swept hill-sides, and barren peat bogs. By this system the trees are inured to the blast from infancy, and as they spread their roots in all directions and penetrate chinks and fissures of rocks in search of food, and send down their tap root into the subsoil, they thus become securely fixed and moored as it were to the spot, so that it is seldom that we see such trees torn up by the roots during a gale. Fine examples of this may be seen in solitary trees in natural forests, and although such trees are exposed to the blast from all quarters, yet they are seldom torn up by the roots, although the tops and branches are often rent asunder and suffer severely.

NOTCH-PLANTING.—Many fine plantations have been formed in the north of Scotland and elsewhere by the cross-notch system of planting, and when the work is properly performed, and the roots spread out in a regular manner from the base of the stem, they are at once placed in a proper position to collect food and support the trees against wind attack from all quarters, and when young plants have been used, and the work carefully done, it is found that such trees establish themselves in a way little, if anything, inferior to such as have been raised on the ground by sowing the seeds. On the other hand, however, there is a system of notch-planting called the L notch, formed by two cuts with a spade at right angles, thus—L, and by pressing down the handle of the spade, the turf is opened up and the plant inserted at the corner. The spade is then withdrawn, and the turf trampled down with the foot, and the work finished. Now by inserting the plants in this way it must be evident that the roots cannot be spread out in a regular manner from the collar of the plant in all directions; consequently trees planted in this way are not only apt to be blown over, but from the roots being principally placed at one side of the tree only, they have to collect food from one spot, all of which put together forms a serious drawback to the stability of the trees and healthy development of the plant. Trees handled in this way are not planted, they are merely laid in by the heels; and although they may grow and appear all right for a time, yet by the time they require to be thinned to allow them space for development and the formation of timber, the evils of the system then become apparent by many of their number being upset by the wind during the first trying gale, and others so much loosened in the ground as to be a serious drawback to their healthy development in after years. The principal aim of the planter should therefore be to have the work thoroughly executed by insisting that the roots are spread out in a regular manner from the base of the stem, so that they can collect food from all quarters, and fix the tree securely in the ground at the same time, and thus lessen the risk of being uprooted by the wind during a storm.

COST OF NOTCHING.—The expense incurred for planting an acre by the cross-notch system is about 9s.; a man with a boy for inserting the plants can plant about 1200 plants per day in fairly workable ground, the distance apart being about $3\frac{1}{2}$ feet, which would give 3600 plants per acre, or a fraction more than what is required to plant an acre at that distance apart, the exact number being 3556. It will be seen from the above statement that the rate of wages allowed for the man and his assistant is 3s. per day. Now, it is not to be inferred that trees planted according to the above directions will always be proof against the blast; we only wish to impress upon the mind of the planter the necessity of using every reasonable means within his reach to give the trees fair play, and prevent as far as possible their destruction during a gale of wind.

PIT PLANTING.—This mode of planting is generally practised in the formation of hard-wood plantations, as well as in cases where it is necessary to use plants of a large size on account of the surface being overgrown by rank grassy vegetation. There can be no doubt in cases where it is really necessary to use large plants for the above or other cause, that the pit system is the best on account of the ground being well broken up, and the facility afforded for spreading out the roots of the plants, both of which are of vast importance for the success of the trees. In opening pits, the size of the latter should always be regulated to suit the size of the trees to be planted, and the subsoil should be thoroughly broken up and pulverised with a pick, and if possible left exposed to the weather for a few months previous to being planted. In performing the operation of planting the trees, these should be placed in the centre of the pit and the roots spread out to their full length in all directions from the base of the tree towards the sides of the pit, and by covering them with a portion of dry friable soil they will thus get a favourable start when they commence to grow in spring. Some planters, however, in place of planting the tree in the centre of the pit, place it in the corner of the latter, by which means they say that, by doing so, the young tree has two firm

sides to rest upon, and consequently is not so easily blown over as when planted in loose soil in the centre, and in this they are certainly right, but ultimately the evils of such a system show themselves, as the trees so treated never can establish themselves so firmly in the ground as those that have been planted in the centre of the pit, and the roots properly spread out in all directions from the collar of the plant. No doubt trees planted in loose soil will require to be examined in spring, and any plants upset by wind during winter will require to be set up and made firm with the foot, but as soon as they take to the soil and commence to grow they will give no further trouble; and as the roots will be enabled to gather food from all quarters, and act as cables to support and keep the trees in their proper position against wind attacks, no matter from what point of the compass the storm may come, the advantages of such a system must be immense. Now, on the other hand, by placing the tree in the corner of the pit, the roots are necessarily all on one side of the tree only; in fact, trees thus treated are not planted at all; they are in the same position as a fruit tree planted against a wall, they are merely wedged in between a hard bank of earth on one side and the loose soil in front, with the roots all one way, and although it may answer the purpose of keeping the plants firmly in their position at the outset, yet the system is bad, and should never be countenanced. Young trees naturally send down their tap roots to fix and steady the trees in their position, and extend their side ones in all directions, and any departure from this fundamental law of Nature, from whatever cause, is at the expense of the healthy development of the trees. The size of pits for ordinary young plants is about 18 inches wide and about 15 inches deep, and generally cost from 1s. to 1s. 6d. per 100 pits, according to the quality of the soil and rate of wages in the district where the work is to be carried out.

In the formation of plantations for utility, it is a matter of great importance for the success of the trees that each species be planted on soil the most suitable for its growth and healthy development. In the formation of ornamental plantations, one can improve the texture of the soil where necessary by adding fresh soil according to its requirements; but in planting trees for profit or utility, the case is quite different, as such a system would never pay; all we can afford to do in this case is to fence and drain the ground where necessary; then by selecting the trees most suitable for the different classes of soil, and planting them either mixed or in masses according to the circumstances of the case, we have every reason to expect our efforts to be crowned with success. Another point of importance, and one which should never be lost sight of altogether in planting for utility, is to plant as many as possible of the kinds of trees which will be wanted in the locality, and thus have a prospect of a ready sale. Thus in planting rich, deep, swampy ground, the different sorts of Tree Willows may be employed with advantage, as well as Alder, Ash, Poplar, &c., with a mixture of Spruce, Silver, and Scotch Firs for evergreen cover; and on clay lean resting upon clay, the Oak will answer as the principal with a mixture of Larch for nurses; the former feeds chiefly on the subsoil and the latter near the surface. Birch and Pine, again, are suitable for poor soil at high elevations, and mossy ground, and so on. All these points should be well considered and digested at the time of the formation of the plantations. J. B. W.

SHORT NOTES—WOODS AND FORESTS.

Charcoal. Can any reader of *Woods and Forests* tell me whether there is any market for charcoal in the south and west of England and at what price? There are large quantities of timber undesirable in this neighbourhood which would make capital charcoal, but it seems to have gone out of use for cooking now.—H. J. EWES, *Freston, Gloucesters.*

Autumnal tints. For truly gorgeous colouration in autumn some of the American Oaks bear off the palm. Perhaps the most beautiful is the Quercitron Oak, of the Eastern United States (*Quercus finctoria*), the fine deeply-lobed foliage of which, in autumn, exhibits a lovely combination of dark glossy green, crimson, and reddish brown, the green occupying generally the central portion of the leaf. *Quercus rubra* (the Red Oak) and its varieties are also noteworthy.

"This is an Art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—Shakespeare.

FERNS.

W. H. GOWER.

THE LOMARIAS.

THESE are nearly allied to Blechnums; indeed the chief distinguishing characteristics are to be found in the fertile fronds. In Lomarias they are much contracted and wholly covered with sori, while in Blechnums the fronds are of equal width both in the sterile and fertile state. This distinction holds good for all ordinary purposes of identification; but, nevertheless, many genera merge so much into other genera, as to render it difficult to draw a line of demarcation. Lomaria contains some fifty species, some being very small and low in stature; others rise upon stout stems several feet in height, and bear large leathery massive fronds, which contrast well with Ferns of more delicate growth; moreover, as the majority of Lomarias are natives of cool countries they thrive in an ordinary greenhouse, and some are even well adapted for growth in Wardian cases. The sterile fronds of Lomarias are evergreen and very persistent; on the other hand, the fertile ones are somewhat fugitive, but while they remain they give quite a distinct aspect to the plant, and as they are for the most part produced annually, this fault may be readily overlooked. Large plants of Lomarias are very effective in the open-air fernery during summer, whilst smaller ones are equally useful indoors, and even as window plants. The following are among the best kinds. *L. discolor* is a bold, vigorous growing plant, which, when old, rises upon a short stout stem. It is a native of New Zealand, and thrives admirably in a greenhouse, or even in sheltered, shady spots in the open air during summer; the fronds are deeply pinnatifid, that is to say, they are once-divided, but the divisions do not extend quite down to the mid-rib. In cultivated plants we have seldom seen the sterile fronds more than 18 inches or 20 inches long, but in native specimens we have seen them upwards of 2 feet 6 inches in length, tapering towards both ends, and about 5 in. broad at the widest part. The fertile fronds are narrower, and usually wholly covered with sori; but in some cases the basal portion of the segments is leafy and auriculate. The fronds are of a bright lively green on the upper side and brownish white beneath, the sori, which are abundant, being chestnut-brown. *L. fluviatilis* is also a New Zealand plant, but wholly different in aspect from that previously named. The outline in this case is vase-like, the fronds being from 12 inches to 18 inches long and pinnate, with closely-set, almost round, segments of a pale green colour; the fertile fronds, which are about the same length, are erect, and bear narrow oblong segments, wholly covered on the undersides with deep brown sori, and thus furnished they form beautiful ornaments in a greenhouse or fernery. In *L. ciliata* we have a miniature Tree Fern, rising, when old, upon a slender stem. It comes from New Caledonia, and thrives best in this country in a cool stove or intermediate house. The sterile fronds are divided into segments, which are cut down nearly to the mid-rib. They are much lobed, very blunt (almost square), pointed at the apex, and fringed on the edges with teeth-like hairs; they are thin in texture and bright green. The fertile

fronds grow erect. *L. alpina* is found plentifully in the Falkland Islands, Cape Horn, and in various parts of Antarctic America. It is a very desirable plant for the outdoor rock garden, in which it forms a dense carpet consisting of deep green fronds, which seldom reach more than 6 inches in height. It may be briefly and familiarly described as a miniature form of our native species (*L. Spicant*), with shorter and more rounded segments. *L. blechnoides*, which comes from Chili, is well adapted for Wardian cases. Its fronds, which are from 5 inches to 6 inches long, have broad rounded segments, leathery in texture and deep green. The fertile fronds are usually wholly contracted, and bear narrow linear segments; more rarely, however, only the upper portion becomes contracted and fertile, these three characteristics being sometimes found upon one plant. In *L. capensis* we have a bold-growing plant, of massive appearance, from the cooler parts of South Africa. This species, when planted in a cool-house fernery, forms in a few years a majestic ornament, and in that state becomes a fine background against which to group smaller-growing and more delicately-divided Ferns. The root-stock is creeping, and the fronds vary from 1 foot to 3 feet or more in height. The segments, which are divided to the mid-rib, are from 3 inches to 6 inches long, rounded at the base, and tapering to a point. They are finely toothed on the edges, dark green above, but below slightly paler. *L. gibba*, though common, is none the less beautiful. It comes from New Caledonia and the various islands in the Pacific. It may be grown in a stove or greenhouse, or, indeed, in a dwelling-house. When old it forms a short trunk, which adds to its attractions, or it may be planted in the top of a dead Tree-Fern stem.

A variety of this species of Fern, called *Belli*, from Chatham Island, differs from the type in having all the bright green segments densely tasselled, but it has hitherto not proved to be a free grower. *L. Germaini*, which upon its first introduction from Chili went by the name of *crenulata*, makes a pretty ornament for a Wardian case. It produces quantities of underground suckers, which sometimes come up where not wanted, to the detriment of more delicate kinds. The fronds are simply pinnate, somewhat spreading, and finely notched on the edges; they are usually from 3 inches to 6 inches high and apple-green, the contracted fertile ones being erect. *L. lanceolata*, which is also dwarf and a fit companion for the preceding, has fronds about 9 inches high, the segments of which are, more or less, rounded at the points, and diminish downwards to the base. The fertile fronds are scarcely so high, and the segments are very narrow. *L. nuda* produces broadly-lanceolate fronds, divided almost to the mid-rib; they are from 12 inches to 18 inches long, and 5 inches wide at the broadest part. They are deep green, and arranged in a vase-like manner. The fertile fronds are smaller than the others, somewhat heavy in appearance, and do not add so much to the beauty of the plant as do those of most of the other species. This plant resembles *L. gibba* somewhat, but the points of the fronds are tapering, not gibbous, as in that species. A variety of *L. nuda*, called *pulcherrima* (which, by the way, we have seen with fertile fronds), is equally strong in growth. The upper halves of all its segments are deeply lobed, a circumstance which gives it the appearance of being crested. *L. nigra* is a curious little plant, a native of dense forests in the vicinity of Tauranga, in New Zealand, and a plant peculiarly adapted for Wardian cases; indeed, we have only seen it in good condition in such situations. It seldom exceeds 6 inches in height, and is often less; the sterile fronds some-

what resemble those of *L. blechnoides*, but they are intensely black-green, whilst the contracted fertile fronds resemble those of *L. fluviatilis* in miniature, thus suggesting the idea that it may be a natural hybrid. In striking contrast to the last-named kind comes *L. gigantea*, set upon a stout stem, furnished about the crown with an abundance of black, chaffy scales. It produces a dense head of pinnate fronds, which vary in length from 1 foot to 3 feet (according to the age of the plant), and are closely beset with deep green segments to the very base; the lower ones are, however, much reduced in size; the sterile fronds in this case help to enhance the beauty of the plant, as the segments, although narrow, are much longer than those on the sterile fronds. It comes from South Africa, and appears to be best at home in a stove. *L. Gilliesi*, which is a native of Chili, is an attractive plant, and one which thrives well in a cool house; its fronds, which are pinnate, are from 1 foot to 2 feet long; the segments are linear-lanceolate and pale green; the fertile segments are very narrow when wholly fertile, but in some instances the lower half only is contracted, the upper portion being leafy, thus affording an agreeable contrast. *L. L'Herminieri*, an elegant plant from the warm parts of South America, does not thrive in a cool house; it is a small species, producing once-divided fronds from 6 inches to 9 inches long and less than 2 inches wide, suddenly tapering to both ends; when young they are bright crimson, but afterwards change to pink, and finally become deep green. The fertile fronds are smaller and not very conspicuous. *L. magellanica* when old has a stout stem some 4 feet or more in height, the crown and base of which are clothed with long, harsh, brown, hair-like scales; the fronds, which are pinnate, are about 2 feet in length, ovate-lanceolate in outline, and the segments tough and leathery. They are deep green on the upper side, paler beneath, and bold and massive in appearance. It is an effective plant in an open-air fernery in summer.

There are in South America numerous forms of this plant, many of which have obtained distinctive names, and deservedly so, as when seen in a living state they differ materially one from another. *L. vulcanica* attains a height of from 9 inches to 12 inches; its root-stock is densely clothed with long, stiff, shining black hair-like scales; the fronds are pinnate, and this species is readily distinguished by the two lower segments being deflexed, thick, and leathery, and deep green. It comes from New Zealand, and is well adapted for culture in a Wardian case. *L. falcata*, from Tasmania, is an elegant cool house plant, the fronds of which are about 2 feet long and some 5 inches across at the widest part; the segments of the sterile fronds are bright pale green; those of the fertile ones numerous, narrow, and graceful. *L. procerca*, which is somewhat rare in cultivation, is both a handsome and distinct Fern. Its fronds are large, and the segments stout and leathery with thickened margins; they are deep green above, but paler beneath. In young plants the lower two or three pairs of segments are often much reduced in size, and the segments of the fertile fronds are shorter than those of the others and very narrow. It comes from New Zealand, and succeeds in a cool house. *L. Patersoni* is thoroughly distinct from any other species. It is a native of Australia. Its fronds are sword-shaped, from 9 inches to 18 inches high and about half an inch broad, tapering towards the base and pointed at the apex. They are deep green and the edges crenulate; the fertile fronds are about the same length as the others, but very narrow; at rare intervals the fronds assume a pinnate character, and bear one or two pairs of

narrow segments about the middle. In a Wardian case it is a very ornamental Fern. The last species which we shall enumerate is a bold handsome kind from Chili, and at home in the barly fernery, where it produces a distinct and bold appearance. It is *L. chilensis*, said by some to be the same as *L. capensis*; under cultivation, however, the two are abundantly distinct. *Chilensis* has a stout creeping rootstock, clothed with large brown chaffy scales, and the large arching fronds attain a height of from 4 feet to 6 feet, and have leathery, deep green segments. It is a plant that deserves attention on account of its distinctive character.

There is but little to say regarding the culture of *Lomarias*; all they want is plenty of root room, and if this cannot be had, they should be fed with liquid manure, mixed with soot, which increases the depth of colour in the fronds. For the strongest and most robust-growing kinds we prefer a compost consisting of two parts loam, one part peat, and one of sand. The smaller kinds should have less loam than those that are more vigorous. If young plants of *Lomarias* have not yet received their spring shift, it should be given at once, or the fronds will be liable to get crippled.

Brazilian Ferns (*B. W., Barnet*).—Your specimens are, 1, *Coptophyllum millefolium*, and 2, *C. buniifolium*. As far as we know, these Ferns have not yet been in cultivation in this country; indeed, they would appear to be rare even in their native habitats. They are species of great beauty, and we trust you may be successful in raising young plants from the spores. *Coptophyllum* is related to the *Anemia* family, from which it is distinguished by its fertile frond rising separately from the root and not from the base of the infertile one, as is the case in *Anemia* and *Anemidictyon*; such distinction is, however, not always considered of sufficient importance to establish a generic difference, inasmuch as the same thing occurs in *Osmunda*, *O. cinnamomea* being characterised by its fertile frond being wholly sporangiferous, and rising separately from the root. These two species of *Coptophyllum* were originally discovered by Gardner on dry hills in the north of the province of Goyaz, in Brazil. The fronds are much divided, and the segments almost as fine as hairs; indeed, without the fertile fronds they could hardly have been recognised as Ferns.—G.

PROPAGATING.

The propagation of all kinds of soft-wooded plants may now be proceeded with, that is to say, where the stock plants, after being partially rested during the winter, were a few weeks ago removed into a more genial temperature, and syringed occasionally, as they will now be bristling with young shoots, which, if taken off at once, strike very readily. These remarks apply more particularly to such things as *Fuchsias*, *Bouvardias*, *Heliotropes*, *Petunias*, and similar subjects, but the same treatment may be followed in the case of many other plants; for instance, the variegated variety of *Coprosma Baueriana*, which has been by many considered a difficult subject to strike, may be increased readily enough if the plants from which the cuttings are to be taken be placed in an increased temperature for a few weeks, and the cuttings formed of the young shoots made during that time. One thing to especially guard against is on no account to allow them to flag before insertion, as they seldom recover if much affected in this way. A few general remarks dealing with all the various subjects enumerated above may with advantage be herein given. In the first place, it is by no means necessary to leave a joint at the base of the cutting, though at one time this was considered absolutely indispensable, and where rapid propagation of any one particular sort is needed, this will be found a great advantage, for by cutting immediately above a joint, the naked piece of stem at the base of the shoot which is removed may be

inserted in the ground, and will root just as well as if one, two, or more eyes were buried in the soil. By this method the bottom joint with its attendant buds is allowed to remain on the plant, and thus forms a base from whence other and an increased number of shoots can spring, thus furnishing a second crop. When the cuttings are ready they must be dibbled into pots of light, open compost, pressed down very slightly, for firm soil so necessary in the case of hardwooded cuttings will retard the striking of such tender subjects. As these cuttings must be kept rather close till rooted, which will only take about a week or ten days, they must not be too much crowded (even though propagating room is scarce), and besides they are better if a thorough good watering is given before putting them in a close case, as then the superabundant moisture can drain away, and is not likely to cause damp. One other precaution to be particularly observed is that insect pests, especially aphides, are so prevalent just at this season, and they increase at such a rate in the confined atmosphere of the propagating house, that care must be taken if any are on the cuttings to clean them off before insertion. To prevent as far as possible the weakening effects of allowing them to remain a long time in a close atmosphere, the lights may be taken off every day for an hour or so, and as soon as the cuttings are rooted air must be given by degrees. Where possible the cuttings should be potted as soon as rooted sufficiently and hardened off, as then they grow away without check. A great many plants may be readily increased by means of cuttings of the roots, but of those herein mentioned the *Bouvardias* are the only ones that are treated in this way, and they are now more generally propagated by means of the young growing shoots than from the roots. To succeed with root cuttings, they should be taken from old-established plants and be of good stoutness, as the minor rootlets are very apt to decay instead of pushing up shoots. The roots should be cut up into lengths of about an inch and dibbled perpendicularly in the soil, after the manner of cuttings of the shoots, but as there is no foliage they may be put in much thicker than the shoots are. They should be put in at such a depth that the upper part of the cutting is just below the surface of the soil, and a little clean sand being sprinkled over the top the operation is complete. They may then be kept moderately moist, when, if plunged in a gentle heat and treated altogether as seeds, the pieces of roots will in time push out fibres from their lower portion, and a bud or buds will form on the upper end, and in time produce leaves.

DAHLIAS that have been wintered in the shape of dormant roots may be increased to an almost unlimited extent by planting-out time if the tubers are taken from their winter quarters, carefully examined to see that there are no signs of decay about them, and potted in some good, open, but not too rich soil. The tubers should be potted at such a depth that the crown of the plant is just covered with soil; or the roots may be laid side by side on a hotbed, and just covered with any light soil instead of potting them at all. This method is very good provided there are several tubers of one kind, but where single plants only are available for propagating purposes, they are better in pots, as there will then be no fear of any mistakes in the names, but if laid rather closely together on a bed or bench, errors in this respect may creep in, and are not easily rectified afterwards. Whichever way they are treated, a gentle heat of 55° to 70° must be maintained, when they quickly push up shoots, which as soon as long enough, can be taken off and put in as cuttings. They root with greater certainty if the shoots are taken off at the base, but in some kinds that do not push up so freely as others (and often the choicest varieties are amongst them) it is not advisable to treat all the shoots in this way, but a few of the principal ones should have an eye or two on the lower portion allowed to remain undisturbed, thus forming a nucleus from which other shoots will push. Where a large quantity is not desired, but simply to increase one's stock by two

or threefold, given tubers that were planted out last year to begin with, a simpler method can be followed with, in most cases, satisfactory results. It is to start them into growth a little before planting-out time, and when the shoots are about an inch in length, if the plants are examined, it will be found that most of them have pushed up more than one shoot. Then, if gone over carefully with a sharp knife, the clump of tubers can frequently be divided into as many parts as there are shoots, and if potted for a few weeks, they are then available for planting out. To dwarf the very tall *Dahlia arborea* it has been recommended to graft it on a tuber of one of the *Liliputian* varieties, but this is of little avail, as the point of union is below the surface, and consequently the scion forms roots of its own, and is thus placed beyond the dwarfing influence of the stock. To be effective the tuber of the dwarf variety must be started into growth, and when the stem is a few inches high it can be cleft-grafted with a shoot of *Dahlia arborea*, and if kept close for a week or ten days a union is effected.

SINGLE DAHLIAS can, of course, be increased by cuttings in the same way as the others, and this is the principal method employed for the propagation of the named varieties, but as seeds are ripened in such quantity, great numbers of seedlings are raised. Next month will be early enough to sow the seeds, as on a gentle hotbed the plants make their appearance in a few days and grow quickly during their earlier stages. With regard to cuttings of all the varieties of *Dahlia*s, they do best if inserted singly in small pots, a suitable soil for the purpose being equal parts of loam, well-decayed leaf-mould, and silver sand, the whole sifted fine. They must be kept close till rooted, and from their tender nature they are very susceptible of draughts or too much sunshine, but at the same time too humid an atmosphere must not be maintained, nor too much water given, as they are of rather a succulent character and apt to rot off suddenly. To prevent this as far as possible, a little air should be given every morning.

CLEMATISES.—The usual method of increasing the many beautiful garden varieties of this now popular flower is by grafting the young growing shoots on pieces of the roots of our common *Traveller's Joy*, and where this practice is followed out the stock plants are kept in pots, as they can be removed into a greenhouse temperature about this time and then start quickly into growth. The operation of grafting may be dealt with later on, but, at the same time, it is by no means absolutely necessary to graft them at all, as the young growing shoots will strike root fairly well, and plants obtained in this way never give any trouble by pushing up suckers. I have a quantity struck last summer, including the new *Jackmanni alba*, all of which are now ready to start strongly into growth. In any case, whether grafts or cuttings be the method employed, it is better to commence as early in the season as possible, for then the young plants will be well established before winter. T.

Vine insects (*J. L.*)—Your *Vine* roots are apparently injured by a small mite, very similar to, if not identical with, the *Eucharis* bulb mite (*Rhizoglyphus echinopus*). I could only find one or two colonies on the root you forwarded, but the whole root appears to me as if it had been attacked by them. I am sorry I cannot suggest any practical remedy except that of taking up the *Vines*, cutting off the injured roots, thoroughly cleansing the others, and replanting in fresh soil, or, perhaps better, planting fresh *Vines*. No insecticide will reach the mites with sufficient strength to kill them when the roots are in the ground. I have found that hot water of 110° or 115° Fahr. kills the mites; if the roots would stand immersion in water of that temperature for fifteen minutes, the mites would be killed, but I am uncertain if the vitality of their eggs would be destroyed. The mites much resemble grains of sand, but are rounder and more shining; they should be looked for with a magnifying glass.—G. S. S.

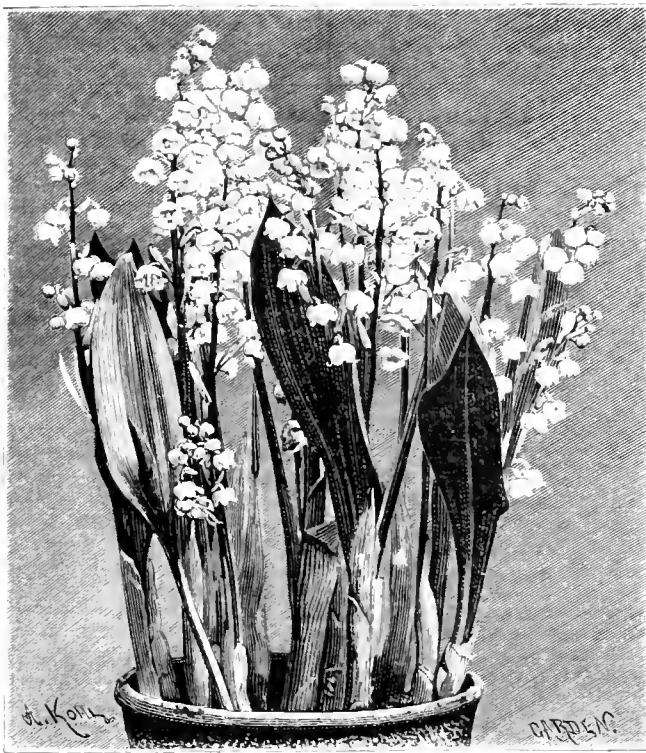
STOVE AND GREENHOUSE.

T. BAINES.

FORCED LILY OF THE VALLEY.

AMONGST hardy subjects forced in winter none are held in greater estimation than this charming little native plant, but when induced to come into bloom towards the end of the old year or the beginning of the new one success is not always achieved, for though most growers experienced in flower forcing are able to get Valley Lilies to bloom, still oftener than not the flowers forced so early are drawn and weak, and so far wanting in size and substance, that they are much inferior to those that come later on when less forcing is needed. One of the defects which the earliest-forced Lily of the Valley often presents is the absence of leaves in sufficient numbers to

requisite relief to the flowers. The way in which Mr. Elphinstone treats his Valley Lilies is to plunge the pots up to their rims in a brisk temperature, the thermometer sometimes showing as much as from 100° to 110°. Each plant is covered with an inverted pot, which is kept over it until some 2 inches of growth have been made, and after that the inverted pots are dispensed with. The crowns are deluged with water every day, given at a temperature equal to that of the bed in which the pots are placed, so that the soil is kept constantly saturated from the time the plants are put in until the flowers open. This thoroughly wet condition of the roots is considered to be essential to success, and I think there is little doubt that it is this saturation of the soil that enables the early forced crowns to produce leaves simultaneously with the flowers. Under this treatment the average time taken to force Lilies of the Valley is as follows:



Lily of the Valley forced, showing leaves as well as flowers. Engraved for THE GARDEN from a photograph.

set off the flowers to advantage. When required in a cut state only this deficiency is often met by forcing some of the thin crowns that have no flowers in them, and which at once push up leaves when placed in heat. But when plants of this Lily are wanted for ordinary purposes the want of leaves obviously cannot be met in this way. The accompanying illustration, prepared from a photograph, represents a Valley Lily sent to THE GARDEN office by Mr. Elphinstone, Shipley Hall, Derby, early in January, and which occupied only twenty-one days from the time when the crowns were put in heat to their arriving at the condition here shown. As will be seen, many of the spikes had nearly all their bells open; the individual flowers, too, were of unusual size and substance. In short, the plant taken altogether presented no more of the weak, drawn appearance that usually follows hard forcing than if it had been flowered in the open air, whilst the leaves were sufficient to give the

December 25 days, January 21 days, February 20 days, and March 15 days.

The best Abutilons.—The list of the best Abutilons given in THE GARDEN (p. 143) is certainly capable of being improved upon, for whereas some of Mr. George's varieties are undoubtedly among the very best, not one is named in the above mentioned list, and the rich crimson-coloured kinds, some of which are suffused with a violet sheen, are altogether omitted. Again, no mention of the best Abutilons would be complete without that vigorous-growing species *A. venosum*, which is such a good pillar plant for large conservatories, and for smaller structures the pretty little *A. vexillarium* is well worthy of a place. Of those mentioned by your correspondent, *Boule de Neige* is undoubtedly the best white we have, better indeed than *Seraph*, which may, however, be grown for the sake of variety. The yellows given are also good, but the brick-red coloured *Darwini robustum* and *La Lorraine* cannot be

classed under the head of rose-coloured varieties. Of rose flowers, including those with a lilac tinge, two good distinct kinds are *Anna Crozy* and *King of Roses*, while of reds, *Lustrous*, rich, glowing crimson, with very stout flowers, *Emperor*, rather a purplish crimson, and *Brilliant* are among the best. Of purples I should be inclined to consider as the best *The Premier* and *purpureum*, this latter being the deeper coloured of the two. In *striatum splendidum*, a hybrid variety, dwarfier than *striatum* itself, the flowers are of an orange colour, thickly veined with red, which makes it very distinct from any of the others previously mentioned. The large palmate foliage of *venosum* is very showy, added to which the bell-shaped, yellow flowers, conspicuously marked with crimson veins, are not only very attractive, but borne in great profusion, when the plant is allowed plenty of room to develop itself. *A. vexillarium* is a slender growing plant of a rambling character, with flowers of a very distinct shape from the others, the calyx being yellow, and the corolla which partly protrudes therefrom is deep purple. There is a variety of this in which the leaves are marbled with yellow. Considering the great beauty and distinct character of *A. insigne* it is a matter for surprise that it has not ere this become more common.—H. P.

WINTER-FLOWERING CARNATIONS.

BEING a great lover of Carnations, I have grown some of the winter-flowering section with what we call in the country a fair amount of success. For four years past we have grown *Miss Joliffe* exclusively, a variety always welcome. Last season I invested in one dozen (to me) new varieties. These arrived in excellent condition, so far as good plants were concerned. Each plant had a good stock of cuttings breaking out from the flowering stems. The dozen consisted of the following, viz., *Madame Carle*, *Alegatière*, *Mrs. Keen*, *Alexandra Regina*, *Bright Phoebus*, *Empress of Germany*, *Lucifer*, *Seraph*, *Sir George*, *Valencia*, *Vulcan*, and *Matchless*. Being desirous of having a thoroughly good stock of these charming flowers for the Christmas festivities, I grew about 300 plants, not forgetting my old love for *Miss Joliffe*, which I knew could be depended upon; 150 plants of that variety were grown. The cuttings were put in in the latter part of March. After being established in 3-inch pots, they were shifted into 6-inch pots, grown under glass in cool houses, and the promise which they gave me of a rich harvest was indeed a bright one. They were duly pinched back through May and June, and grew into remarkably fine specimens. In August we placed them outside, close to a south wall, well protecting them, and letting them stand there until the end of September. They were then removed to their winter quarters, which was a very light house, the plants standing well up to the glass in a temperature of 50°. After being at all this trouble, learning much, but netting little, the following is a truthful account of their behaviour. When we brought them into this house *Miss Joliffe* and *Madame Carle* were already bristling with flower-buds, and the same may be said, although in a less degree, of *Alegatière* and *Mrs. Keen*. These four varieties have been blooming all through the winter in profusion. *Empress of Germany*, a white one of which we have a dozen fine plants, has rewarded us with four single blooms. I therefore look upon the varieties just mentioned as being worthy of the name of winter-flowering Carnations, while the others have no just right to such a name. This opinion is based on practical experience, which I hope will keep others out of the pit into which I have unfortunately fallen.

Broughby.

RICHARD GILBERT.

Staphylea colchica.—When forced into bloom early in the season, this is far more effective than when allowed to flower naturally out of doors, for under glass the clusters of flowers are pure white in colour, whereas in the open ground they are tinged with green, and consequently do not so readily attract attention. Indoors, too, the delicate green of the partially expanded foliage is a

pleasing feature, and serves to set off the blossoms to advantage. This shrub has only within the last few years been valued for forcing, yet its beauty is such, and it is so distinct from others employed in this way, that it should be made a note of where plants of this kind are in demand. — H. P.

RHODODENDRONS UNDER GLASS.

WHEN simply grown in a greenhouse temperature—that is to say, without any of the forcing required to get many subjects in bloom at this season of the year—the early-flowering Rhododendrons are laden with bloom, and make just now a goodly display. One of the most attractive plants in the greenhouse at present is a bush of *Rhododendron præcox*, raised twenty-five years ago or thereabouts, between the pretty little hardy species *R. dahuricum* and the Sikkim *R. ciliatum*. It forms a compact-growing, much-branched bush, which is often used for the front rows of shrubby borders, for rockwork, and similar spots, for it will not grow too large, even if space is very limited. The flowers are of a very pale lilac colour, and borne in the greatest profusion. Though it does not flower for a month or six weeks later when in the open ground, yet even then it is frequently injured by spring frosts, while under glass the flowers retain their delicate tints to the last. From this kind, crossed with one of its parents, viz., *R. dahuricum*, was obtained R. Early Gem, another most useful variety, with the foliage of *R. dahuricum*, and flowers a good deal like those of *præcox*, but larger. Again, *R. dahuricum* itself is readily amenable to just the same treatment, and affords a pleasing change from the other two. It forms a rather upright-growing shrub a yard or so high, and bears great numbers of bright, rosy, purple-coloured blossoms about an inch in diameter. This species varies to a considerable extent in many particulars, some being, from an ornamental point of view, much superior to others. Another hybrid kind, Countess of Haddington, is under the same conditions, just unfolding its blossoms, and a goodly display they will make in another few days. This is the result of a cross between *Rhododendron ciliatum* and the straggling-growing Primrose-flowered *Rhododendron Dalhousie*, whose large bell-shaped flowers are so showy, but the plant is very rambling in habit and by no means robust in constitution. *Rhododendron Countess of Haddington* is a bold-growing kind, more vigorous, in fact, than either of its parents, but equally floriferous. As a proof of this I may mention that a small specimen here in an 8-inch pot has, from a clear stem a few inches high, divided off into nine branches, each of which is terminated by a fine plump flower-bud, two of them having already expanded blossoms. The earliest to bloom of all the Himalayan species, and one that will soon be in flower, is *Rhododendron argenteum*, which is of quite a tree-like habit, and furnished with stout leathery leaves a foot or so in length, and of a beautiful silvery whiteness on the under surface, from which character the name of *argenteum* is derived. The flowers are borne in large, closely-packed, terminal trusses, and in the bud state are pinkish, but after expansion they become white, with the exception of a dark blotch at the base of the throat. This species, too, in common with many others, passes through a very attractive stage just as the young leaves are in process of expansion, at which time they are altogether white, but more conspicuously so on the under than on the upper surface. Besides these above enumerated, the different hybrids of the tube-flowered section are in full bloom, and for months they have not been without flowers, but during the winter they succeed best in a temperature rather above that of an ordinary greenhouse. These have been so often noted in THE GARDEN, that no further mention of them now is needed, except to say that no garden where suitable structures exist for their cultivation should be without a selection of this beautiful class of plants. Besides the hardy Rhododendrons noted in the early part of this article as flowering well under glass, many of the various garden hybrids which impart such a charm to woodland scenery later on may be forced prematurely into bloom, and are then grand objects for the embellishment of the conservatory. The little hardy evergreen *Azalea amona* is now

under glass quite a mass of its bright purple blossoms, although no care whatever was bestowed upon it, except lifting it from the open ground, potting, and keeping it in a greenhouse temperature throughout the winter. Under the same conditions *Azalea mollis* is, though still leafless, bearing its large clusters of buff, orange, or salmon-coloured flowers. T.

CANTUA BUNIFOLIA.

THIS handsome plant (sometimes called *C. dependens*) is not so generally met with as it should be. The moderate growth and its inclination to climb rather than to form a bush fit it for use where dense bushy plants or vigorous growing climbers are inadmissible. Grown in a pot and trained to the rafter of a greenhouse or on a pillar, its beauty is best seen. It blooms in spring or in the early part of the summer, according to the warmth it is subjected to. It does not require much more warmth than will preserve it from frost. There is no difficulty in keeping it within bounds, the annual growth being moderate. It strikes from shoot cuttings, but the wood being wiry, we must secure cuttings when the young growth is in a soft state. The points of the shoots when about 4 inches long may be put in 6-inch pots, drained and filled with sand. Keep them fairly moist in moderate heat, cover with a propagating glass, and shade from the sun; they will soon strike. When rooted, tilt the glass a little, ultimately dispensing with it altogether. They should then be put singly into 3 inch or 4 inch pots. The plants will thrive in either peat or loam. Keep them in an intermediate temperature, with a moderately close moist atmosphere until they begin to move freely, after which let them have more air, and allow them to remain for a time where they will have more warmth than an ordinary greenhouse affords. This will enable them to attain a larger size than if kept cooler. During the summer give a little shade in sunny weather. They will require moving into larger pots before the plants become pot-bound. Give more air in autumn with less water at the roots, and winter them in a greenhouse temperature. I have said nothing about stopping the shoots, an operation that is seldom necessary further than pinching out the point of the leading one, and which, if the plants break of their own accord so as to make two or three branches, will not be necessary, as the object is to get them on in height rather than to assume bush form.

In spring, just as growth is about to commence, shift into pots two or three sizes larger, and encourage the plants to move freely by keeping up a genial humid atmosphere, with plenty of light, giving air in the middle of the day and a little shade in bright weather. The syringe should be used freely every afternoon when the house is closed. The plants may now be stood where they are to remain, training their shoots to the pillar or rafter they are intended to cover. From this time all that is necessary is to give more pot room as may be required. This plant will, however, do with smaller pots than many things after it has attained a size sufficient to show its character, provided that a little of the surface soil is renewed each spring, and manure water or other stimulants are given during the time the growth is being made. When planted out the bed or border should be much smaller than that required by stronger growing subjects.

In regard to pruning, proportionately less will be necessary than with vigorous growers, simply shortening back any shoots that seem to require it. This should be done after the plants have flowered. Treated in this way, this *Cantua* will last for many years. T. B.

Kæmpferia ornata.—This new and beautiful *Kæmpferia*, which was recently introduced to cultivation from Borneo by the *Compagnie Continentale d'Horticulture*, is as yet but little known in gardens. Its rather long-stalked, sharply-lanceolate leaves are dark green on the upper

surface, and present on the whole a slightly velvety appearance. On each side of the midrib, and contiguous to it, is a broad, irregular, silvery-white band. The under surface is purple. The flower-spikes, which rise from the sheaths of the leaves, bear rich orange-coloured flowers of moderate size. In a gardening point of view, the importance of this plant undoubtedly lies in its beautifully marked leaves and graceful habit, characteristics which will readily secure for it a prominent place in all ornamental collections. A plant of it is now in flower in the stove at Kew. —A. Z.

CHRYSANTHEMUMS FOR THE CONSERVATORY.

HAVING a large space to fill up, I find that large plants help to do so in such an effective manner, that I will briefly describe the way in which we obtain them. When the plants go out of flower I set aside a certain number of one-year-old plants to grow on into specimens for the next season's flowering.

These plants will not produce such large blooms as young ones, but they will give a far greater number, and as we only want them for effect, the more flowers we can get the better, as we depend on young plants to give the largest blooms. These old plants entail less labour than the others, and one specimen will fill up as much space as three plants raised from cuttings the same season. I consider the incurved and reflexed varieties are best suited for this purpose. The sorts I prefer are Mrs. G. Rundle, G. Glenny, *arcum multiflorum*, Pink Perfection, Mr. Bunn, Venus, Prince of Wales, Fingal, Cherub, and Hetty Barker. Some of the dwarf-growing Japanese varieties do fairly well, especially Golden Dragon, Gloire de France, and Cossack. The most suitable place for them up to the time they are repotted is a cold pit or frame where they can have pl-nty of air without being exposed to frost. About the middle of April they may have about two-thirds of the old soil shaken away from the roots, and then put into their flowering pots. The weakest growers should occupy pots 12 inches in diameter, and the strongest 2 inches larger. Good fibrous loam and a little sand are what we use as a compost, in which they make satisfactory growth. The plants may remain in the frame until the end of May. On all favourable occasions the lights should be drawn off after the beginning of May, the object being to get the growth firm. During the summer I have dealt with the plants in two ways, with very little difference in the results, except that by the one plan I did not get so good leafage near the bottom of the plants as by the other. The first plan was to plunge the plants in a bed of soil, quite covering the pots, so that the roots could get over the rims as well as through the bottoms. These plants were perhaps a trifle larger, but, owing to the mass of roots which had found their way outside the pots, they lost a good many of the bottom leaves after they were lifted in the autumn. Plants thus treated require less water than those which stand on the surface. The loss of some of the bottom leaves is not a serious disfigurement when the plants are wanted for massing. I gave the plants that were grown in this way very careful treatment. They were lifted carefully at the beginning of October, and not a root was injured at the time, except those that were damaged in coming out of the soil. All the roots as well as the soil that adhered to them were left intact, and the plants placed on the floor of a greenhouse, which was kept close for a week, and the plants syringed two or three times a day. By leaving the roots on the plants as they were lifted, the check was not so severe, as the dry air of the greenhouse soon caused these roots to shrivel up sufficiently to allow us to remove them altogether, and to cleanse the pots before they were wanted for the conservatory. The plants suffered less than they would have done had we removed the roots when they were taken out of the ground. Where the loss of the lower leaves is of no consequence, I can certainly recommend this plan in preference to leaving the pots exposed to the air, as the saving in labour is very great; but it must not be understood that they will do without the assistance of the watering-pot altogether. They will require liberal supplies

in dry weather, especially at first, but after that much less will serve them. The other plan is to set them on a hard surface, so that the roots cannot find their way out of the pot. When this is practised, most of the lower leaves may be kept green and fresh, which enhances their appearance when the plants have to occupy prominent positions. But whether they are grown on a hard surface, or plunged in a bed of soil, they yield such a quantity of flowers, that I would not willingly be without them. It is not unusual to see as many as 130 to 150 flowers on such varieties as Mrs. G. Rundle and aureum multiflorum, and this with only a minimum amount of training. On the large flowering varieties I leave about eight strong stems, and on the others twelve. Early in June the shoots are pinched, and then allowed to grow, and when necessary staked. The other details of management are the same as are given to the general stock J. C. C.

GESNERA CINNABARINA.

This useful Gesnera has been in flower here since November, and we find it very handy in many ways, particularly as a vase plant indoors, where the rich colours of both its foliage and flowers intermixed with Ferns have a striking effect. When done flowering, the stems are cut off, and the plants are placed near the light in a stove to ripen their tubers, just sufficient water being given them to keep the foliage from flagging. As soon as the tops have died down and have been cleared away, the pots are taken to a warm greenhouse and laid on their sides underneath the stage, or stored in any out-of-the-way corner where the temperature does not fall below 50°. About the end of May the tubers begin to grow. They are then taken out and assorted as to size, the largest being put singly in 6-inch pots, and of the next size we place three in a 6-inch or 7-inch pot. The compost which we use is turfy loam, leaf mould, and silver sand in equal proportions. Our tubers are now put into the pots in which they are intended to flower. There is no advantage obtained by putting the bulbs into small pots and then shifting them into larger ones. They require plenty of drainage; we therefore fill the pot half full of potsherds; on this a thick layer of the mould is put, and on it the tubers are placed, and covered about an inch deep; the soil is pressed gently around them, but in no case should it be pressed hard. As soon as potted they are placed in a vinery, in which the temperature ranges from 60° to 65° at night. No water is given till the young leaves appear, and then it must be carefully administered until the roots have taken good hold of the soil; after this they should never be allowed to get dry. They remain in the vinery until they get 3 inches or 4 inches high, when they are removed to a warm pit and kept close to the glass. Here they are grown until they begin to show bloom, when they are taken to a stove in which to open it. On no account must they be syringed or water spilt over the leaves, as it is sure to disfigure them, and they must be kept shaded from the direct rays of the sun. Treated in the way just described, they make strong, robust plants, from 2 feet to 2½ feet high, with numerous side-shoots that flower as freely as the main stems.

W. WATSON.

Eglchturst.

Alpinia pumila.—This beautiful Scitameneous plant, a native of the Malay Archipelago, does not seem to be a favourite in gardens, owing doubtless to its size and lax habit after a few years' growth in a warm moist house. It was introduced to cultivation some sixty years ago, but was soon afterwards lost, and only reappeared some few years since. The stems of a plant now flowering in the Palm house at Kew have reached a height of about 9 feet. The leaves are about a foot long and from 4 inches to 5 inches broad, quite smooth, lanceolate, and tapering to a sharp point. They are bright green on the upper surface, paler green beneath, and have a still paler midrib. The flower-spike is covered with short silky hairs, and is clasped at the base by a striated sheath from 3 inches to 5 inches long. The flowers are about 3 inches in length; the petals are pure white, and the lip

broad, ovate, recurved, and bright orange in colour, marked with scarlet stripes.—A. Z.

SEASONABLE WORK IN PLANT HOUSES.

ARISTOLOCHIAS.—Those who are fond of singular-looking flowers can scarcely fail to appreciate the merits of these climbers, which, in addition to their distinct appearance, have the further good property of being free-growers and free-bloomers, producing their distinct-looking flowers in succession during summer and autumn. The plants are easily propagated from cuttings, which, if put in in a brisk heat now, will strike in a few weeks. They will last for years, but when grown in pots it is as well not to keep them until they are old, as young stock raised from cuttings at this time, and grown on freely during the summer, will make large specimens the ensuing year that will often flower quite as well as older examples; consequently, it is advisable to have young plants coming on to take the place of those that are discarded. Strong-growing sorts, such as *A. gigas* and *A. ornithocephala*, when their roots are confined within the limits of even a large pot, exhaust the soil to an extent that necessitates a greater proportion of it being shaken away at the time of repotting than is necessary with less vigorous growing things. Plants that were cut back a short time since should now be turned out of the pots, removing as much of the old soil as can be got away without breaking the roots and replacing it with loam made richer with rotten manure than plants that are less vigorous in growth would require; 18 inch pots will not be too large for full-sized specimens of the strong-growing kinds. When planted out it is not well to give them too much root room, otherwise they make so much top-growth as to encroach upon everything near them. The beds in which their roots are located should now have a dressing of rich soil applied, removing an inch or two of the old material to make way for it. *A. elegans* is a comparatively new species of unusual merit. The flowers are smaller than those of the largest species, but the beautiful combination of colours which they possess, and their singularity of form, place this species in the front rank of stove-climbers.

THUNBERGIAS.—The climbing kinds of Thunbergia are best suited to a large house where they have sufficient head room to admit of their tops extending in the way their vigorous habit of growth necessitates. They require to be pruned close in after flowering; presuming this has been done, the plants when grown in pots will be in a condition for repotting. Like the Aristolochias, as much of the old exhausted soil should be removed as can be got away readily, replacing it with new rich material. In addition, moreover, manure water will require to be used freely during the time in summer when the season's growth is in full force. Cuttings of these Thunbergias should now be put in, for though the plants will last for many years, it is well to always have a few young examples in reserve to take the place of any that it may become necessary to clear out. Cuttings treated in the ordinary way strike freely, and the plants in their after stages are amongst the freest and easiest to grow.

FINE-FOLIAGED PLANTS.—Taking into account the many ways in which the different kinds of fine-leaved stove plants can be used for very many purposes, they have become of nearly as much importance as the flowering section, especially when grown under conditions that give the requisite substance and endurance to their foliage that will enable the plants to be moved for a time in summer to quarters where they will be under the influence of a lower temperature than that of the house in which they have been grown. To admit of this they must, during the spring and early part of summer whilst in active growth, be subjected to all the light that can be given them, keeping them well up to the glass. The semi-darkness in which these fine-leaved stove plants are often kept is just the reverse of that which is calculated to secure the robust growth so much desired.

ANTHURIUMS.—Several of the fine-leaved Anthuriums, such as *A. Warocqueanum*, *A. crystallinum*, and *A. Veitchi*, are deserving of a place in the most select collection. They succeed best in light, open material, such as a mixture of fibrous peat, chopped Sphagnum, broken crocks, or charcoal and sand. Even when grown in such porous compost as this it is better to renew the soil at this time each spring before growth commences, as the roots will not thrive if it is too far decomposed, a condition to which the amount of water the plants require soon reduces it. The old material should be carefully shaken away from the roots: in repotting it is well to half-fill the pots with crocks, as these Anthuriums are surface-rooters. To grow them in a way that will admit of their leaves attaining their full size when the plants are large they must not be stinted for root-room; 16-inch or 18 inch pots are not too large for full-sized specimens, but, except where there is some special object in view for growing large plants, smaller examples are more useful.

ALOCASIAS.—Some of the best kinds of Alocasia increase by the production of tubers as well as by the multiplication of their crowns. Now, when the plants are repotted, these should be removed and grown on by themselves for a season. Soil of a like description to that advised for the Anthuriums will answer in every way for most of the Alocasias, and in potting it is well to give plenty of drainage, as the plants succeed best when their roots are near the surface.

MARANTAS.—These plants should now be repotted, and where the stock is to be increased the crowns ought to be divided more or less according to the size required. In effecting the division care must be taken not to mutilate the roots, as Marantas do not recover so readily as many things when they suffer in this way. When the plants are divided in this manner they should be kept somewhat close until the roots have begun to move freely, giving no more water than is necessary to keep the soil slightly moist.

DIEFFENBACHIAS. Now is the right time to repot these showy plants. They will thrive in either peat or loam, with enough sand to keep it open. Most of the old material should be got away. In potting, make the soil moderately firm. Where the stock has to be increased, this is easily effected, as the thick, fleshy stems, if cut into lengths of a few inches, root readily in sand, keeping them warm and shaded. Medium-sized examples, each consisting of two or three stems, will be found to be the most useful.

PANDANUS.—These plants are much more useful in the form of small examples, consisting of a single crown, than when larger. The suckers, which large specimens of most of the varieties produce freely, root readily in a brisk heat; they should be taken off with all the stem that can be got attached; a few of the lower leaves must be removed, placing them singly in small pots. Stand in a brisk heat, but do not confine them too much; they are light-loving plants; consequently when sufficiently established they must be kept well up to the glass, without which the leaves come weak and are wanting in endurance. In the case of the variegated kinds, *P. variegatus* and *P. Veitchi*, suckers should be chosen that have sufficient of the white colour in them; if this is not attended to the plants when established will most likely remain deficient in this respect. Where large specimens are required proportionate root room must be given, at the same time it is well to remember that all these Screw Pines will thrive in smaller pots than most things.

CROTONS.—Large specimens of these may be grown in smaller pots than are frequently given them, provided manure water is applied freely during the time the plants are making growth, yet from the fact of their being free rooters they must not be kept for an indefinite time without a partial renewal of the soil. Large examples that have been cut in since their growth was completed last autumn will have now pushed young shoots, and should be turned out of the pots and have some of the old material from the tops of the balls

removed, replacing it with new; good yellow loam, with some sand, suits them in every way, giving manure water freely in the active season. Contrary to what might be supposed, the leaves come finer coloured when so treated than when the plants are kept poor. Few things are better suited for the various purposes for which small plants are now used than the drooping narrow-leaved varieties of Croton, as, notwithstanding their requiring a comparatively high temperature, they will bear removal for a time during the summer season to cool houses and living rooms. Cuttings composed of the points of last summer's shoots, about 6 inches long, if put in now will root readily, and if grown on freely in a warm stove will attain a useful size before autumn.

TUBEROUS BEGONIAS.—These should now be started. If wintered in the old soil in which they

using a little more moisture in the atmosphere. Shading materials should be got ready, as it not unfrequently happens that the sun is so powerful early in the ensuing month, that if means are not taken to protect the young, tender leaves, they suffer proportionately more than they would later on, when, if the solar rays are more powerful, the plants are in a better condition to bear them. Whatever is used for shading, it should be moveable, without which the majority of the plants will be wanting in the substance of their leaves. T. B.

FLOWER GARDEN.

HERBACEOUS AND SHRUBBY CLEMATISES.

THE great improvements that have, within the last few years, taken place in our garden Clematises,

The general practice is to leave them unpruned until spring, when they are merely cleared of dead wood, leaving shoots on which there are fresh healthy buds undisturbed. They are sometimes also cut down altogether, and, I am told, with good results, but I have not had sufficient experience of this practice to recommend it. Kinds possessing a woody character will only require the removal of the superfluous shoots annually. They flower on the current year's wood, and all properly placed shoots should be left so as to ensure good young growth. Such sorts as *C. graveolens*, *C. montana*, *C. cirrhosa*, and others do well in ordinary garden soil of good depth, but we, nevertheless, find a top-dressing occasionally to be very beneficial to the majority of them. Clematises may be used in various ways, but that in which we think they look



C. graveolens.



C. aethusa-fofolia.

were grown last season, they must be shaken out and repotted in fresh soil, giving pots proportionate in size to that of the tubers. Although these Begonias during all the stages of their growth will succeed in a greenhouse temperature, still, if they can have a little extra warmth for a time until the roots and tops have made some progress, it will be better. This is especially the case with small tubers which, when so treated, attain extra strength early in the season, by which means they are able to flower better than when the growth is made slower.

TEMPERATURE.—The temperature of the stove should now be raised both day and night proportionate with the requirements of the plants grown,

tises, as well as the introduction of new kinds, have deservedly raised them to the foremost rank amongst hardy climbers. *C. Jackmanni* may be seen almost everywhere, and used in all sorts of ways. In the neighbourhood of London especially hardly a garden worthy of the name is without a plant of it. I have even seen it flourishing in window boxes, and it is not at all unusual to see verandahs entirely covered with plants of it growing in small boxes. In the case of this Clematis and its hybrids, good rich soil should be used unsparingly in the first instance, and a top-dressing of good manure should be added annually afterwards, or at least when required.

best is creeping over old stumps or draping trees, which they do very gracefully. Many of them are also very effective overhanging large boulders in the rockery, such as we see in Battersea Park and in the new rockery at Kew. Old ruins, walls, isolated heaps of brickwork, and old roots may all be improved and beautified by these charming climbers. Amongst the most useful are *C. Flammula*, a native of Southern Europe, but as hardy and free as the wild *C. Vitalba*. It looks well on old rockwork or tree stumps, producing dense panicles of small white Hawthorn-scented flowers. *C. carulea*, a near ally of *C. florida*, introduced from Japan about

1834, has large pale violet flowers. It is the parent of many garden forms, both single and double, none of which surpass the type in beauty. *C. graveolens*, here illustrated, is another species with strongly scented flowers, which are pale yellowish green; although not so ornamental as

hide the foliage. It is a native of Nepal, and blooms during the greater part of the summer. *C. viticella* is another well-known species, a native of Spain and Italy, and one which has sweetly scented flowers. Under cultivation it has become greatly improved; its flowers, which are large, are reddish purple, and there are double forms of it. It is not such a rampant grower as *C. montana*, but when allowed to grow unchecked on low trees or on rustic supports, it makes a very effective plant. Others are *virginiana*, *Vitalba*, *ligusticifolia*, *lanuginosa*, *floridissima*, *crispa*, *balearica*, &c. Clematises suitable for herbaceous borders or beds are also very numerous, and when run over rustic supports, such as the tops of small Larches, they look truly beautiful mixed with other plants.

are very ornamental. It is useful for copes, covering old stumps, and it is also effective in mixed borders. It is a native of Southern Europe, and flowers in summer. *C. Viorna*, the Leather Flower of the United States, is a pretty small-flowered species, the sepals of which are thick and leathery and purplish in colour. The variety *coccinea* is a native of Texas, and has only recently been brought into notice. It is one of the prettiest of the small-flowered section;



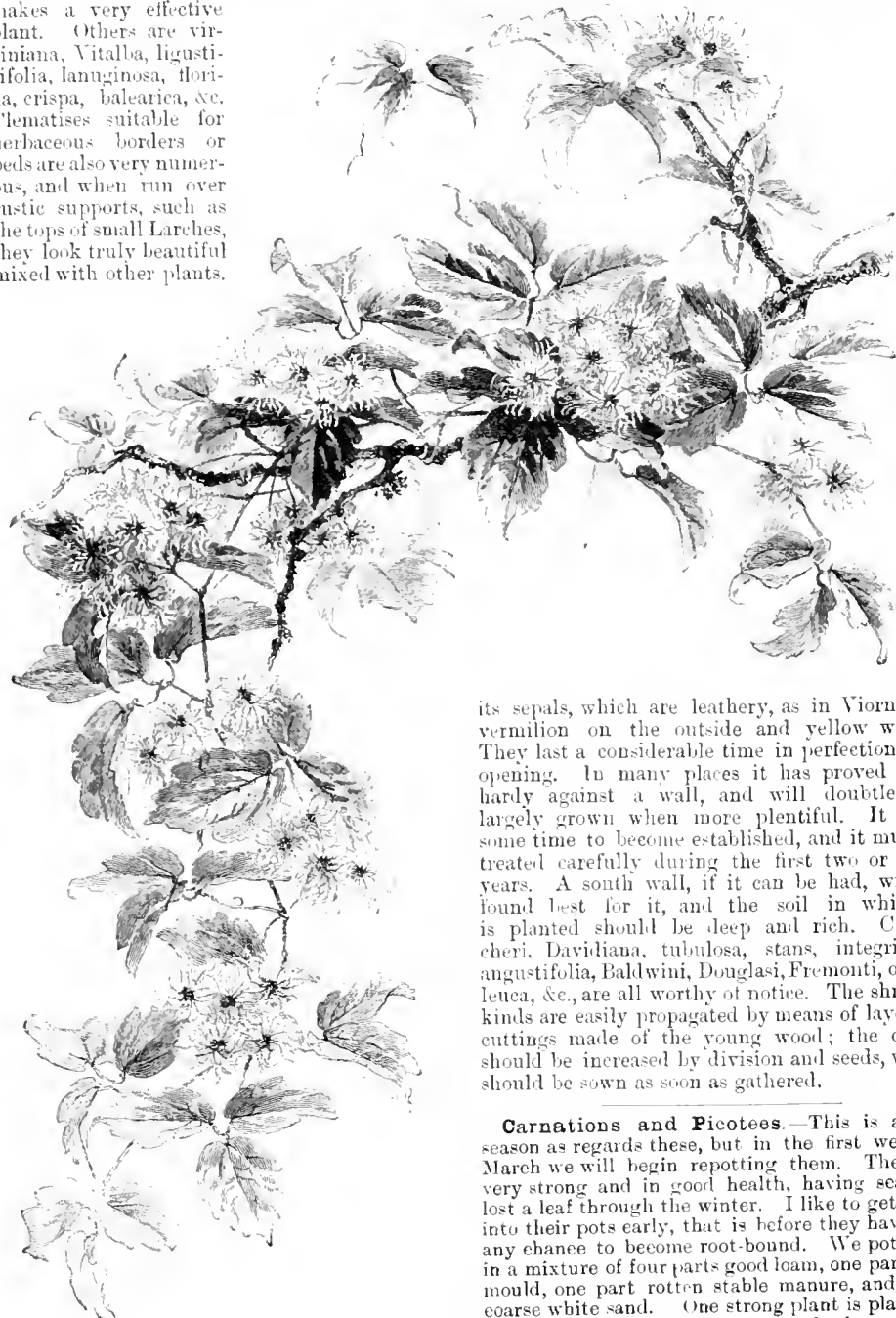
C. cirrhosa.

those of some kinds, they are produced more plentifully, and the fruits with their long feathery tails remain until November. *C. graveolens* is a free grower, and does well in any partly sheltered spot. The leaves, which are triterminate, have a pretty glaucous sheen, not unlike that of *C. songarica* or *angustifolia*. It was introduced about 1844 by Captain Munro when in India, but it is also found in Chinese Tartary. *C. cirrhosa*, the Evergreen Virgin's Bower, is an interesting early kind. Its flowers, which are white or greenish white, are produced in bunches, as may be seen by the annexed illustration. It



C. campaniflora.

is comparatively hardy, and flowers freely in sheltered positions. In floral brightness, however, few equal *C. montana* var. *grandiflora*, a perfectly hardy sort, even in the most exposed situations, and one which produces such a profusion of large pure white flowers as to entirely



Traveller's Joy (*C. Vitalba*).

Most of them flower all through the summer months, and many are useful in a cut state for wreaths, &c. Among these may be mentioned *C. aethusefolia*, a native of Northern Asia. Its flowers, as may be seen, are thimble-shaped, and produced in great profusion all through the summer months. Being nearly white they are shown off to advantage by the pale green foliage. *C. campaniflora* bears a profusion of pale purplish flowers, which

its sepals, which are leathery, as in *Viorna*, are vermilion on the outside and yellow within. They last a considerable time in perfection after opening. In many places it has proved quite hardy against a wall, and will doubtless be largely grown when more plentiful. It takes some time to become established, and it must be treated carefully during the first two or three years. A south wall, if it can be had, will be found best for it, and the soil in which it is planted should be deep and rich. *C. Pitcheri*, *Davidiana*, *tubulosa*, *stans*, *integrifolia*, *angustifolia*, *Baldwini*, *Douglasi*, *Fremonti*, *ochroleuca*, &c., are all worthy of notice. The shrubby kinds are easily propagated by means of layers or cuttings made of the young wood; the others should be increased by division and seeds, which should be sown as soon as gathered. D.

Carnations and Picotees.—This is a late season as regards these, but in the first week in March we will begin repotting them. They are very strong and in good health, having scarcely lost a leaf through the winter. I like to get them into their pots early, that is before they have had any chance to become root-bound. We pot them in a mixture of four parts good loam, one part leaf-mould, one part rotten stable manure, and some coarse white sand. One strong plant is placed in a 7-inch pot, two medium or weak plants in an 8-inch, and two stronger ones in a 9-inch pot. —J. D.

Polemonium Richardsoni.—Having just received Mr. Ware's catalogue, on the outside of which is figured a large head of *Polemonium*, called *P. Richardsoni*, I write to say that I think it a pity that plants should be distributed by wrong names, and that the plant figured certainly cannot be *P. Richardsoni*, which is correctly figured and described in the *Botanical Magazine* (tab. 2800). It is a dwarf trailing plant closely resembling *P.*

humile. Mr. Ware's plant is one of the fine North American varieties of *P. cœruleum*, of which there are now many in cultivation, varying considerably from seed. The plant Mr. Ware exhibits outside his catalogue received a certificate in 1885 from the Royal Horticultural Society under the name of *Richardsoni*, and both before and since has figured in gardens under that name which a reference to the Kew herbarium or the *Botanical Magazine* will prove to be wrong. The nearest approach to Mr. Ware's plant I can find in any figure given and described on good authority is in Edwards' *Botanical Register* for 1830 (tab. 1303). It is there called *P. cœruleum* var. *piliferum*, and is described by Lindley who says it was raised from seed sent from North America by Dr. Richardson, and flowered in the garden of the Royal Horticultural Society. The next plate (tab. 1304) is called *P. humile*, a dwarf plant distinct from the others, but considered, says Lindley, by Dr. Hooker to be identical with *P. Richardsoni*.—C. WOLLEY DOD, *Edg. Hall.*

SPRING-FLOWERING ANEMONES.

THESE are all great favourites with lovers of hardy flowers, and well they deserve to be, for few other groups of alpine are more accommodating, or yield a greater amount of pleasure amidst the trouble taken with them. The common *Hepatica*, so well known in every cottager's garden, has of late years been multiplied into almost endless numbers, each vying with the other in the richness or delicacy of its tints, or in the almost perfect doubleness of its flowers. All are worth growing, and I make a point of adding every new shade of colour I happen to meet with to my collection. They are now beginning to peep up everywhere, those in the most sheltered places being ready to burst forth with the first gleam of sunshine. They are easily managed, simply planting in good rich soil and leaving them alone. All of the varieties we yet possess belong to *Hepatica triloba*, but *Hepatica angulosa* is a much taller species, with larger, handsome starry blue flowers, and equally easy to manage. Our own wood *Anemone*, and especially the handsome variety called *Robinsoniana*, are hardly to be equalled among species of that class. The last does extremely well with us on the shady side of an old rockery, producing annually flowers in great abundance. They are larger than in the type, and suffused with a lovely blue colour. The type, however, itself is not to be despised, as when grown in the wild garden, where it reveals, it yields an amount of pleasure which few other plants under the same conditions afford. *A. trifolia* is nearly allied to the above, but readily distinguished by its very regularly toothed leaves, while those of our English wood *Anemone* are cut irregularly, and toothed somewhat like *Anemone ranunculoides*. *Anemone trifolia* replaces *Anemone nemorosa* from Remo to Genoa, in Italy. It has large flowers an inch or so in diameter, and makes a fine subject for sloping banks on or near the rockery. *Anemone ranunculoides* we have always found easy to grow. It is a charming free-flowering species, with prettily cut foliage; the flowers of the normal form are golden yellow, while those of the variety are pale sulphur, and not nearly so striking. *Anemone palmata*, which we always raise in abundance from seed sown in beds in the open air, is also a pretty plant for the rockery; we grow it on dry, exposed places, and never fail to get abundance of its large shiny yellow flowers. In the pure white variety, the leaves are few and small in proportion to the quantity of blooms it produces. It seems to do best in a light sandy soil. *Anemone vernalis* is a very dwarf species, the whole plant being not more than 1 inch or 2 inches high. The leaves all rise from the base, and are trifoliate, the leaflets again being divided almost to the midrib. The flowers are curious, solitary, reddish purple, the outer divisions densely covered with long silky hairs, and presenting a very singular appearance. The involucre is also noteworthy, from its rough, unceath appearance. *Anemone pratensis*, which seems to be more rare

in our gardens than any of the above, is the nearest approach to a black flower of all the *Anemones*. This has deep lurid purple flowers, with finely divided leaves, and is really a most desirable addition to our collections. *Anemone Pulsatilla* varies from red and lilac to white, and does well in exposed places planted in lime rubbish. There are many others, such as *Anemone apennina*, *blanda*, and *sylvestris*, which are equally beautiful and interesting. K.

THE PINK STIGMA OF HELLEBORUS ALTI-FOLIUS.

HERR MAX LEICHTLIN'S experience is so great that he cannot approach any botanical subject without throwing additional light upon it; he does not, however, quite take in my views, nor consequently does he, as I think, controvert them. My starting-point is that *altifolius* is either a distinct species, or, if not, it has wandered from its type beyond power to revert to it; there are others more or less connected with it. Herr Max Leichtlin, equally with me, recognised Mr. Engleheart's plant as *altifolius*. I recognised it by the presence of a robust form, cupped flower, and pink stigma; he did so, although in the plant in question its characteristics were at variance with what he postulates for the wild form, viz., slender habit, flat flower, and white stigma. I do not for a moment doubt that the latter is one form of *altifolius* any more than I should doubt the claim of a white Foxglove as well as the red to be typical, except in colour, but all the evidence I have leads me to believe that amongst wild *altifolius* the great majority of plants have the pink stigma, whereas amongst all the imported wild plants of niger typical which I have seen or heard of none are so marked. Where I have seen one Herr Max Leichtlin has probably seen a hundred, and his experience may be different, but I scarcely consider the cases he mentions can be taken in evidence. *Niger præcox* is not niger typical, and in the case of the typical niger it is not stated whether the parent plant might not have been exposed to foreign pollen. We rather want wild specimens of both niger typical and niger *altifolius*, the former gathered from hunting grounds where the latter is non-existent. Mr. Baker cites Reichenbach as the authority for *altifolius*, and I think I am not wrong in saying that his plant, the original of the name, has the red stigma; and it is not only in the colour of the stigma and in its size and shape, but also in the colour, form, and texture of the leaves, that *altifolius* and several others with red stigmas generally differ from the niger type. From the appearance of the Brockhurst *angustifolius*, I had expected the red stigma to be present, but until I received specimens from Mr. Veitch a few days ago I had never detected it. I cannot judge of Miss Hope's *angustifolius*, having only one plant with green stigma; but from its appearance I should expect the red stigma to develop itself in this variety also. It is a trite saying that exceptions prove the rule, but I should indeed be sorry could it be shown that in the wild habitats of niger typical even one per cent. is found to weaken the convenient rule for which I contend.

Hellebores have a grievance against science, but even were the species more accurately defined, amateurs are not generally up to nice distinctions in such a complicated family. They want easy general rules, and science must fill up the details. We have discussed one rule; let me give another. Many of the plants figuring under the *viridis* section, to the casual observer, are much alike, but call in the aid of smell, and the amateur will readily detect a difference; he will meet with a considerable Elder-scented group, of which *Bœconi* is a prominent example, and perhaps *odorus*, with its more refined perfume, an aristocratic member; thus tested, no one would confound one of these with the rank, poisonous-smelling *viridis* proper. *Dumetorum*, again, is comparatively scentless. Again, as between *antiquorum* and *olympicus* true and *olympicus* major, as I used to

call it forty or fifty years ago, I believe it is a safe rule to lay down that *olympicus* never shows pink on the sepals; *antiquorum* always does, more or less. Herr Max Leichtlin suggests that the difference in pollen grains prevents crossing between niger type and niger *altifolius*. Now, I succeed easily with most of the Hellebores, crossing indifferently persistents and non-persistents, and, as if to emphasise the difference between the Elder-scented group and *viridis* proper, I have never had a cross from the latter, but the Elder-scented (non-persistents) cross with persistents, and the results have been persistent foliaged plants with Elder scent. I have been unsuccessful also with *trifolius* (*argutifolius*) and with *foetidus*. Has Herr Max Leichtlin been more successful, or has he examined the pollen grains to account for failure? T. H. ARCHER-HIND.

South Devon.

NARCISSUS CYCLAMINEUS.

THIS newly-discovered *Narcissus* came into flower here about February 15, in the open border under a south wall, about a fortnight after it had begun to flower in the greenhouse. The bulbs were sent from Portugal by Mr. Tait, and were planted last July. I find the habit of bulbs imported from the south of Europe to flower the first season at the same date as they flower in their native country, but fortunately they soon learn better in the English climate. I am afraid *N. cyclamineus* seems likely to be delicate, and will have to be treated here as a frame bulb. I have already noticed two, of which the leaves withered before flowering and the bulb had rotted. As regards the natural history of this curious species, an opinion has been given that it belongs to the Ajax section of *Daffodils*. Ajax was a generic name adopted by Haworth for what Mr. Baker classed as *N. pseudo-narcissus*, and *N. cyclamineus* certainly is not a variety of that species. A more plausible opinion was given that it is a hybrid between *N. pseudo-narcissus* and *N. triandrus*, and it is true that it presents characters intermediate between the two, especially in the leaf. But nearly half the so-called species of the genus *Narcissus* have been pronounced by some botanist or other to be hybrids of two other species. It has been said of *N. incomparabilis*, of *N. montanus*, of *N. intermedius*, of *N. dubius*, of *N. biflorus*, and others. The different species of *Narcissus* do form hybrids readily, and it is possible that some or all of these may have originated in crosses. Still, when we find that a plant has held for centuries an independent existence, and that it reproduces itself perfectly from its own seed, botanists will not deny it the right of being a species because three hundred or three thousand years ago it may have derived its first origin from a cross. That something like the species mentioned may be produced in gardens by artificial crosses may be true enough; and many similar crosses seem to be constantly produced in Nature, and to die out again. I have living in my collection from wild sources *N. pseudo-narcissus* × *N. triandrus* (several forms), *N. Bulbocodium* × *N. triandrus*, *N. pseudo-narcissus* × *N. juncifolius*, *N. poeticus* × *N. pseudo-narcissus*; of the last named I found several hundred flowering last summer in the Pyrenees. They grow mixed up with the two parents. But though they vary much, I did not find one which could have been mistaken by anyone who knows the genus for *N. incomparabilis*, which has been said to owe its origin to this cross. To return to *N. cyclamineus*, the style and stigma, and anthers and the mouth of the corona resemble *N. pseudo-narcissus*; but there are two very distinct characters which I have never seen in any of the many varieties of *N. pseudo-narcissus*—one is the reflexing of the perianth, the other the juncture of

the tube and corona, the outline of the latter bulging out suddenly from the end of the tube. This is seen in the accompanying diagrams, which are drawn in profile from exact measurement, and afford perfectly consistent characters of the respective species.



1. *N. Bulbocodum*. 2. *N. triandrus*.
3. *N. cyclamineus*. 4. *N. Pseudo-narcissus*.
The cross lines mark the juncture of tube and corona where the perianth is attached.

I have not mentioned the extraordinary form of the tube of *N. cyclamineus*, which is its most peculiar botanical character. Has the remarkable rapidity with which *N. cyclamineus* (I speak on Mr. Tait's information) ripens its seed any connexion with this? C. WOLLEY DOD.
Edge Hall, Matpits.

Dwarf Cannas.—M. Dutailly, president of the Association Horticole Lyonnaise, at a meeting held for the distribution of prizes won at the exhibition in September last said, speaking of the progress of horticulture, "The Carnation, which by some is called the king of flowers, has been greatly improved in our city, and the perpetual Carnation had its origin here." But that is not all, for we have not ceased to continue with ardent zeal to improve flowers of various kinds. One of our distinguished horticulturists, M. Crozy, has by hybridisation transformed the *Canna* into a plant worthy of the name. The tiny flowers of the parent plants have been greatly enlarged by him, and now our *Cannas* are ornamented with large and numerous flowers, brilliant like those of the *Gladiolus*, while the ample foliage of the Indian plant has been retained. Thus improved they are not only valuable garden ornaments, but also useful for indoor decoration.—JEAN SISLEY, *Mompaisir, Lyons.*

SHORT NOTES.—FLOWER.

Alpine plants—Would some of the readers of THE GARDEN be so kind as to give the names of the six best alpine plants suitable for exhibition?—SUB-EDITOR.

Saxifraga ciliata.—We have this now in bloom, and a handsome plant it is. The flower-stalks are from 4 inches to 5 inches in length, and of forced rhubarb colour, the flowers being of a whitish pink. The leaves are roundish in outline, and are from 5 inches to 6 inches in length.—W. H.

Iris reticulata.—This *Iris* possesses so many good qualities that it cannot fail to become one of the permanent adornments of cool houses, and also of any open-air garden to which it is introduced. That it produces flowers in the depth of winter under glass which, for richness of colouring, are equal to those of any *Orchid*, is of itself sufficient to entitle it to high favour; but when we find that its requirements as to soil and situation are such as can be supplied in the humblest cottage garden, it cannot fail to commend itself to all who love flowers. I find it to be most useful in 5 inch and 6-inch pots, into which I put five or six bulbs, and, if set on a shelf in a vinery or greenhouse as soon as potted in autumn, they will be in bloom in January and February. Out of doors I planted a few bulbs in a warm border in front of a vinery, and last spring they were in full bloom in March. They were left undisturbed, and I find that they are pushing up strongly, each bulb having increased to three this season. Any one wishing for a really choice spring flower to contrast with *Crocuses* cannot do better than grow a few clumps of this pretty *Iris*. Our soil is a light sandy loam, and without any special preparation this *Iris* does extremely well in it. I may add that plants of it in pots were not shaken out of the old soil until the day on which they were repotted, as I think bulbs of all kinds keep better in soil than in paper bags or boxes.—J. GROOM, *Glasport.*

Old Crimson Clove.—Why is this grand old Carnation so subject to disease? Is it weaker in constitution than the other varieties. Last autumn we entirely renewed our Carnation borders, removed all the old plants, and planted entirely with healthy young stock; and as our soil is of a heavy, wet nature, we removed the whole of it to the depth of about 15 inches, and filled up with a prepared soil, consisting of loam, leaf mould, and sand from the seashore, which on previous occasions had proved beneficial to Carnations. The whole of the plants looked healthy, and appeared to be doing well, and not in the least damaged by the recent severe weather until about three weeks ago, when it was noticed that the Old Crimson Clove began to look sickly and to die off in places. Upon examining the roots, I found a small white maggot in the centre of them. It is probably the same species as the one which has been doing so much damage amongst the Carnations at the Slough Nurseries of late. But it seems strange that it should attack this variety alone, when it is growing side by side with other varieties which, up to the present, continue to look strong and healthy, and not in the least affected; but on previous occasions here the Old Crimson has always been subject to black spots appearing on the Grass, but never on any other variety. It would be interesting to hear the opinion of some good Carnation growers on the subject.—J. C. C.

Primula obconica.—This must become a general favourite when better known. In order to have good specimens of it it should be propagated from seeds; for this purpose a plant should be set aside and only allowed to develop two or three flower-heads, picking off all fresh comers as soon as they appear. To have plants in bloom at this season the seed should be sown at the same time as that of *Primula sinensis*, and it should receive the same treatment in every way. This *Primrose* bears from twenty-eight to thirty flowering spikes at one time, and each spike carries from seventeen to twenty pinkish white flowers. *P. floribunda* makes the best plants when raised from seed and treated in the same manner as *P. obconica*, but it is greatly inferior to it in elegance. It has yellow flowers, which are produced to such an extent that the plants are almost worthless for growing a second season.—W. H.

Tropæolum speciosum.—This lovely climbing plant, which is so useful for covering walls, pillars, or trellises, has also a charming effect on the bare stems of *Roses* or those of other shrubs. It is, however, rarely seen in the south of England, and in cases in which I have seen it, it never appeared to grow satisfactorily. In northern districts and in Scotland it may be seen in its true form. We have a quantity

of it planted here against walls, and when commencing to grow we place wire netting against the walls, through which it climbs and forms a dense mass of green, studded with bright vermillion flowers. It appears to enjoy a deep, rich, and rather moist soil, and pains should be taken to get it well established and vigorous. It is easily propagated by dividing the old roots, an operation which should be done in spring before they commence to grow. When planting, place a good bed of well decomposed manure in the bottom of the pit and sprinkle a little soil over it; then insert the roots about 6 inches apart, and fill up with soil, consisting of good loam and leaf-mould. A good surface mulching is necessary, as the manure thus applied prevents evaporation during summer.—C. C. HOWLER.

ROSE GARDEN.

T. W. GIRDLESTONE.

GROUPING ROSES.

In addition to the Hybrid Perpetuals, there are a few *Roses* which, though they blow but once a year, ought yet to occupy a conspicuous position in every *Rose* garden. It is objected that beds of these will be dull and flowerless in autumn, it may be found possible to combine with them some varieties sufficiently alike to be in harmony with them, but which yet are autumn-flowerers. The obvious resort, that under such circumstances it can be only worth while to grow the autumn-blooming varieties, does not necessarily apply. For instance, who that has ever loved the name of *Rose* would be without *Moss* *Roses* in his garden? Now it is a strange thing that of all the seedlings and hybrids of *Moss* *Roses* that have been raised, though many of them flower in autumn, none excel, and very few at all approach in beauty, what is still, for lack of a better name, called the common *Moss*. It seems as if the flower-angel of the legend, angered at the presumption of the notion of trying to improve upon what he intended to be a masterpiece, had thwarted every attempt at the development of a race of beautiful *Moss* *Roses*; at any rate, the fact remains that there is not a coloured *Moss* *Rose* that can compare favourably with the common *Moss*, which, although it flowers but once a year, must therefore be planted where pink *Moss*-buds are wanted. The term "coloured" *Moss* *Rose* is used advisedly; for there is a white *Moss* *Rose* which produces buds hardly less attractive than those of the common pink variety, and which has the additional advantage of flowering again in autumn. If, therefore, this white *Moss* *Rose*, which is called *Blanche Moreau* and is one of the most vigorous and best constituted of the race, be associated with the common *Moss* *Rose*, each has a worthy compeer, and while the one that flowers but once a year cannot be dispensed with, it is not necessary that the *Moss* *Rose* bed should be flowerless in autumn. There is one other variety, albeit no autumnal flowerer, that is worthy of being grown beside the common *Moss* and *Blanche Moreau*—*Little Gem* to wit, a charming miniature crimson *Moss* *Roselet* abundantly produced on bushy plants, and eminently attractive both in bud and (unlike all other *Moss* *Roses*) also when expanded.

The *Scotch* *Roses* or *Scotch* *Briers* again make charming groups or masses, especially the less formal (not that any part should or need be formal) parts of the *Rose* garden; and these hardy *Roses* are of especial value from the fact that they will establish themselves and flourish in soils and situations where other varieties will not thrive. They look well clothing a bank or slope, their dwarf growth and innumerable flowers covering the ground admirably, and in such a position they are useful as well as ornamental, for their abundant suckers and underground stems are of material service very often in supporting the bank they grow on. The most attractive varieties are the yellow, a very hardy and free blush-white; and a fresh pink, semi-double only, but the purest of its colour; but their name is legion, and as they are so rarely grown now-a-days under names, it is not

easy to obtain particular sorts, nor to identify them except when in flower. To avoid the groups of Scotch Roses being flowerless in autumn, every fourth or fifth plant should be the Stanwell Perpetual, a charming blush-white hybrid of most delicious fragrance, and one that produces its pretty flowers at intervals throughout the season until cut off by frost.

If a representative of the old-fashioned striped Roses is wanted, there is nothing to surpass *Rosa Mundi* or Rosamond, figured and described by Redouté under the name of *Rosa versicolor*, and one of the oldest striped Provence Roses. It is curious how constantly and persistently this Rose has been called and passed from hand to hand as York and Lancaster, which is a true damask, with rather flimsy and not very striking white flowers striped with lilac or pale rose, though it is a common thing for the petals to be all red or all white without any stripe or flake. This true York and Lancaster is not by any means a variety to be selected for the purpose of making an effect of colour anywhere, but *Rosa Mundi*, which has a good white petal variegated with bright red, makes a very striking and distinctive feature when grown in a mass, as it is without the lilac shade which prevails in so many of these striped Roses and gives a group of them a dingy appearance.

So far the only yellow Rose referred to has been the yellow Scotch Brier, but for making an effective mass of that indispensable colour there is nothing among Roses that can vie with the golden glory of the Austrian Briers. Of the double varieties the best are Harrison's Yellow (still pedantically called Harrisoni in many catalogues) and Persian Yellow, each bearing a strong family likeness to the other, both having bright yellow flowers, the first being perhaps rather the stronger grower and the second rather the more free-flowering of the two. For the latter qualification, where either is obtainable and only one required, preference should be given to Persian Yellow; but Harrison's variety is said to be able to endure the murky atmosphere in the neighbourhood of large towns. Oddly enough, though both called Austrian Briers, neither of these two Roses originated in Europe, the one having been sent from Persia by Sir Henry Willock in 1837, and the other having been raised in the garden of Mr. Harrison in America, it is said from a cross between *Rosa lutea* and a Scotch Brier, about the year 1830. Neither variety requires much pruning, and both make fine heads as standards; and if plants of this form be planted in front of a high hedge of some dark Evergreen, such as Holly or Portugal Laurel, the effect of the bright yellow flowers against the glossy green background is exceedingly striking.

The double forms, however, should not be cultivated to the exclusion of the type *R. lutea*, the yellow Austrian Brier, whose single flowers are of an even more delicious shade of yellow than those of the Persian variety, and are quite capable on a large bush, or where several plants are grown together, to make a very telling display. *R. punicea*, too, whose unique and gorgeous colouring is but little suggested by the epithet "copper" Austrian Brier, is indispensable; there is nothing in the least like it in all the Rose world; scarlet does not describe its hue, which yet is not orange, and perhaps the description of it as the Rose with petals of gold lined with vermilion is not really any exaggeration. These two Roses, single-flowered though they be, should be grown in abundance, not only to make a brilliant and distinctive group, but also to supply cut flowers, a purpose for which their pure and unusual colouring renders them especially popular.

It may be worth while here to mention three or four other single Roses, by way of completing a selection of the best six sorts for growing in masses. For the beauty of its individual flowers *R. macrantha* must rank next to the Austrian Briers, although its habit of growth is not quite sufficiently erect to display its charms to the fullest advantage when it is grown as an ordinary bush;

but if it can be grown against a pillar, or, better still, be planted beside, and trained to, an ordinary foot-and-rail fence, its large, fine petalled, flesh-tinted flowers make a grand show. The best companion to it in the cut state is Hebe's Lip, which is classed as a Hybrid Sweet Brier, and which has large substantial white petals with a Picotee edge of purple. This beautiful Rose is not of climbing habit, and, though strong and of excellent constitution, has not that rampant vigour of growth which has before now been urged as an objection to some of the rubiginose. It makes a good, hearty bush, several of which, planted together, produce a better effect than a majority of the white Roses commonly grown in gardens; while a bouquet of its flowers, with those of *R. macrantha*, furnishes a combination which cannot fail to win general admiration. *R. Woodsii* produces a profusion of rosy blossoms, which render it a very pretty plant and well adapted for massing. *R. lucida* is perhaps the best of the North Americans, and a group of plants of it is certain to arrest attention at any time of the year. Its habit of growth and ruddy shoots, with its deep green glossy foliage, would make this "Rose luisante," as the French call it—worth cultivating even if it never flowered, for it is nearly an Evergreen, and its gleaming leaves do not get disfigured by mildew and such pests; but it has attractive rose-coloured flowers, which are succeeded by even more attractive deep scarlet hips, so that, although the plant does not bloom a second time, it is often gayer in autumn than many a so-called Hybrid Perpetual Rose. None of these six single Roses can be considered weedy or in any sense of the term wild garden plants; while, with the exception of *R. macrantha*, which displays itself better when afforded some slight support, all make handsome and effective groups as bush plants and are free from mildew; all are hard, free-growing, and free-blooming, and have beautiful flowers; and all will grow and flourish without any particular looking after.

Another single Rose has of late years given rise to a charming class of Roses for massing, namely, the hybrid polyanthas, which afford an excellent instance of the advantage that may accrue from the employment of Rose species in hybridisation. The original *Rosa polyantha*, one of the prettiest and most fragrant of the single Roses, is a rampant climber and not autumnal, but it is extremely hardy and produces immense trusses of bloom; the Tea-scented varieties, on the other hand, have double flowers, and are among the freest of autumnal bloomers. By the intercrossing of *R. polyantha* and the Teas a progeny has arisen, displaying the main characteristics of both parents, namely, the hardness and floriferousness of the former combined with the double flowers and thoroughly perpetual character of the latter. Most of these hybrids closely resemble the original *R. polyantha* in everything but stature, for instead of being gigantic climbers they hardly exceed 9 inches or a foot in height. This does not apply to a recent seedling of M. Lacharme's, which, however, was the outcome of a cross between *R. polyantha* and General Jacqueminot, and not a Tea-scented variety. The best of the varieties is Mignonette, which produces its great trusses of fresh pink flowers almost without intermission from June till November; it makes a compact bushy little plant, and a mass or broad edging of it is always attractive, being rarely without flowers, which, moreover, are able to endure exposure to considerable rain or hot sunshine without disfigurement. Two of the best of the white varieties are Anna Marie de Montravel, each of whose blossoms is a singularly perfect rosette, and Paquerette, which, oddly enough, like Mignonette, is called by another flower's name; Paquerette being the little white Easter Daisy, and probably also used as a pet name. The inflorescence of Perle d'Or inclines more to the branching type of the Teas, but its Madame Falcot-coloured flowers are charming, and it is so far the only yellow variety.

There is one other Rose which is not included

in any of the universally recognised sections, although it is an eminently desirable plant and continuous bloomer; this is *Rosa clinophylla* fl. pl., whose numerous large double blush-white flowers make a delightful group, and for whose non-cultivation the fact that it is neither called a Hybrid Perpetual nor a China nor by any other nickname is not sufficient excuse.

Of the Bourbons, the best for massing are Armosa (syn., Setina), pink, Queen (fawn), and Souvenir de la Malmaison, whose blush flowers, however, often fail to open clean in early summer and are too liable to be spoilt by wet in autumn; but of the Chinas, too many can hardly be planted, and of such varieties as the common pink, Cramoisi Supérieure, the pretty pale Mrs. Bosanquet, and the dazzling Fabvier, effects of colour may be made in the roserie which will be in evidence during fully six months of the year.

GARDEN FLORA.

PLATE 585.

CELOGYNE CRISTATA MAXIMA.*

THE ever-popular *Cœlogyne cristata* is perhaps the best known of all showy garden Orchids, for ever since it was introduced five and forty years ago it has been grown in all good gardens. A lovelier Orchid does not exist. The graceful way in which the long, pendulous spikes of flowers are produced adds a charm to the chaste beauty of its snow-white blossoms. Upon this identical species Lindley founded his genus *Cœlogyne*. This was in 1825, but the plant was not introduced until about ten years later, and in the year 1841 the first flowering plant was seen in this country. Mr. Barker, of Birmingham, at that time one of the chief among the few Orchid growers in this country, exhibited a fine specimen of the crested *Cœlogyne* before the London Horticultural Society, which held its meetings at that time in Regent Street. This Orchid captivated everyone by its exquisite beauty, and Mr. Barker was awarded a silver Banksian medal for the plant. Since then we may say that the *Cœlogyne* has been an established favourite in gardens; indeed, it is now as indispensable to a gardener in spring as the *Eucharis* is in winter. In gardens where Orchids are not made a fuss with, you see this *Cœlogyne* grown well in company with a few other old Orchids like *Dendrobium nobile*, *Phaius grandifolius*, *Cypripedium insigne*, and others of proved excellence for cut bloom. For many years this Orchid was cultivated before any variation from the original type was noticed; then came larger flowered forms; then one with pale lemon-yellow on the crest instead of orange-yellow; and then the snow-white variety called *alba* or *hololeuca*; and lastly, the magnificent form called *maxima*, which is well represented by the accompanying plate. Every variety is so beautiful in itself that it is a difficult matter to say which is best. Many consider the pale yellow crested form the loveliest, as the yellow, being so delicate, harmonises so charmingly with the white sepals and petals. It is named *Lemoniana*, after Sir Charles Lemon, not in allusion to the lemon-yellow crest, as is generally supposed. It is also, but less frequently, called *citrina*. This is still a rare variety, and plants of it in the auction rooms, particularly if in bloom, always fetch a good price. The pure white *hololeuca* is yet as rare as it is lovely, and tiny plants sell for several guineas apiece. There is not a trace of colour in the flower; indeed, it is one of the few only absolutely pure white Orchids in cultivation. The form of the flower is quite different from that of the ordinary type,

* Drawn for THE GARDEN by Mr. Moon in Mr. Sander's nurseries, St. Albans, on May 20, 1883, and printed by G. Severyns.



and this, combined with its distinct style of growth, which is somewhat creeping or stoloniferous, inclines us to regard it as a distinct species. One can single a plant of it out among a crowd of plants of the other varieties. Now we come to the large-flowered forms, variously known under the names of the Trentham, Chatsworth, major and maxima varieties. The Chatsworth form is very fine, large in bloom, broad in sepal, and long in spike, and so is the Trentham; in fact, it is a difficult matter to tell the difference between them. The Chatsworth form is a wild variety found and brought home by the late Mr. John Gibson (Battersea Park) when collecting plants in his young days in India for the Duke of Devonshire. The maxima variety is what we ought to talk about most, because it is generally admitted to be the very finest yet seen. As may be seen by the plate, the flowers are large and broad-petalled, and the spike carries five and six flowers each, while it is otherwise distinct, particularly in the large truncate bulbs. This form is also known among Orchid growers as the St. Albans variety, on account of its having been distributed by Messrs. Sander, of the St. Albans Orchid nursery. It is a scarce and most expensive plant at present, but being a strong grower and tolerably easy to propagate by division it may not be so scarce in a few years. It is a great chance if such a fine form as this turns up again. Those who love the old form will long to grow this new variety, as it is so superior to it.

COLOGYNE CULTURE is now so well understood and practised, that it would be almost an insult to our readers to describe it in detail. The glorious specimens with which one meets in all parts of this country afford evidence of this, and few Orchids can be grown into what are popularly called specimen exhibition plants with such comparatively little trouble. This *Cologyne* is essentially a cool-house Orchid—that is, it abhors a high and dry temperature. It may be grown to perfection in a cool, moist greenhouse, not a draughty place, as most greenhouses usually are, and during the time it is making its growth—that is, after the flowering time, which extends from about January to March—it can scarcely be over-watered, provided the drainage of the pots or pans is good. This plant is so sensitive to injury by dryness, that when once it has suffered from protracted drought the bulbs shrivel and require a long time to recuperate themselves. The same thing occurs after dividing the bulbs for increasing the stock, as is done in some places, as the roots dislike disturbance. The bulbs are apt to become overcrowded, and will, if left unmolested, grow one upon the other in a confused mass. Instead of dividing the root-stock and so thinning the bulbs, a better plan is to cut away the old and useless bulbs, leaving the young leaty bulbs ample room to develop. The best time to pot *Cologynes* is in spring, as soon as the flower crop is past. The soil should consist of good fibry peat, mixed with a good proportion of fibry loam and Sphagnum Moss. Pans are best suited for *Cologynes*, as the bulbs then have more surface upon which to increase. Large specimens, 3 feet or 4 feet across, are invariably grown in pans about 9 inches deep.

C. cristata is a native of Northern India, where it grows wild among the hills of Nepal and Sikkim, at elevations of 5000 feet to 8000 feet. It is found, travellers tell us, mostly on trees and rocks, always fully exposed to the sun; and therefore, from this fact cultivators may take the hint not to shade too heavily.

Pelargonium De Lesseps.—Although this variety has been raised for some years, it is still considered to be one of the best for winter flowering. We saw it growing

side by side with *Vesuvius* in the nurseries of Messrs. Hawkins and Bennett, who consider it quite equal to that variety for yielding cut blooms. The flowers are bright scarlet, and produced in profusion.

FRUIT GARDEN.

W. COLEMAN.

GRAFTING VINES.

My thanks are due to "Hortus" (p. 166) for having directed my attention to a sentence in my paper upon this subject which he thinks may puzzle people. The sentence in question runs as follows: "If the stock is very young, the joining of the inner bark of the one to that of the other will not be difficult, but when the stock is old and rough some care will be necessary, otherwise the two will not meet, but overlap, when a perfect union may be doubtful." Further, he assumes that I have slid out of the vineery into the orchard. Such, however, is not the fact, as readers will gather that I thought it necessary to point out the danger of adopting in the vineery a method which usually succeeds in the orchard. From a physiologist's standpoint "Hortus" is doubtless right, but from a practical operator's point of view I venture to think I am not wrong, for, granting that the Vine is endogenous and has no inner bark, externally there is a limit to the sap vessels not infrequently protected by flakes of dry bark more than half the thickness of the scion. Allow one side of the scion to overlap this dead matter, and the chances of a perfect union are very much lessened; but unite the living bark of the one to that of the other, and the operator, who in nine instances out of ten attaches the graft to one side of the stock, derives full benefit from the doubt as to whether the bark or the wood are the active agents in forming a perfect union. In my own practice I have always attached the scion to the side of the stock, and when the latter has been very large I have put on two, one on either side for the twofold purpose of securing two strings to my bow and getting the porous wood quickly covered and protected from the action of the atmosphere. As to whether half the stock and a like portion of the scion are cut away, I think matters little, always provided the operation is performed at the proper time, *viz.*, after the stock is in full leaf, and the two barks or outer coverings are neatly joined at the base. I should not, however, like to trust to a small piece of wood placed immediately over the pith of the stock unless the heel of the scion overlapped the external covering of the stock. In the example of cleft-grafting to which I made allusion, the stocks, to the best of my recollection, were quite 2 inches in diameter after the Vines were headed down. Two grafts, one on either side, cut wedge-shaped were lightly driven home, but, notwithstanding the fact that the pith was split through, certainly they did not touch it, and they grew as freely as the best bottle grafts I ever saw put on young Vines.

BUD-GRAFTING is a very neat and expeditious mode of transforming an established cane into a fruit-bearing Vine in one season, and may, I believe, be successfully performed in the autumn as well as in spring. It is not, however, so much practised as it deserves to be, as many bare parts of old rods might be refurbished where a change of variety is not thought necessary. "Hortus" having so lucidly described the method which he so successfully practised in April, when his Vines were in full growth and his buds, as a matter of course, ripe and to a certain extent dormant, the remainder of my remarks will be devoted to autumn grafting. Some years ago, when the much-abused and imperfectly-understood Madresfield Court Muscat was disposed of by my friend

Mr. Cox, the late Mr. Stevens, of Trentham, took Grape growers by surprise with a full crop of Grapes the following season. The method he adopted was bud-grafting in the autumn, whilst there was a sufficient flow of sap going on to form cambium and so complete the union. The buds in his, as in all cases of the kind, would be taken from young rods still growing, but on the point of ripening, and, being nearly perfect, would remain dormant throughout the winter. Unlike the Rose or the Peach, it is unnecessary to remove the wood from the shield; nor must the leaf attached be injured. When neatly and accurately let into the rod by taking a corresponding piece of bark and wood out just below an eye, the bud, about 2 inches in length, must be firmly tied with soft bast or budding yarn and protected with Moss, which must be kept damp until the union is complete. When the rod shows signs of ripening its foliage, and there is no longer any danger of the bud breaking, the shoots beyond must be shortened back to two or three buds and left for the winter. As soon as the sap begins to move in the spring, breaks from the eyes left on the stock will require close pinching, and when the inserted buds get into free growth their entire removal will become necessary. If it is thought desirable to put a number of buds on a cane—which, by the way, should not be old—they may be let in alternately a foot or so apart, care being observed as regards the protection of the buds and foliage of the Vine, as well as of the leaves attached to the buds. When all is finished, light, shading, and syringing two or three times a day to keep the Moss damp, will facilitate the completion of the union.

— After a very short trial I gave up grafting Vines, and now whenever we want to work any other variety on to the permanent Vines, it is always done by inarching. By this method a much more satisfactory union is made, and no time is lost. In fact, the advantages are all on the side of inarching. Suppose a scion is grafted on a permanent Vine this spring, it might not become a fruiting cane during the following season; but in the case of the inarched Vine, if properly managed, a fruiting cane is sure to be the result. The operation is so simple, that almost anyone may perform it successfully. The Vine on which the inarching has to be performed should have a shoot trained up from near its base, and the Vine to be worked on it must be grown in a pot. When both have made shoots about 1 foot long, the pot Vine is placed close to the stock, a slice about 3 inches long is taken from the side of each growth, cutting with a sharp knife to the centre; the two are then tied closely together with a strip of bast. The top is also pinched off the shoot which sprung from the permanent Vine, and the new one is trained up in its place. The two shoots should be tied loosely together above and below the union. In three weeks the bast must be loosened, but it must be carefully done, as the cut portions may separate; indeed, I do not remove the bast altogether until the end of the season. The Vine in the pot is also cut off gradually by cutting a notch in the stem close to the union and cutting it deeper at intervals of two weeks until it is cut quite through.—J. D.

Bush fruits.—Gooseberry bushes seem in this locality to have passed through the hard weather so far very well. Tomtits and other ravenous small birds have been either scarce or otherwise fed, as their customary attacks upon the fruit buds seem to have been lacking. There is time yet for mischief, it is true, but with a little open weather the buds will soon burst, and will then be beyond the reach of such depredators. Currant bushes rarely suffer so much as Gooseberries do, but all seem let alone this season. So far that is hopeful. Still further, all the buds yet remain dormant, the effect, no doubt, of a lengthened period of cold, but specially promising because we have seen bush buds in some previous years quite in leaf early in February. Black Currants have not been heavily fruited for two years, and on these the

buds are stout and vigorous. In the case of other bush fruits there is not such development, but it is not possible to tell whether or not buds will prove productive for some time after they have burst into leaf. There is a lull just now in the planting of breadths of bush fruits, for prices have not been encouraging of late.—A. D.

HOME-GROWN V. AMERICAN APPLES.

Now that American Apples are being brought into this country in quantity and taking the place of our home-grown fruit, it may be well to make a note or two of several varieties of the latter that may be had in good condition during this month and the next. If fruit-growers would only bestir themselves, weed out old and useless varieties and plant sorts that would come in, in quantity at a time when American varieties are a glut in the market, I have no doubt that home-grown fruit would soon take the place of foreign fruit, and fetch more remunerative prices. The reasons for this supposition are not far to seek. The American fruit has to be conveyed long distances, both by land and sea, and there is not the slightest doubt that the fact of its being packed so closely in barrels causes fermentation, and thus robs it of any fine flavour which it may have had. American fruit has little briskness, Newtown Pippins excepted, and always seems flabby and soft. Home-grown fruit, on the other hand, as, for instance, Cox's Orange Pippin, Ribston, and Blenheim Orange, is just the reverse. If people would only take the trouble to examine fruits as to quality and not look so much to high colour, matters might be different. Only the other day I was privileged to see a collection of Apples grown in a large fruit nursery in the neighbourhood of London. This nursery is quite close to the Thames and surrounded by large gas factories, yet, in spite of its position, it produces excellent fruit. The soil is sandy and light with an understratum of yellow sandy gravel, through which the water percolates freely. The fruit trees are all small and take up but little room, being for the most part worked on the Paradise stock. In looking over the produce, now, of course, in the fruit-room, I found grand samples of the following, viz.: *Dessert Apples*—Boston Russet, Braddick's Nonpareil, Claygate Pearmain, Coole's Seedling, Cockle Pippin, Court Pendu Plat, Cox's Red-leaf Russet, Duke of Devonshire (very fine), Dutch Mignonne, Fearn's Pippin, Golden Russet, King of Tomkin's County (a handsome, highly-coloured variety of American origin), Lamb Abbey Pearmain, Lord Burghley (very fine, will be in condition up till May), Mannington's Pearmain, Northern Spy, Ribston Pippin, Scarlet Nonpareil (handsome fruit), Stamford Pippin, Sturmer Pippin, Syke House Russet, Wyken Pippin. *Kitchen varieties*—Alfriston, Besspool, Bramley's Seedling, Baumann's Red Winter Reinette (a very handsome variety), Betty Geeson, Bismarck, Dumelow's Seedling, Gloria Mundi (quite sound and good), Graham's (cooking or dessert) Lord Raglan, Hambleton Deux Ans, Hereford Pearmain, Norfolk Beaufin, Northern Greening, Royal Russet, Striped Beaufin, The Sandringham, Yorkshire Greening. These varieties were all in a grand state of preservation, and several of them, notably the Beaufins, will last up till May. T.

Golden Queen Raspberry.—Among new varieties of fruit that are prominent in the trade this season is the Golden Queen Raspberry. This variety is supposed to be a seedling from the Cuthbert. It would appear from the claims made for it by those interested in introducing it that it has some unusual merits, for, while it is said to have "proved of iron-clad hardness," and thus is suited to the coldest of northern climates, it also finds favour in the Southern States, where, heretofore, only the Black Caps have succeeded well, the heat being too great for the red varieties—"flattering reports of it have been received" from Maine and Minnesota to Florida, Louisiana and Texas. Greater popularity than this could not be hoped for. The berries are said to be of large size, exceeding those of the Cuthbert, and of high quality, golden yellow in colour. The canes are strong and exceedingly productive. Mr. Theodore F. Baker, formerly president of the New Jersey Horticultural Society, says: "I am much pleased to

state that the favourable impressions I had of this Raspberry last year are confirmed and strengthened by my observations this year. It certainly is a most wonderful plant. Strong, thrifty, and healthy, while, withal, the canes had drooped with their enormous crop of fruit, which is large in size. Some berries I measured were 1 inch across, while many would cover seven-eighths of an inch in diameter. As to the quality, I consider them the best of all the Raspberries. Those I ordered sold readily, and were pronounced superior to other kinds in the market, both for quality and size. The berries were in good condition, convincing me that they will bear transportation with the best of the Raspberries."—*Vick's Magazine*.

STRAWBERRIES IN POTS.

COMPLAINTS among gardeners are not uncommon at this season of the year as to their Strawberry plants producing abortive flowers, either causing the entire or partial loss of the crop. The question arises whether such disastrous results may or may not be entirely avoided. It is only the earliest crops that are likely to be injured, but, as a rule, these are of the most value. For many years I have given attention to the cultivation of Strawberry plants in pots, and have had ripe fruit about the end of February, but to obtain such results the plants must be subjected to good cultivation and careful management through all the details of their culture. If there are any gardeners lamenting the loss of their crops during the months of March and April, it is possible that failure may be avoided next year by attention to the following details. In the first place, the plants intended to be forced early should be propagated as early as possible the previous season by pegging the layers into small pots from the middle to the end of June, and I would advise the culture of Black Prince for the earliest batch of plants, to be succeeded by Keen's Seedling. It does not always follow that because a Strawberry may be excellent for early fruiting if planted out of doors that it is of equal value for pot culture. Failure may result from acting on this assumption. Two weeks after the layers have been placed in the pots they may be cut from the parent plant; place the plants in an open, sunny position, sheltered a little from the north and east; in two or three weeks more the Black Prince variety may be transferred to 5-inch, and Keen's Seedling to 6-inch pots.

For potting soil use good decayed turfy loam, with a third part of stable manure, and in potting the plants ram the compost quite firmly with a wooden rammer. They may then be placed in the same position as before, but in order that each plant may be exposed to the influence of light and air as much as possible, I place each one separately on a brick. If the leaves are kept free from mildew and a plentiful supply of water is given, strong fruitful plants are sure to be produced. It is very easy to keep them clean by daily watchfulness. Mildew, as also red spider, may cause much damage. Our plants of Black Prince were attacked by mildew last year, and before I was aware of it they experienced a very serious check. I had them dusted with sulphur, which destroyed it at once; but the leaves were so badly injured that many of them shrivelled up, and I fear we will see the effects of this presently. The plants may be left out of doors until the end of October.

After that time take them into some cool house or shelter from rain by frame lights. It is also of the utmost importance that the plants should be placed near the roof-glass when forcing commences, and the temperature must not be higher than 15° at first, rising 5° in two or three weeks, and 5° more in a month or six weeks from the time of starting, but not more than 55° at night until the flowers open, and they will set better in this temperature than in a higher one. Up to the time the flowers open a moist atmosphere may be kept up, but at flowering time a dry atmosphere is best. The blossoms should be brushed over once every day with a soft brush or a portion of rabbit's fur tied on a stick. In all the stages of the plant's growth water should be freely supplied at the roots, and when the fruit is set the plants ought to be well syringed daily to prevent red spider. The minimum temperature should be 60° to

65° when the fruit is well set. I ought to add that as soon as it begins to colour it is desirable not to give too much water, otherwise the flavour will be impaired. The fruit must also be thinned out. A good plant of Black Prince will bear a dozen or fifteen good fruits. J. DOUGLAS.

FILBERTS AND COBS.

As one who has been for the past few years favoured with some Kentish-grown Cobs and Filberts, and can appreciate their fine quality, flavour, and dimensions as compared with Spanish Nuts, I can join heartily with Mr. Coleman in wishing to see the cultivation of these hardy fruits largely extended. No doubt Kent owes its reputation for these nuts to the excellent cultivation bestowed and admirable system of pruning adopted in that county, but what is possible there is equally possible elsewhere. Mr. G. Bunyard, in his admirable little book on fruit farming, refers to the fact that considerable breadths of nuts are grown in close contiguity to the Hop gardens, and that it is needful to gather the fruits even ere ripe lest the pickers should plunder the trees. That is a difficulty which need not exist in other parts of the kingdom, where there may be found warm sites, shelter, and deep rich soil in abundance. Probably the chief difficulty would be found in vermin, squirrels especially, but if good class nut-growing be undertaken, it should be done well, and ample protection from vermin should be assured. Over how many acres of woodland carrying overhead fairly good timber are there beneath common Hazels used only to furnish fagots, hurdles, Pea-sticks, &c., none of a very profitable kind, and yet occupying land where cultivated Nuts would thrive admirably. How much better would it be that land should be thus devoted than given over to the keeper and the pheasant.

It is specially important that nuts and Filberts should have some little overhead shelter. We have this season, for instance, seen Filberts in wonderful bloom during February, and whilst the bloom was at its best we had several days of bitter east wind and nights of intense frost. It seems impossible for the bloom to have survived such weather, but if it is found to have done so, then must it be classed as hardy indeed. Ordinarily we may look for good nut crops four seasons out of six, and that is a good average; but it is evident that, with the bloom opening so early and in such an exposed manner, there being no foliage to shelter it, that the chances are rather against a crop than favourable if hard weather prevails at the blooming period. Probably if we could ensure freedom from late winter and spring frosts we should enjoy the most abundant fruit crops in the world. It is weather which so largely handicaps our home fruit trade. It has been stated on authority that we exported small nuts to America and elsewhere to the extent of nearly £60,000 worth in 1882. If that be the case, and the nuts were of home growth, it is a surprising statement, and indicates that we must have greater breadths devoted to the culture of small nuts than is usually imagined. But it may be that some of this large export were of previously imported stocks, perhaps the best selections from Spain. On that head no information is given. Still, landowners of all classes should be encouraged to plant the best class nuts, whether Filberts or Cobs. The ground between the plants may be utilised for vegetable crops for some few years, but once the bushes have filled out, then the nuts will appropriate all vacant room. It is needful to show patience, as even well-prepared plants from the nursery some three years old still require some half-dozen years ere they become productive; but, as the old adage says, "everything comes to him who waits," so also will crops of nuts. Mr. Bunyard specially favours the Lambert Filbert, or true Kentish Cob, as being very prolific, hard-shelled, and therefore little affected by vermin; it blooms rather later than does the old Kent Filbert, which is an undoubted advantage, although the latter is rather the best flavoured. Webb's Prize Cob also obtains high praise as a very fine variety, but hardly cheap enough yet for very extensive planting. The Cosford is pronounced to be thin-shelled, a recommendation of it at once to mice and squirrels. It

produces catkins profusely, and should be planted here and there amidst other harder-shelled kinds to promote fertilisation of the female blooms. It is very evident that we have ample room for much wide small-nut cultivation. A. D.

FIGS IN THE OPEN AIR.

Now that all kinds of hardy fruits are being more thought of than at any time since the rage for building fruit houses set in, the Fig may come in for a fairer share of attention than it has had. At present Figs are cultivated principally on the south coast, but if the attempt was made in an intelligent manner much further inland, I am of opinion that success would in many instances result. The true cause of so many failures is the unripeness of the wood, this being both unproductive and very liable to destruction by severe frosts. The trees are grown too strongly—this, accompanied by a free use of the knife and close training to the walls, being the opposite of what is really required. Ordinary garden soil is usually much too rich for Figs to root in: what they should have is fresh loam and abundance of chalk or mortar rubbish. In districts not considered favourable to Fig culture, the hottest corner in the garden—this usually being the angle formed at the junction of walls facing north and east respectively—should be devoted to them. Both the surface and sub-soil ought to be removed 2 feet deep for at least a radius of 6 feet, plenty of drainage, in the shape of broken bricks or stones, with a good outlet being thrown in, and on this some rough material. One part in three of the compost should consist of either chalk or mortar rubbish, and if fresh loam be scarce, a portion of the common garden soil may be substituted. This, being made firm, induces a sturdy, fruitful growth not easily altered by either neglect or too close attention. Some of the finest Fig trees to be seen in England were at one time growing against a railway embankment almost beneath the Shakespeare Cliff, near Dover. They were planted by a fisherman and his sons, who occupy a strip of land reclaimed from the sea. The greater portion of the soil they had to root in was brought down from the cliffs in baskets, and, as far as I could judge, seemed little else than chalk. Nor did a little salt water appear to injure them, as very high tides frequently saturated their little borders. An exceptionally rough sea, which did so much damage on the south coast, completely cleared away the greater portion of the border formed in such a laborious manner, and only one tree is now alive. Plenty of fine fruit from those roughly trained trees have reached the London shops, and from 4s. to 6s. per dozen was the usual wholesale price at Dover. When I saw the trees they were at their best. They appeared to have reached their maximum size, as none of the branches at that time grew more than 6 inches in length, but this growth was nearly the thickness of a man's forefinger and very short-jointed and firm. It is this short-jointed growth that all must secure if possible. In other parts of Kent and Sussex I have seen trees nearly as sturdy in habit, but in every case they, like the Dover trees, were only roughly trained. For a few years it is necessary to neatly lay in the leading branches, but when once a good space is covered, they ought not to be treated like Peach trees. All the principal branches must be strongly secured to the walls, but the points ought not to be confined. Being allowed to grow out from the walls checks soft useless growth, and all that is necessary is to keep these shoots well thinned out to ensure good crops of fruit. Some growers are inclined to go to the other extreme, nothing in the shape of pruning being attempted. In this case a thicket of growth is formed, more especially on the top of the walls, the consequence being that only the outer portions of the trees are fruitful. The proper course to pursue is to annually thin out and tie, or otherwise strongly fasten, in the branches, the points being allowed to spring out about 1 foot from the wall. Trees with a clear stem are preferable, those being less liable to throw up a quantity of sappy suckers. If at any time the base or centre of the

tree becomes somewhat naked, some of the main branches may be freely shortened back, this being followed by plenty of fresh growths, which in time become hardened and fruitful. On no account should the points of the fruiting shoots be shortened, as these only can be relied upon to bear fruit. When the trees have arrived at a free-bearing state they require an annual surface dressing of manure, lightly forked in any time during the spring months, this being also the best season for either planting young trees as supplied in pots by nurserymen, or for lifting and replanting old trees that are not found sufficiently profitable as they now are. The Brown Turkey is the favourite variety for all positions, and I have gathered many baskets of fruit from standard trees of this hardy sort. The Brunswick, as far as the foliage is concerned, is a more handsome variety, but even in favoured localities it is very shy-bearing. For my own use the preference would be given to the White Marseilles, this small fruited sort being delicious if allowed to hang on the tree long enough. The description given of Castle Kennedy may tempt others, as it once did me, to give it a trial, but those who are in the habit of eating the fruit grown in their own garden will soon get rid of it again. The fruits are plentifully produced and exceptionally large, but they crack badly, and are rarely fit to eat.

W. I.

HOME FRUIT NURSERIES.

If landlords really want to see their tenants prosper they should set about supplying them with good fruit trees, on condition that they carefully plant and cultivate them, and leave them in good order at the expiration of their tenancy. On all large estates there are nurseries for raising forest trees, shrubs, and hedgerow plants, and by a little enlargement fruit trees might easily be added. If small holders of land or cottagers could get a supply of young fruit trees from the estate nursery, a great impetus would be given to fruit culture. There are no better cultivators of vegetables to be found than cottagers; but, as regards fruit, the majority are quite at a loss as to what sorts to grow and what to avoid, and this is one of the rocks on which the inexperienced split. If they saw the Blenheim Orange spoken highly of as an orchard tree they would at once suppose that it would be suited for small gardens in the form of a bush tree. There is, indeed, much need of sound teaching on such matters before we can hope to see the country covered with well-stocked orchards. The present state of our laws relating to land are so unsatisfactory, as to deter tenants from embarking in any expenditure which they can avoid. Landlords might therefore find the distribution of good fruit trees a really profitable investment. We frequently hear it stated that corn-growing does not pay, and vegetables are already sufficiently abundant. What, then, can we grow to keep the land in cultivation? The answer is clear, viz., grow fruit of the best kinds only. In no other way can we get the bulk of the fruit trade back into our own hands and thus save the country millions of money. Those who are willing to supply the requisite skill and labour have in many cases not got the necessary capital to invest in tree-planting, or if they have, their holdings are of too precarious a character to warrant any outlay in that direction. It is distinctly therefore the owner's duty in this case to supply what may be needed, and the best way to do this is from a home nursery in which the best sorts of fruits have been proved and made ready for planting. That orchard crops do pay better than most other crops is certain. To prove this we have only to take the average prices realised in Kent and other counties, where crops are sold on the trees, and compare them with those obtained for corn.

JAMES GROOM.

Gosport.

SHORT NOTE.—FRUIT.

Lane's Prince Albert Apple.—A better Apple than this cannot be desired for cooking, and it is in prime condition now (beginning of March). It is selling in Covent Garden Market at the rate of 9s. per bushel.—E. S.

SOIL FOR MELONS.

GARDENERS, if not exactly called upon to make "bricks without straw," are very frequently under the necessity of adopting various makeshift practices without any credit being given them for the same. If they succeed, all well and good; if they fail, they have to bear the blame. One of the greatest difficulties in the majority of gardens is that experienced in procuring suitable soil for all purposes, turfy loam, considered indispensable, being frequently absolutely out of the question. Melons have to be grown in a variety of composts, but if employers knew how much the character of the soil determined the quality of the fruit obtained, I am convinced they would consent to and even insist upon the best for the purpose being employed. In the course of my gardening career I have assisted to grow Melons in common garden soil, in a compost of turfy loam and leaf soil, in almost solid clay, in a mixture of clay and light turfy loam, in fresh turves, and in light fibreless loam, with fairly good results in every instance as far as the quantity and appearance of the fruit were concerned, but the quality varied surprisingly. A good Melon (and by this I mean a fruit that is readily eaten without plenty of sugar to render it palatable) is rarely if ever obtained from plants that rooted principally in any light or brown loamy compost. It is the loams of a clayey nature that produce the best Melons, a fact better understood by the past generations of gardeners than by the majority of those at present in practice. All cannot obtain clayey loam, but if the loam available is of a loose or light nature, pulverised and well-dried clay should be prepared and liberally added to it. I have known instances where a heap of clayey sub-soil, wheeled out from the foundations of a large house, was for years drawn upon for mixing with the Melon compost with the best of results. A loose rich compost induces the formation of rank, unfruitful growth, and what fruit may be cut is certain to be of poor quality. A solid and comparatively poor mound of soil has a contrary effect in the first instance, but, with the assistance of liquid manure and water in abundance, is quite capable of supporting a heavy crop of highly flavoured Melons. Modern cultivators certainly succeed in growing extra fine Melons, but these compare very unfavourably with the solid little fruits that used to be grown in ordinary frames on hotbeds in such abundance. Quite recently I had an opportunity of looking over a number of prize cards won by a gardener at several local shows. Nearly every season he had won first honours with Melons in competition with gardeners from larger places. It is a case of frame versus house culture, the former having the advantage. I examined my friend's soil and found it of a decidedly clayey nature with very little fibre in it, and no manure is added. Our best fruits have always been cut from plants rooting in fibrous clayey loam skimmed off the surface of pasture-land, to this being added a little fresh lime at the rate of an 8-inch potful to 2 bushels of soil. Unfortunately, our supply of this good Melon soil is cut off, and we, in common with only too many growers, have to substitute anything we can get. I can readily sympathise with gentlemen in their objection to park or pasture land being stripped of its most valuable surface soil, especially seeing that in a great many instances no attempt is made to compensate or restore the land to something like its former fertility. Wherever turf is removed for any purpose connected with horticulture, those responsible ought to replace it with garden soil, making this firm, and sowing a good mixture of Grass seeds. If this is rolled occasionally, and cut or fed down, a good turf will soon be formed; whereas, when the ground is simply cleared of turf and left to take its chance, nothing but weeds will result. Clayey loam, being unsuitable for potting, not suiting even Cucumbers, very little of it is needed annually. If, therefore, the owners of land object to the turf being entirely removed, they may yet allow a small portion of the soil underlying the turf to be dug, and this I hold to be good material for Melons.

Our plan is to line out the turf in the same way as if we intended to entirely remove it. The turving iron is passed under at a depth of about 2 inches, thus admitting of the strips being rolled back without finally detaching it. After about 2 inches, or rather more in some cases, of the soil have been removed and replaced by garden soil, the turf can be returned to its original position and well beaten down. In this manner good Melon soil can frequently be obtained without giving offence to anybody.

W. I.

Keeping Apples.—I have made a very fine cellar, well drained, paved and provided with bins for fruit and vegetables, and yet it does not answer for fruit. Apples that should have been sound and solid now, were almost dried up two months ago, and Potatoes are growing freely. Would it pay to cut a door through the present cellar wall and make a sort of underground cave, without light or ventilation in which to store the barrels, bringing them out just as needed? Or can I make entirely outside a cistern-like room, letting the barrels down into it from above? Kindly state what conditions are necessary for the keeping of fruits, and how they can be secured most economically.—J.

* * The first and most important requisite for the successful keeping of Apples is a low temperature—one within a few degrees of freezing. If this can be secured, it does not make much difference as to the amount of moisture or dryness in the air. But if the apartment is quite warm, the fruit will rot if too damp, and shrivel if too dry. What you most need probably is to control thorough ventilation, so that cold air may be let in when the days are cold, or during cold nights, and the room kept closed and cool in warm days. By the use of thermometers and proper attention, you may maintain constantly a low temperature. If the temperature is uniformly at 35°, you cannot fail to keep fruit well. Windows on opposite sides, which may be opened and closed at will, the sash either sliding or hung on hinges, will answer the purpose. The close, dark apartment you propose to make could not be kept cold enough.—*Country Gentleman.*

SEASONABLE WORK AMONG FRUITS.

PINES.

EARLY started Queens, if not already in fruit, will soon be showing, and as this is the most critical stage in their culture, a little extra attention just now will be well repaid in the long run. Bottom heat from artificial materials being so essential to their very existence, this must be kept right, be the means hot water alone or hot water and fermenting matter combined. Leaves or tan are generally used, and where the first are plentiful I question if there is anything to beat them, as every stage of decay through which they pass gives life and vigour to the Pines, and they form an indispensable article in the potting shed afterwards. Moreover, Oak and Beech leaves well harvested are always dry and warm, and ever ready to fall back upon when fermentation in the pits is on the decline. This state in the earliest Pine house as firing slackens is not unlikely to happen, and the young roots upon which so much depends being soft and tender, renovation should be performed in anticipation of their wants, not by disturbing the pots if it can be avoided, but by setting and packing them in position, by giving the old dry plunging material a good soaking with hot water and filling up to the rims with sweet, well-worked leaves. This plan, without endangering the crock roots at a critical time, will give an impetus to the fruit, and most likely suffice for the whole season. But the question may be asked, Where are we to draw the line, as different growers recommend heats varying from 100° down to 75°? Of the two, many would prefer the latter, but if I might venture a definition I should be inclined to say 85° as the mean where racing against time is not an object, and the best of all

methods growing into fruit-bearing can be practised.

Watering.—Of equal importance is the application of water to the roots, for, much as the Pine enjoys tropical heat and an abundance of atmospheric moisture, the leathery texture of its leaves does not favour rapid exhalation. Still, water must be given to the roots, and as newly started plants are generally wintered on the dry side, the first liberal supply of water should be given as soon as the fruit is visible. From this time forward each plant should be examined individually, and, whilst dribbling is avoided, a sufficient quantity to moisten every particle of soil should be given, when, to the uninitiated, the ring of the pot, to the experienced, the feel of the foliage, even in the dark, render watering necessary. As days increase in length and the sun gains strength more water may be given, but the proper strength—be the plant a newly-rooted sucker or a pot-bound fruiter, be the season summer or winter—should never be departed from, as indiscriminate watering results in the loss of roots, in untimely starting, in black hearts and inferior quality. Now all the plants are on the move, the temperature may range from 66° to 70° by night, with a rise of 10° to 15° on fine days, always with a little air and 90° with sun-heat after closing. Overhead syringing before the plants come into flower is perhaps most honoured in the breach, as an abundance of moisture can always be secured by damping the walls, and the stem-roots can be fed by syringing into the axils of the lower leaves and over the surface of the bed with warm diluted liquid when the temperature is rising.

Successions.—When all the plants intended for this year's fruiting have been top-dressed and disposed of for the present, the potting of those occupying the succession pits must be taken in hand. As these will take the place of fruiterers recently moved forward, thorough cleansing, scalding, and limewashing must precede the preparation of the bed. It does not often happen that a pit becomes quite clear of plants; therefore when it does, the war should be carried to its lowest depths, as crickets, cockroaches, and woodlice—three troublesome marauders—can then be greatly reduced, if not entirely destroyed. Moreover, a fresh start with everything clean and sweet is one of those good points which every grower who studies the well-doing of his plants and his own comfort, I will not say credit, should never allow to slip. If the bottom heat is obtained from pipes lying in chambers, the plunging material can be made warm in a few days; but when large masses of tan or leaves are employed, their proper preparation should be taken in hand some weeks before they are wanted. Meantime, compost, clean crocks, and pots may be prepared, and when the heat of the bed has declined to 85°, weather being favourable, the plants may be potted and plunged forthwith. If the plants have been kept on the dry side and the pots are full of roots, as they should be, water in sufficient quantity to moisten the balls must be given before they are disturbed. Then, although the compost may be dry, and, as a matter of course, warm, the moisture contained in the bed, combined with the gentle dewing overhead and about the walls, will prevent waste until new roots are formed, when a supply of water must be given. As days increase in length and brightness, air on all favourable occasions must be given to prevent the foliage from becoming drawn, and possibly very light shading for a few hours may be needful. From this stage forward the temperature may range about 65° through the night, 75° by day, and 80° to 85° after closing with sun heat. The bottom-heat, as I have before stated, will suit the plants admirably if it can be kept about the last named figures.

Suckers and overpotted plants which it may be thought advisable to reduce or shake free of soil should be left till last, as next to overpotting the most doubtful step that can be taken is too early potting, and on no account should they be disturbed until the new bed is in proper growing condition. The better to prevent the compost from holding

much water in suspension, a small clean pot well crocked should be used, and the firmer in reason the soil is rammed the quicker and safer at this early season will be root action. Plunge the plants with their heads almost touching the glass, avoid shading if possible by shutting off fire-heat early on fine mornings, and prevent waste by keeping the pit close and moist until new growth justifies giving a supply of water. If the space occupied by old stools from which winter fruit has been cut is wanted, they may be shaken out and laid in by the heels for a month or two. An occasional dash with the syringe will aid them in feeding the suckers, which may be detached and potted as they become large enough and suitable quarters can be provided for them. Shy varieties, like the Smooth Cayenne, often force dormant buds into growth; if divested of all their leaves they are lightly buried in soil placed over a strong bottom-heat.

MELONS.

Although early Melon plants have had a severe struggle, a change to milder, but still sunless, weather has brought about an improvement, and where they are growing in well-appointed pits a few bright days may render them worth keeping. Weak, leggy plants are not, however, tempting, neither are they profitable; hence my reason for advising frequent sowings, as it is better to throw away feeble batches and trust to later plants, which not only catch them up, but pass them by and yield fine fruit worth eating. Good Melon seeds are not expensive, as most people raise their own, and the better to start well, a few put into small pots or squares of turf every ten days will always give a supply of plants to fall back upon. But, assuming that the earliest plants have climbed to the trellis and are now making good progress, encourage short-jointed, sturdy growth by the maintenance of top and bottom heats that will favour a chink of air every day to let out vitiated air and keep them clean and healthy by the production of atmospheric moisture in preference to direct syringing. Later on, when the fruit is swelling, copious syringing after the house is closed at a high temperature will be found beneficial not only in keeping the foliage free from red spider, but also in preserving it, as tropical plants never scald in a bath of vapour.

Water, of which the Melon takes copious supplies, may be used pure until the fruit is set; afterwards the addition of liquid from the manure tank, guano water, and occasionally a little soot water will help the plants, always provided they are well furnished with hungry mouths, which can be created by thin top-dressings of fresh loam freely charged with bone-dust. As growth proceeds, be the plants in pots or on hills, every lateral from the base of the stem to the first wire must be pinched out when quite young, but great care must be observed in the preservation of the leaves, as injury to these frequently predisposes them to canker. When two-thirds of the trellis is covered, the pinching of the leading points will throw a flush of laterals, and as these show at the first joint every flower must be fertilised as soon as it opens.

Melons in pits and frames.—Unless plenty of time can be devoted to these, this mode of culture is best left alone until the Blackthorn winter has passed away, but where the first and perhaps the only crop is obtained from manure beds, the preparation of the materials will now be under hand. Many people give preference to brick pits, but unless they are made complete by the addition of a hot-water pipe, I think I should be inclined to go back fifty years or more to the old-fashioned double-boarded McPhail frames permanently fixed upon studs of timber resting in an excavation wide enough to favour the addition of front and back linings. When properly constructed with steam-proof cavities, and the linings receive regular attention, these frames are much drier and warmer than brick pits—no small matter in the cultivation of plants whose greatest enemy is cold, condensed, and stagnant moisture. Although the art of manufacturing a first-class manure bed is nearly

lost, I may observe in passing that this is the foundation of success, for unless good materials are properly prepared and well put together, the seed, as I lately observed on the management of Vine eyes, comes to a dead stand just when power is needed, and the crop is crippled or lost. The next point is compost, which should be sound, heavy rather than light, and good enough to support moderate growth without the aid of solid manure. Old pasture loam corrected with lime rubble in moderate bulk answers best; lighter soils, to which marl has been added, also fosters good growth, and finishes fair fruit, provided it is made very firm and well fed when the Melons are swelling. The last point I shall touch is the selection of varieties and the mode of raising the plants. Free growers and setters like Golden Gem, Golden Perfection, Victory of Bath, Blenheim Orange, and the original Egyptian green flesh are good all-round Melons, and, properly grown, still stand in the front row. But a good start being more than half the battle, a one-light frame placed on a hotbed and well lined should be devoted to the raising of the young plants. If one or, perhaps, two seeds are placed in 4 inch pots, plunged in a bottom heat of 80°, and not more than a foot from the glass, which should be kept clean, sturdy plants will soon be ready for turning out on the hills; but in order to have the fruiting frame in proper condition for them, the making of the nursing-bed should precede the permanent bed by three weeks or a month. If the two seeds grow, the weakest may be pulled out, and the strongest, when three or four leaves have been made, must be pinched to induce side breaks. As these growths will be allowed to extend until they nearly touch the sides of the frame, when they also will be stopped, the soil in the fruiting frame should be ready for the plants by the time the back buds have started. If, on the other hand, it is not ready, a small shift will be necessary, as young Melon plants should never become pot-bound.

CUCUMBERS.

Autumn-sown plants with us have wintered well, and are now producing good fruit. They are growing in very narrow troughs formed by 11-inch boards set on edge and backed up by fermenting leaves, which are renovated whenever the bottom heat descends to 80°. Top dressing, consisting of light rich turf, old lime rubble, and a dash of bone dust, is used lightly as often as the roots reach the surface. Weak liquid is administered freely, but solid manure is never used, as it sours the soil and encourages worms. The air temperature ranges about 65° at night and 70° to 80° by day, and the syringe is used freely when the houses are shut about 1 p.m. for the day. Although spider has been seen it has not been troublesome, and, thanks to Bloxham's fumigator used weekly, our tobacco consumption is very small, and fly never puts in an appearance.

Spring-raised plants.—Where pits have been prepared for these, the soil should be ready for their reception before they become pot-bound, otherwise, like Melons, they must have a shift into larger pots, and as this means two checks where one should suffice, it becomes a question whether plants from later sowings will not beat them in the long run. Cucumber pits, like Pine houses, should be thoroughly cleansed and scalded at least once a year, twice if practicable, and as spring planting generally means a new start, this important matter should never be neglected. If fermenting leaves are at command they should be used freely, as they economise fire-heat and produce genial warmth and moisture, in which all soft-wooded plants luxuriate.

The Oso Berry (*Nuttallia cerasiformis*).—One of the earliest to flower among what are called spring-flowering shrubs is the Californian Oso Berry, which has much the appearance of the common flowering Currant (*Ribes sanguineum*), except that its flowers are white. They are borne in drooping clusters before the leaves are scarcely unfolded. The flower-buds are just bursting now,

and a few sunny days will see the shrub in full bloom. It is a large, round-headed, very twiggy bush, and is well worth growing for the sake of its early bloom. Its usual height is about 5 feet or 6 feet in this country, but in California, its native country, it reaches as much as 15 feet. It grows well on any light soil, and it is always best to plant it in an open, sunny position. It is nearly allied to the *Spiræas*.—W. G.

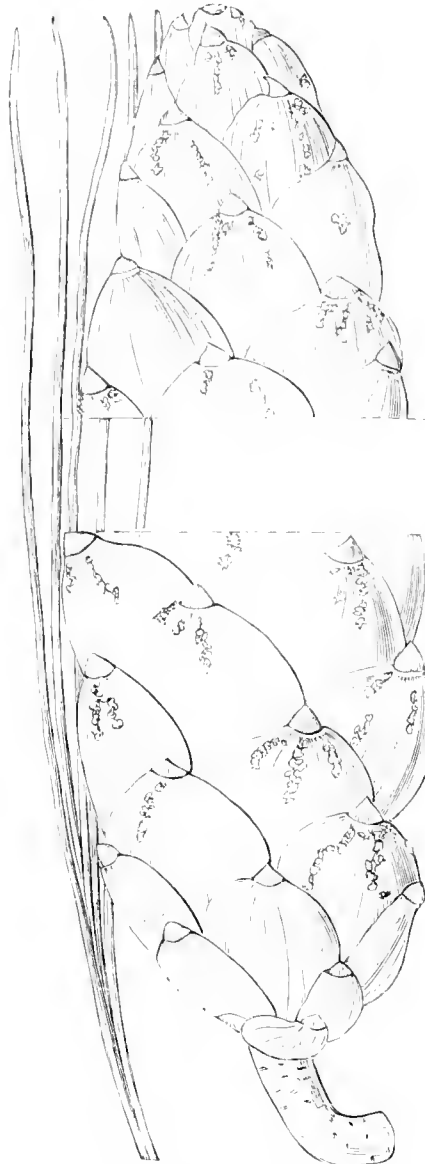
TREES AND SHRUBS.

W. GOLDRING.

THE BHOTAN PINE.

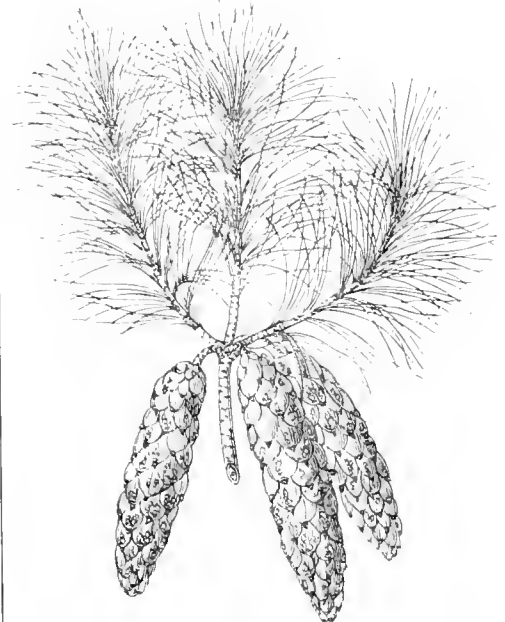
(*Pinus excelsa*.)

THE Bhotan Pine has become such a favourite ornamental tree of late years, that it is now one of the commonest trees in gardens large and small. The exquisite gracefulness of its growth, its



Full-sized cone and leaves of *Pinus excelsa*.

sheltered. What it does not like is a spot exposed to south-west winds. In such a place the most vigorous young specimens soon show signs of distress; they become weak and straggly in growth, with scarcely any branches on the windward side. For this reason no one would think of planting it on an open hillside sloping to the south.



The Bhotan Pine, coned branch.

As regards soil, I conclude that a deep sandy loam is most suitable for it, though grand trees may be seen growing in dry sandy soil resting on gravel as well as in heavy clays; indeed, it is one of the few Pines that may be planted in absolutely damp places, provided the roots are not perpetually in water. Yet one of the finest trees of it with which I am acquainted is growing by the side of a lake, so near to the water's edge that the roots on one side must be continually submerged. The only thing to fear in planting this Pine in low-lying damp spots is injury from frosts during severe winters, for the growth of trees in such spots is obviously less hardened than that of trees on higher ground. The growth of young trees is most liable to injury, particularly for a season or two after they have been transplanted.

In tree-planting we have not much control over the soil unless we go to the expense of making a suitable soil in places where such does not exist, but usually a choice of situation may be had in every place, and care should be taken to select a sheltered spot for this and other Pines that dislike strong winds. If there is a plantation running east and west, then the place for the Bhotan Pine would be within 50 paces of that plantation, as, though it likes shelter, it dislikes shade, and for that reason it does not do so well at the foot of a northern slope of a hill as in a better aspect. It is my opinion that the proper selection of positions for ornamental trees is of far more importance than soils, and particularly so in the case of Conifers. I have never seen what I should call a good specimen of *Pinus excelsa* on the chalk, but perhaps some of the readers of THE GARDEN may have done so.

The aspect of the Bhotan Pine must be so familiar to all who take the least interest in trees, that a description of it is unnecessary. The only other Pines that closely resemble it when young are the common Weymouth Pine (*P. Strobus*) and the Roumelian Pine (*P. peuce*). When large, say 20 or more feet in height, one can at a glance distinguish them. The Weymouth has shorter leaves, and the leaf-tufts are not so plentiful as in *excelsa*; in fact, the tree is altogether thinner and more inclined to grow erect, while *P. excelsa* always

feathery appearance, and its soft grey colour captivate everyone. It is, without question, a most valuable ornamental tree, and amongst a dozen Pines selected as the best for general culture in any part of the country we should be inclined to place *Pinus excelsa* at the head of the list. It is, moreover, a very accommodating tree; it rarely refuses to grow anywhere if the position is at all

has a tendency to spread. While you see one excelsa with a single erect leader, you may see a dozen others with two, three, or more leaders, and with wide-spreading horizontal limbs. Of *P. peuce* I have not seen large specimens, but plants about 15 feet high are so much like young Bhotan Pines, that one has to look closely for the shorter and more slender leaves. Botanists tell us that *P. peuce* is only a geographical form of *P. excelsa*; but that is questionable, for there is quite as much difference between the two Pines as there is between other so-called species. Grisebach, who closely studied European plants, named it, and, no doubt with good reasons, considered it specifically distinct.

All three Pines mentioned above belong to the five-leaved section of the genus, and all possess the characteristic glaucous tinge in the foliage—a bluish grey tint, in fact—while the smooth bark of the young branches is of an ashen grey colour. The merit of *P. excelsa* consists in its retaining its lower branches well, and these being wide-spreading in isolated specimens, sweep the turf in a most graceful way. It is, therefore, the perfection of an ornamental tree, especially an old tree when laden with its long, drooping cones of a pale russet brown. Adult trees bear cones freely, which form conspicuous objects through the winter. Their seeds are sweet morsels for squirrels, which I saw busily dining off them the other day in the Kew arboretum. They were perched on the topmost limbs, and it was amusing to see how dexterously they nibbled away the scales and extracted the seed: it was astonishing, too, to see how instinctively they knew a seedless cone. I picked up one which they had allowed to fall, and found not a scale touched, and not a seed in it. Some young trees of this Pine begin to cone when only about 10 feet high, but this occurs chiefly where the soil does not induce rapid growth. Its rate of growth is obviously governed by the character of the soil: in the most suitable ground and position young trees grow as much as a foot and even 18 inches annually.

This Pine is one of the characteristic trees of the Himalayan Mountain region, where it is known to travellers as the Weeping Fir. It spreads over a vast area. Gordon, in his "Pinetum," states that it is found principally in Nepal, where it prefers the more open aspects of the mountains, forming in Bhotan extensive and very beautiful woods on the southern slopes. It grows at elevations ranging from 6000 feet to 10,000 feet. In Nepal, Simla, Cashmere, Kumaon, and other localities it grows in company with the Deodar and attains a great height, often over 150 feet in the sheltered valleys. Its timber is excellent, and is one of the staple woods of that region. It is preferred to all other woods for certain work, such as pattern-making, as it works easily, and is free from knots. It is very resinous and fairly durable. This is what the timber is in its native country; what it is grown in this country I have no experience. It does not seem a likely timber tree for this country any more than the Weymouth.

The illustrations herewith given represent a coning branch admirably, but often the cones are solitary or in pairs.

Butcher's Broom.—I never for a moment doubted the hardness of this shrub; indeed I have often found it wild in various parts of England. The point which I wished to make known was this, that in this country, as far as my experience goes, it is a stiff, dark, morose, forbidding-looking plant, huddled and drawn together exactly as if it felt our cold winds, and seldom if ever fruiting (I have only once seen a single berry on it): whereas in hotter climates it is the very opposite—bright, cheerful, spreading, elegant, and covered with exquisite big berries. A plant may be perfectly hardy and yet never come to perfection in a cold climate. Has "W. G." ever seen it fruiting freely in England? Has he ever noticed the utter difference of its habit in Southern Europe, where it is

indeed a delight to feast one's eyes upon?—W. WILKS, *Shirley Vicarage, Croydon.*

KITCHEN GARDEN.

W. WILDSMITH.

NEATNESS IN GARDENS.

IN these times of general depression, which influence horticulture to a great extent, the question of neatness in the kitchen garden may by some be considered out of place, and the labour it involves more profitably employed in the furtherance of a higher standard of cultivation. Those, however, who entertain such an idea would do well to remember that the best cultivation is found in gardens in which some attention is paid to neatness. "Rough and ready" is an old saw that gardeners need not mind, for if a thing is worth doing at all, it is worth doing well. This applies equally to all work about the garden, and satisfaction cannot be expected so long as dirt, weeds, and bad walks meet the gaze. Someone may say, Your logic is all very fine, but I am short-handed, and not having a sufficient number to work the garden as it should be, some portion of it must of necessity be left in the rough, and of course it is the kitchen garden. Two crops on the same ground at the same time is an impossibility, and as weeds will not pay, grow only vegetables, and you will get as much from half your ground as from the two halves with a crop of weeds. The spare half, if no better plan presents itself, can be laid down as pasture till better times admit of its being cultivated. Too large gardens are as difficult to manage satisfactorily as too small ones. Of the two I would prefer the latter, as being more easily worked if foresight be exercised in regard to cropping, while the anxiety concerning appearance would be considerably reduced. It would be difficult to always have everything straight in the kitchen garden, but who expects to see that degree of neatness which is appropriate to the flower garden? At the present time the frost necessitates some extra labour to neutralise the mischief done among the green crops. We are compelled from sanitary motives to remove this decaying matter, and neatness is thus forced upon us. Similar hard knocks might be advantageous to those who act under the false idea that neatness is not an essential to good cultivation.

Gilbert's Jubilee Sprout.—Mr. Gilbert has already enriched our gardens with such a variety of the Brassicaceous race, that it is not surprising he marks the Jubilee year by presenting it with one of his novelties. He has sent us a Sprout which he proposes to call the Jubilee Sprout, and which we have tried both boiled and *sautée*—the way in which the Brussels Sprout is frequently treated abroad—and a very good flavour it has. A benefactor of this kind generally takes his own way, but if we could imprison him and give him work to do, we should turn his attention from vegetables of this race to certain fruits. The production of a really high-flavoured late Apple would be worthy of his attention; whereas the number of the Cabbage race in Western Europe, from Berlin to Oporto, is so large, and the kinds so varied, that we should not lose much if we did not add to the number. We might gain something, perhaps, by studying delicately-flavoured kinds that are little grown in this country as yet; but we every day see evidence of the deplorable fact that, while other countries are sending us, by the thousand barrels, Apples that bring high prices, good late English Apples do not come into the English market.

Veitch's Red Globe Turnip.—Whilst looking after new friends do not let us forget old ones, and this Turnip is one which should have a prominent place in every vegetable garden. It is not an early Turnip, but that does not matter, as we already have several of the strap-leaved sorts which have superseded the Early Dutch. We have the Stones, the Snowballs, and the Six Weeks for summer use, and Red Globe,

which by the way cooks as white as any of the above for winter and spring. Orange Jelly, an excellent winter Turnip, is not perhaps so much grown as it was a few years ago, its colour being against it, but Veitch's Red Globe, equally hardy and very handsome, with its bright band of crimson dying off to pure white near the ground line, is a worthy substitute. I sometimes sow it for summer and autumn use, but my main sowings are made after early Potatoes, and the roots are allowed to stand until the end of February. They are then lifted and stored under a cold north wall, where they keep fresh and tender until the strap-leaved kinds are fit for use.—W. COLEMAN, *Eastnor Castle, Leicestershire.*

CUCUMBERS IN FRAMES.

It is often more economical to grow Cucumbers on a bed of fermenting material in spring and summer than in an artificially heated structure, *etc.*, if the object is to grow them for home use only, and, besides, there are many places where they must either be grown on a manure bed or not at all. The best kind of bed is that composed of nearly equal parts Oak leaves and fresh manure from the stable, thoroughly intermixed and blended. In a bed of such materials properly put together there is not much danger of overheating. Some judgment and experience are required in making up a bed for Cucumbers to go successfully through the season. If the materials are fresh and the manure in excess of the leaves, tread it rather firmly in order to drive out the air and prevent violent fermentation, which has a tendency to carry off all the moisture. A bed 5 feet high at back and 4 feet in front, and 1 foot longer and wider than the frame, will carry the plants through the summer without linings if well put together not earlier than the middle of February. The frames and lights should be washed to clear off any eggs of insects which may have remained from last summer and to remove all dimness from the glass, as it is important that full light should at least, at the beginning, be admitted. As soon as the temperature of the bed has become steady at about 80°, the hills of soil may be placed in the centre of the lights, and when the heat has penetrated through them the plants may be set out. If no provision has been made for

RAISING THE PLANTS in some other structure, the seeds will soon germinate in the frame in question if planted singly in small pots. As soon as the rough leaf appears the young plants should be planted in the hills of soil, which should consist of about two-thirds turfy loam and one-third old manure or leaf-mould. The soil should not be too light, as its tendency in that case is to encourage over-luxuriance rather than early fruitfulness. Cucumbers do not require much soil to grow in, but it is necessary to apply frequent light top-dressings, and some means should be taken to warm the soil before scattering it over the white roots, which are constantly, in the case of healthy plants, pushing their way to the surface. Many growers keep little heaps of fresh soil for the purpose of top-dressing in the corners of the frame at the beginning of the season. Later on, spreading it out in the sunshine will warm it sufficiently. The water used should have its temperature raised to that of the frame, either by adding hot water or by setting the vessel containing it in the frame some time before using it. Liquid manure should be given freely after bearing begins.

STOPPING THE SHOOTS.—Rub out the leading bud as soon as the plants arrive at what is termed the rough leaf stage. When the leading bud has been pinched out other buds start away below it, and these shoots soon begin to spread over the frame on all sides. When some progress has been made the terminal buds are pinched out, and very soon male blossoms and fruits make their appearance. The shoots should be pegged down as they advance in growth, and sprinklings of compost should be given at least weekly. These light, weekly dressings are very encouraging to the plants, and tend to keep the atmosphere of the

frame sweet and buoyant. The regulation of the growth may for some time at least be done with the finger and thumb, pinching each shoot one leaf beyond the fruit; also pinch out or stop any shoots not required for filling the frame. Ventilating and shading are two operations closely linked together in Cucumber culture; only enough shade should be used to prevent scorching, and just as much ventilation should be given as will ensure robust growth and no more. If a piece of scrim or canvas be hung over the opening for ventilation, the atmosphere in the frame may be changed without creating cold currents. Warm coverings will be required at night till the summer is well advanced.

INSECTS AND DISEASES.—Greenfly and red spider are always ready to take advantage of conditions favourable to their attacks. Robust, hardened growth is the best preventive of these, and also of mildew, which is sometimes troublesome if the least stagnation occurs in the growth of the plants or in the atmospheric condition. Very often the Cucumber frame is crowded with pots of cuttings, pans of seedlings, &c., and though within reasonable limits the genial temperature of the Cucumber frame may be taken advantage of for forwarding many things for which there is a demand in spring, much watchfulness is required to keep the atmosphere fresh, sweet, and buoyant. Sulphur is the best remedy for mildew where it does occur, and it should be applied the moment the first white spot appears. At the same time the cause should be removed, the frame should be cleared of most of the pots and pans which it contains, and a top-dressing of fresh compost should be applied. Greenfly can be kept out by an occasional moderate fumigation of tobacco, and red spider by the application of moisture, accompanied by a close atmosphere for a time. But the most serious disease which attacks Cucumbers is a kind of gangrene or ulceration which attacks the fruit, and is first made known by the exudation of gum from its sides, which renders it unfit for use. There is at present no remedy for this disease. If taken in hand early, the temperature increased, and more moisture than usual thrown into the atmosphere, it is sometimes possible to drive it out, but the result is always uncertain; and in a general way it is safer and better practice to make a clearance of everything and to burn all that can be done in order to destroy any germs which the soil may contain. Well limewash the house or frame, clean the paint and glass, and begin afresh with new soil and fresh plants from another source.

VARIETIES—The Telegraph, Tender and True, Cardiff Castle, and Model are all good varieties for frame or house culture. E. HOBDAY.

SEED POTATOES.

MR. MUIR'S strictures on the samples of seed Potatoes sometimes obtained from seedsmen may, in his experience, be justified, but I think the picture is rather overdrawn. In dealing with Potatoes intended for seed, and especially with those of the more expensive sorts, lift them on dry days and allow the tubers to lie on the ground for a few hours to dry; pick out all the larger samples first, then the seed sample, and the very best tubers for seed are the middlings; carry these into a yard or enclosed space and where there is a hard floor, lay them out there for a whole day in the sun and wind; then carefully go over and select again, rejecting all ungainly, small, and diseased tubers, and then place them in a shed on shelves, or in greater bulk on floors, or perhaps in bins or large boxes, where the tubers can obtain ample air and, if possible, light. Now, it is not possible for anyone to give greater care and attention to the tubers than this, or to afford them more suitable treatment to endure the winter's storing. As a result, I can say that not a bushel of tubers out of tons, even of the earliest sorts, has yet pushed a shoot, because with all this exposure there has been an average low temperature, which is beneficial to the tubers. When we have very soft, mild winters no power can prevent growth; but this is certain, that with careful selection, ample harden-

ing, and air during the winter after storing, any harm arising from early or premature starting is very much minimised. I must object to the statement that Potato seed tubers generally are treated badly. Such a stricture may have had fitting application twenty years ago, but it does not apply now. Then it is most improper to assert that Potatoes rejected for cooking should never be used for seed. In my experience of seed Potatoes—a very extensive one—I have ever found that preference is shown to the size which we invariably regard as just below ware or cooking tubers. Good sound hard tubers of about two ounces in weight are the very perfection of seed tubers, far before others double the size, which need cutting ere planting, or if planted whole are so much food wasted. Tubers of the weight named, however (2 ozs.), are, of course, held to be too small for cooking. As I have never illustrated a Potato I am not amenable to the charge that the seed tubers bear no comparison to the pictured tuber, and it must be admitted that whilst in shape fair enough, the coloured illustrations so often seen of Potatoes in seed lists are absurd enough. Still, these are but assumed to represent not seed tubers, but the best selected samples, as no one illustrates the worst of anything. After all, I think that Peas and some other things are much more unfairly illustrated than ever Potatoes are. However, I think if gardeners or others wish to obtain seed Potatoes from any respectable seed firm, they will have little cause for complaint. The Potato seems to be a black mark with some writers. I hold, none the less, that there is to be obtained in the trade seed Potatoes equal in quality to that found in any other article in the seedsmen's lists. A. D.

KITCHEN GARDEN NOTES.

VEGETABLE FORCING.—In order that no check to growth may take place, it is important that the linings round frames containing Potatoes should be renewed at least once a fortnight during very cold weather, and once in three weeks as the weather becomes milder, and fresh soil should be added as soon as any roots are seen on the surface. We usually sow Radishes thinly between the rows, and where this has been done the soil will have to be stacked in ridges in the same way as in outdoor earthings; if needs be, as soon as the Radishes are pulled, additional soil may be put between the rows. Having made up other beds on which to plant Potatoes, the framework—long, thin planks to hold the soil together—is now being put into position, and stout Hazel rods hooped over on which will rest the covering to protect them from frost. Light soil of any description, from 12 inches to 15 inches in depth, will grow good Potatoes, and as soon as the heat has subsided to a temperature of 70° they may be put in with safety. Between the rows of the Potatoes we shall sow Coleworts, which will be fit for transference to the open air before the Potatoes require additional soil. Carrots do remarkably well in these makeshift frames, and there being virtually no labour needed other than covering them over in severe weather, they should be grown in quantity this season, as there is sure to be a dearth of good vegetables this spring. French Beans I have always found to do best in pots, but they take up so much room at a time when every placed is crammed with bedding and other plants forced for supplying cut flowers that they are more conveniently grown in pits after this time. They do not require much bottom heat; 60° will do, but 65° would be better. Leaves are about the best heating medium for them, and if not too wet a bulk 4 feet in depth gives off that amount of heat. Equal parts of loam and roughish leaf-mould make a good compost for them, and a sufficient depth is about 8 inches, as the plants root down into the leaves, much to the advantage of the crop. We sow very thinly in drills a foot apart, and thin out the plants in the row to 6 inches asunder as soon as the first leaf is well formed; there is then no danger of injuring the roots of the plants that are to remain, which would be the case if they were left to get matted together. Keep the soil nicely moist

through—not sodden—and syringe daily when the pit is being closed for the night. The temperature should never be lower than 60° by night, and from 65° to 75° by day, according as the weather is cold or warm. Any of the varieties will force, and there is really very little difference in earliness between Sion House, Fulmer's Forcing, O-born's, and Canadian Wonder; the last named I prefer because it never fails to crop heavily and is of such robust growth as to disregard a little rough treatment. Mustard, Cress, Mint, Tarragon, and Chervil are conveniently grown in corners of the French Bean and Potato frames in small boxes or pots, according to the quantity of each that is required. Attention to put in the several sorts in time to succeed the crops exhausted can only be done by some such method as setting apart a certain day in each week to, as it were, take stock of such matters, and act accordingly.

PARSLEY.—The late severe wintery weather has made sad havoc with this, both under the protection of a frame and in the open border: consequently to avoid a failure as regards the supply we have lifted a lot of the strongest roots and planted them in boxes and put them in ainery that is being forced, and a sowing will as soon as possible be made at the foot of a south wall, but the general sowing will be deferred till March. Being hard up for a suitable place in which to continue the supply of forced Asparagus, we lit on what is likely to turn out to be an excellent plan. We have a large stack of leaves stored for Pine growing; on the top of this stack we levelled the desired space, put on a thin layer of soil, then the plants, covered the whole with 6 inches of light soil, and gave a good watering. During the late frost we covered up the bed with mats, and now we shall erect a trellis on which to lay the mats whenever the weather is cold. The bottom-heat thermometer pushed well into the leaves registers 86°, so that the heat is not likely to get excessive, seeing that the plants are quite on the top of the stack. All our Seakale is now planted in large pots, and a constant supply is kept up by putting a couple or three pots into warmth every week. The roots of all that have been forced are saved, as many of them will do to re-plant, and meanwhile all are heeled in under the shelter of a wall.

LETTICES.—We have pricked out in cold frames the plants raised in heat, and they will be planted on a south border as soon as they have acquired sufficient strength to withstand the cold easterly winds so prevalent in spring-time. After this time all the sowings of Lettuces will be made on the ground where the plants are to mature, this being the only method by which we can secure fine crisp heads throughout the summer on our light soil. We shall make our first sowing at once on a narrow, well-sheltered border, in rows a foot apart, and thin out the plants to 9 inches asunder in the row. Soot, wood-ashes, and Beeson's manure are all excellent fertilisers sprinkled between the rows a week or so after the thinning out is done. Sowing "little and often" is the surest way of maintaining a continuous supply. The Cos varieties are generally the most prized, and rightly so, for they have the double advantage of being less liable to seed and of higher quality than the Cabbage varieties, Paris White and Paris Green Cos, and the many closely allied types of these are all excellent.

SHALLOTS AND GARLIC.—Had the weather been favourable, these would have been planted ere this. The ground—a deep, highly manured loam—is quite ready for them. For the Shallots we allow a space of a foot by 9 inches, and for the Garlic a foot each way; these distances we find to be none too much, considering the clusters of bulbs which they make in highly tilled ground. We plant deeper than is generally done, the sets being completely buried and made extra firm with the view of preventing upheaval by frost. This was the only reason we had to favour deep planting when it was first adopted, but the success has been such, that we should plant just as deep, even if we could feel sure that there would be no frost, as I am satisfied that both

clusters and single bulbs are larger, because not so liable to be affected by drought. Thus growth is continuous, and as both naturally mature early, there is no risk of bad keeping owing to lack of ripeness. Sound and large sets should be selected, not that small sets always give small produce, though for the most part they do; it is therefore wisdom to strive to avoid any such mishap by selecting the most perfect seed.

LEEKS—We southerners are not so enthusiastic as regards the cultivation of Leeks as our northern brethren, and the reason is we have but little demand for them. If we had they would be forthcoming in abundance, as there is no more skill necessary in order to grow a good crop of Leeks than one of Celery or Onions. We always grow a few, as they may possibly be asked for about twice during the season, but for all that we try to grow them well, and now is the time to sow them. Good soil and an open exposure will suit them; sow rather thickly in drills, and as soon as large enough to handle transplant them to their permanent position, which should be a sunny exposure, and the soil deep and well enriched with farmyard manure. Draw deep drills 15 inches apart and plant with a dibber, allowing each plant at least 9 inches of space. Should the weather be dry at time of planting, give a good soaking of water, and repeat the same if needs be till the roots have got well established. As the plants progress in growth fill in the trench, and towards the end of the growing season, should the length of the plants warrant it, earthing up, the same as is done in the case of Cabbages, will assist the blanching. This constitutes the whole of our practice in Leek growing, but were this vegetable demanded of us in the highest perfection we should give it still more liberal treatment, and grow it in much the same way as Celery and Cardoons are grown.

GENERAL WORK consists in trenching ground lately cropped with Parsnips, and which will be required for our main crops of Peas; therefore all the manure that can be afforded is being worked into it. The frost has hindered the sowing of Parsnips, Onions, and a second lot of Peas and Broad Beans, but now that a change to milder weather has set in, we are preparing for sowing by roughly raking down the soil, an operation that has to be repeated on two consecutive days in order to get it sufficiently fine for the drawing of seed drills. Ground not over-rich may have a surface-dressing of artificial manure spread over it before raking is done, as by that means the manure gets well worked into the soil, and the drilling gives it another fillip in the same direction. For Turnips we prefer this way of manuring to all others. Soot is the main ingredient used, and even in the driest season this appears to answer, as we seldom have to complain of injury from fly. Our first-sown Peas in the open air are just breaking through the soil, and unless at once made distasteful to sparrows and tomits, the points will soon be nibbled out. Soot and lime deter them, but the dose must be repeated after each heavy rain. If the rows can be staked at once and made extra thick at bottom by the use of Evergreen spray, this balks the birds so much, that unless hard pressed for food they avoid them. Another sowing of Peas and also of Broad Beans will be made during the week, and just a small patch of Early Munich Turnip, a variety that differs from other kinds quite as much in its non-liability to run to seed by reason of early sowing as it does in being ready for use in an exceptionally short time. It is not a good summer Turnip, for directly hot weather sets in it gets so bitter as to be quite unfit for use. All through the spring the quality is passable, but its principal claim to notice is its earliness.

W. W.

Odontoglossum gloriosum.—The finest form of this species which has come under our notice is now flowering in the select collection of Orchids belonging to Mr. Jacob, at Stamford Hill. *O. gloriosum* of Bateman is now, however, merged into *odoratum* of Lindley, and the plant in question certainly much resembles that known as *O. odoratum* Lecanum. The panicle is much-branched and many-flowered; in the blossoms, which are large and richly coloured, the lip

is profusely blotched with reddish brown in front, and in addition to the beauty of their markings, the flowers yield a delicate perfume resembling that of Whitethorn.

ORCHIDS.

W. H. GOWER.

INTERMEDIATE HOUSE ONCIDIUMS.

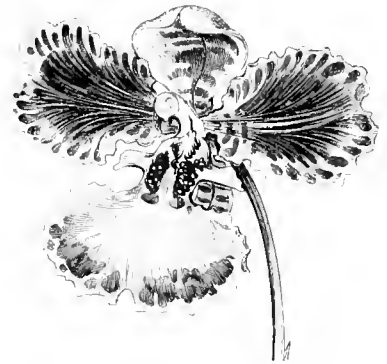
THE prevailing colour of the flowers of the different species belonging to this somewhat large genus is yellow, although there are some notable exceptions, one of which is *O. Jonesianum*, figured the other day in THE GARDEN. Many of the earlier introduced species were small-flowered, and although a few years back these were highly prized, they do not now-a-days find much favour with Orchid growers. Nor is this to be wondered at, seeing that numbers of new large-flowered kinds have been discovered and introduced in a living state in quantity. Those commencing the cultivation of Orchids should select kinds that will maintain a good display of bloom



Oncidium curtum (showing habit of growth).

throughout the season. In some instances even a houseful of bloom, consisting of one species and its varieties, is a grand sight, an example of which we had recently in Mr. Sander's nursery, where many hundreds of blooms of *Cattleya Trianae* were to be seen, but such a display only lasts about two months. A succession must, therefore, be secured, and, as in the case of the *Cattleyas* given in THE GARDEN (p. 175), we have described a dozen *Oncidiums*, which will thrive under similar conditions of temperature and form good companions for them. *O. Cavendishianum*, although an old kind, cannot well be dispensed with, as it is one of the earliest of intermediate house species to produce its flowers, which usually appear in January and February, and last six weeks in perfection. It is a massive-growing plant, and for that reason should be kept in a pot. It has few or no pseudo-bulbs—its leaves, which are erect, very thick

and fleshy, are keeled at the back and vivid green. It produces its blooms in great branching panicles, on which the single flowers measure an inch or more across. The sepals and petals are dull yellow, spotted with red, and the lip, which is flat, is bright yellow.



Flower of *Oncidium curtum* (full size).

O. concolor, which is a native of the Organ Mountains, should be grown in a suspended basket; not only does it succeed best thus placed, but its racemes being pendulous display their charms to the greatest advantage in that way. The pseudo-bulbs (which are ovate and furrowed), and also the short, strap-shaped leaves, are bright green. The flowers, which appear in March and April, are large and wholly bright clear yellow, with the exception of the two raised ridges at the base of the lip, which in some varieties are red, and in others orange. *O. sarcodes* is another Brazilian plant, the pseudo-bulbs of which are erect, almost cylindrical, and dark green. These bear a pair of short, broadly lance-shaped leaves of a deep shining olive-green. The panicle, which is large, is much branched and many-flowered; the sepals and petals are yellow, and more or less profusely blotched and streaked with reddish brown, and the lip, which is flat, is also clear bright yellow, dotted towards the base with red. The flowers of this species usually open during April, and before those of *O. concolor* are over. *O. Marshallianum*, a Brazilian *Oncidium*, is of the showiest belonging to the genus. It blooms during April and May. Its panicles, which are erect and branched, bear many flowers, and the individual blooms measure 3 inches across. The sepals are yellow, transversely banded with chestnut, and the petals, which are of the same colour, are not banded, but blotched along the centre; the lip, which is large, flat, and bilobed in front, is brilliant clear yellow, with a saddle-shaped blotch of chestnut at the constricted base.

O. Marshallianum is often in perfection in May, and *O. ampliatum majus* is a fit companion for it; the large, somewhat flat pseudo-bulbs of this variety are apple-green freckled with dotted lines of red. The leaves, which are flat and broad, are pale green; this, being a massive, heavy-looking plant, should be kept in a pot. The panicle, which is some 3 ft. or more in height, is much branched, and bears a profusion of flowers of the clearest and brightest yellow in front, but white behind. This variety comes from Costa Rica. *O. crispum*, which is a native of Brazil, and thrives best on a block, comes into flower in May and June. It is peculiar on account of its having rough, almost brown furrowed pseudo-bulbs, which bear a pair of broadly lanceolate, coriaceous, dark green leaves. The panicle, which is branched, bears often-times half a hundred flowers, each of which measures between 2 inches and 3 inches across. The colour varies much, but in the typical form the whole flower is rich brown, with the exception of the base and crest of the lip, which are orange-yellow dotted with red, the edges of the lip as well as those of the sepals and petals being beautifully waved and crisped. The Butterfly *Oncidium* (*O. Papilio majus*) should be grown upon a block of wood or in a suspended basket. Its pseudo-bulbs are compressed and rough, and the leaves are also rough and solitary, deep green above and conspicuously marbled with reddish brown tessellations; beneath they are reddish brown, profusely dotted with emerald-green; these markings vary

much in intensity in different plants. The scape, which is slender, and from 2 feet to 3 feet in length, is terminated by a sheath, from which numerous flowers issue in succession; it is seldom, however, that more than a single flower is open at any one time, but if the plant is large, many scapes will be produced, each of which will bear a flower, which from their peculiar formation have a striking resemblance to butterflies on the wing. The old flower-scapes should be retained from year to year, as they will make lateral branches, and thus add their quota to the general effect. Each flower measures between 3 inches and 4 inches across the petals, and more than 6 inches from the base of the lip to the tip of the antenna-like sepals; the three sepals, which are erect, are long and narrow, and dull purple, with a few narrow, scattered bands of yellow; the petals are broad, deflexed, tapering to a point, chestnut-red, and irregularly and transversely streaked with orange-yellow; the lip, which is flat, is clawed, nearly circular, and orange-yellow in the centre, margined with a broad border of chestnut red; the structure of the side lobes and that of the crest of the lip, together with the column, materially support the supposed resemblance which this flower bears to a butterfly. *O. Kramerianum* is another Butterfly Oncidium, the flowers of which, however, are different from those of the last; in this case the petals are deflexed, pale yellow, profusely spotted and dotted with reddish brown, and very wavy at the edges; the lip, with the exception of the crisp margin, is large and flat, broadly fiddle-shaped, pale yellow, and bordered with brown spots; the peculiar knotted flower scape is a marked feature in this species; both this and *O. Papiho* continue to flower for many weeks at a time.

O. Lanceanum, a grand vanilla-scented species, is somewhat difficult to keep in good health; this difficulty has, however, to a great extent been overcome by Orchid growers during these last few years. It requires plenty of air, and its roots should be kept in confinement; therefore it thrives best in an open suspended basket, well exposed to light. It is destitute of pseudo-bulbs, and its large, fleshy leaves, light green profusely dotted with purple, resemble those of *O. Cavendishianum*. The flower-scape is erect, and the individual flowers measure nearly 2 inches across; in the typical form the sepals and petals are greenish yellow spotted with reddish purple, and the lip, which is broad and flat, is rich violet, the middle lobe being deep purplish violet. In the variety *Lawrenceanum* the expanded front lobe of the lip is pure white. *O. Gardneri* belongs to the crispum section. It comes into bloom about July and its flowers, which are sweet-scented, are very long-lived. The panicle, which is erect, is much branched and many-flowered; the sepals and petals are bright brown, bordered with pale yellow and crisped on the edges; the lip, which is very broad and rich golden yellow, has a spotted marginal border of chestnut-brown. *O. Jonesianum*, of which a coloured illustration was given lately in THE GARDEN, is a new, distinct, and beautiful species which should be grown upon a block and suspended head downwards; its deep green leaves are long and Rush-like, whilst the panicle of bloom (when the plant is strong) becomes branched and many-flowered. The sepals and petals are greenish yellow, blotched and spotted with brown or crimson. In some forms the lip is pure white in front, with a yellow ear-like lobe dotted with crimson on each side at the base. In others the richly-coloured spots are irregularly spread over the middle lobe. *O. Rogersi* is a variety of *O. varicosum*, itself a very fine, free-flowering Orchid, and if the best variety cannot be obtained, the typical form should be substituted. The panicle is densely branched and the flowers numerous, often over a hundred on a panicle. The sepals and petals are very small, the lip large, flat, deeply lobed in front, and of a uniform rich deep yellow. *O. curtum* is nearly related to *O. crispum*, and extremely floriferous, as will readily be seen by a reference to the accompanying illustration. The sepals and petals are rich clear yellow, blotched and dotted with bright brown. The lip is bright golden yellow bordered with cinnamon-brown, and flushed with purple on the disc. These Oncidiums require very similar treatment to that recommended on p. 176 for Cattleyas, but their roots like rather more water

than Cattleyas during the growing season, and they will bear a little more resting during the winter. Those kinds recommended for block or basket culture should be carefully watched during the resting season in order to avoid excessive drought.

Phaius grandifolius.—Several large pots of this handsome Orchid in one of the houses at Penrhyn are just now a sight, and a most enjoyable one too, for rarely indeed have I seen this winter-flowering plant in better condition. Not one, but most of the plants have as many as ten flower-stems of nearly 5 feet in height, and with from fifteen to a score of flowers on each. The big, bright green, Palm-like leaves, combined with the luxuriance of the flower-spikes, clearly point out that Mr. Speed knows well how to manage this gigantic Orchid, and which he values highly for cutting purposes during the winter months.—W.

Odontoglossum hebraicum.—This rare and beautiful plant is said to be a form of *O. odoratum*, but if so, it differs widely from the type. Its appearance impresses one with the idea that it is a hybrid, but between what parents it is difficult to assert. It produces dense panicles of large, showy flowers, the sepals and petals of which are yellow, streaked and profusely spotted with chestnut-red, whilst the lip, which is spear-shaped, is yellow, marked with radiating reddish crimson lines at the base, and blotched in front with velvety maroon. We recently saw two very distinct forms of this plant flowering with Mr. Jacomb at Stamford Hill.

Cattleya Trianae Ernesti.—This is perhaps the finest form of this variable Cattleya that has yet bloomed in this country. The flowers are very large, sepals and petals broad, lilac-mauve tipped with magenta, slightly flaked down the centre of the petal; lip large, the front lobe rich crimson-lake, deeper at the base, where it is met by rich deep orange which fills the throat. We recently noted this fine form with Mr. R. J. Measures in his garden at Cambridge Lodge, Camberwell, where also blooming at the same time were several other remarkable kinds, such as the true pure white form called *alba*, and the variety *Symeana*, which has bluish sepals and petals and a very fine lip, crimson in front and deep orange in the throat; also *Amesiana*, likewise a rich and rare form.

SHORT NOTES.—ORCHIDS.

Odontoglossum crispum Stevensi.—One of the finest of the spotted forms is now in flower in Mr. Pollett's collection. This variety opens with a yellow ground, subsequently becoming paler. It is blotched and spotted with reddish brown.—J. D.

Dendrobium Wardianum. A variety of this is now flowering in the nurseries of Messrs. Hooper, at Twickenham, different from the typical variety, in which the petals and sepals are tipped with magenta. On the plant in question, however, they are pure white and very pretty.

Dendrobium endocharis.—This variety, a cross between *Dendrobium heterocarpum* and *japonicum*, is worthy of note, both on account of its perfume and its fine shades of colour. It has a remarkably long labellum with purple throat, the petals and sepals being a beautiful ivory-white.

Brassavola glauca.—This very desirable Mexican Orchid is now in fine condition in the Cattleya house in Messrs. Veitch's nurseries. The petals and sepals are greenish white, and the labellum white with a slight tinge of pink on the upper part. It will last for a week or two in good condition.

Masdevallias.—I have sent a flower of *Masdevallia Veitchi grandiflora*, also two flowers of different varieties of *Masdevallia amabilis*, for your opinion. I have *Cymbidium Lowianum* with twenty-six flowers on one spike, and twenty-two on another. Is that about the average number for it to bear?—J. OSBORNE, *Wilton House, Southampton.*

* * * The flower of *M. Veitchi* is a very fine one, measuring upwards of 6 inches across. In one variety of *M. amabilis* the flowers are very dark, the lower concave sepals being deep crimson-scarlet. Your plants of *Cymbidium Lowianum* must be strong to produce the quantity of flowers you name.—Ed.

Odontoglossums.—I potted some imported bulbs of *Odontoglossums* some few months back, and placed them in a greenhouse where they soon began to grow. I then placed them in a small stove in which the heat varied from 50° to 70°, and kept them rather damp. Some have since done badly, and the bulbs have withered and died. Have I given too

much water, or too much heat? The pots were plunged in *Cocca* fibre. I have now replaced them in the greenhouse in which the temperature is from 40° to 50°, and plunged them in *Cocca* fibre. My Cattleya in the stove are growing, but not so well as I should like. Perhaps the house is too dry.—A. B.

A YEAR'S CROPS FROM COLD PITS.

THE purposes for which cold pits and frames may be used are so many, that it is doubtful whether there are any other structures that yield the same return as these when their cost is taken into account. To-day I was occupied in filling a four-light brick pit with Strawberry plants for the production of a crop that will fill up the gap between those forced in pots and those in the open; as a matter of course, the plants have been well prepared. The earliest runners were taken and planted in a rich piece of ground early last July. During autumn all runners which they made were taken off and weeds kept down. To-day they have been lifted with grand balls of roots and planted in a bed of soil in the pit, 15 inches apart each way. When the planting was finished they received a good soaking of water, and, with the exception of giving them plenty of air, an occasional watering, and cutting off the runners as they appear, they will involve no further trouble, unless it be placing a mat on each light when frosty. We shall thus get a crop of fruit equal in size and flavour to the best grown in the open ground. In the meantime a sufficient number of plants of Tomatoes will be got ready. The variety we prefer is Hathaway's Excelsior. The lights being 4 feet wide, two plants will be provided for each. The Tomatoes, well established in 7-inch pots, will then succeed the Strawberries. We have some galvanised wire hurdles that just fit the interior of the pit; these are fixed 1 foot from the glass and to them the Tomatoes are trained. One plant is put in at the back and the other in the front, in the same soil in which the Strawberries grew. Towards the end of the season we generally let one plant monopolise the space of one light, and cut most, if not all, the back ones out. If I had not the wire hurdles I should stretch some wires along, or make temporary frames with builders' laths on which to train the growths. When the Tomatoes are over the wires are taken out, the soil stirred up, and Endive to be preserved for use as winter salad is put in. It will thus be seen that this pit is never unoccupied, and that it affords protection for three important crops in one year. But no one need be confined to these crops only. The routine may be varied by substituting Potatoes or an early crop of Radishes instead of the Strawberries, or some roots of Asparagus may be lifted and brought on in advance of the outdoor crop. Seakale may also be brought on in the same way. The frames may also be used for the protection of bedding plants, and then leave time enough to get a crop of late Cucumbers. French Beans may be substituted for Strawberries if not planted until the end of March. This will prove a very valuable crop, and will prolong the season of that useful vegetable fully three weeks. In the case of movable frames they may be utilised to protect Vegetable Marrows until the end of June, which will bring on the crop much earlier.

In autumn these structures may be filled with Violets, which will flower during winter and spring. At the end of May the Violets may be taken out, and, with a little fermenting material to furnish a gentle bottom-heat, a crop of Melons may be obtained in August. Cold pits may also during summer be used for at least three months in sheltering greenhouse and stove plants, which do better in a properly managed pit in hot weather than in houses. This is particularly the case with young stock of such plants as *Ericas*, *Azaleas*, *Linum trigynum*, and *Poinsettias*. The cool bottom on which they generally have to stand prevents the soil drying up so quickly as it does in houses. During the autumn and early winter months such plants as *Cinerarias* and herbaceous *Calceolarias* do much better in frames than in heated structures. In many cases *Cyclamens* are better planted out in a bed of soil in them than when kept growing in pots. In the early spring months such annuals as *Asters*, *Ten-week Stocks*, and *Zinnias* may be better raised in these structures than in houses, and the same frames may be used during the winter for the protec-

tion of bedding Calceolarias, &c. It will thus be seen that there is hardly any limit to the uses to which they can be appropriated, and where there is a large demand for a variety of subjects one can hardly have too many of them. Every small garden ought to be provided with a brick pit at least 20 feet long and 6 feet wide, and two or three portable frames. J. C. C.

MARKET GARDEN NOTES.

THE late drying winds have left the soil in good order for cropping, and all hands are now busy getting in the earliest crops. The soil, being light and well drained, is naturally warm, and seeds may therefore safely be sown earlier than in cold, stiff soils; moreover, the seedlings get deeper rooted before droughts can affect them. The crops that come in for first sowing are—

PEAS.—Of these the earliest kinds are now mostly sown, and some of the second earlies will get attention at once; for when once picking begins market-growers soon clear the land so as to get in other crops, as after two or three pickings they do not pay to go over, and are cleared off and given to the pigs or sheep. In this part of the country Kentish Invicta, Ringleader, and William I. are popular early kinds; and Harrison's Glory, Pride of the Market, Veitch's Perfection, Main Crop, King of Marrows, and No Plus Ultra, late kinds.

BROAD BEANS are sown as early as the soil will permit getting them in. Only two or three sowings of these are made, as a rule, as they are not profitable after other Beans come in. The Longpod, Johnstone's Wonderful, and Windsor are the sorts sown, in the order named.

RADISHES are sown largely as early crops on warm borders. They are generally sown broadcast, in beds about 1 foot wide, and covered with straw, which is removed during the day when fine and returned at night. The long red sorts are the best for early sowing, and the white-tipped French Breakfast is also much in request. The Turnip-rooted kinds are sown next month in large quantities.

ONIONS.—These are being transplanted from autumn-sown beds and put out on very rich soil that has been deeply cultivated and well enriched with manure. The Giant Rocca and the Tripoli varieties are the sorts used for transplanting, and the white Spanish for pulling while green for salads. The soil is being got ready for spring sowing, as a good seed-bed is of great importance for Onions: liberal manuring, deep cultivation, and getting the seed in when the surface is dry are the points on which market growers rely for good crops. James's Keeping and Bedfordshire Champion are the favourites, as they keep well until the spring, when there are few foreign Onions in the market.

CARROTS of the Early Horn type are being sown both in frames and on warm borders; a light, friable, sandy soil to produce bright, clean roots without much fresh manure is the one selected for this crop. They are pulled as soon as they are of sufficient size. The Early Scarlet Nantes is now in great favour, rivalling the old French Horn, so long used for early work.

PARSNIPS are sown already by many, while others are getting the land ready. This crop delights in stiffer land than Carrots. Deep cultivation is also necessary to produce long, straight roots, but no fresh manure is applied, as it causes the roots to become forked. The Hollow Crown and Student are the varieties grown.

POTATOES of the early kidney kinds are planted out in frames and on warm borders, and a quantity laid out in boxes to sprout ready for planting. The earliest main crop here is of the American Rose and Beauty of Hebron types, as they fill the measure sooner than the kidney varieties. The planting of these will be pushed on directly milder weather prevails.

CAULIFLOWERS that have been wintered under handlights are being thinned out and put under cloches or any other slight protection, and are usually grown close to the homestead, where shelter can be given them.

CABBAGES that have stood during winter in the seed bed are now being transplanted into rows rather thickly, to follow those put out in autumn, and seed is being sown as they are one of the all-year-round crops.

LETTUCES are being planted out in quantity; they are of the Brown Cos and Cabbage varieties, and boxes of seed are sown under glass for succession.

Frames and hotbeds are now being put in order for the season; seeds of Cucumbers, Tomatoes, and other crops that it is desirable to get as early as possible are already sown. Tomatoes are especially benefited by early sowing, as our summers are too short for them unless every day is utilised. They appear to be more in demand every year. I find many are reducing the space devoted to Cucumbers and increasing that for Tomatoes; a good selection of the old Smooth Red is the favourite with market growers, and with Cucumbers Telegraph is still the one selected.

Hardy fruits are being pruned, manured, and cleaned; the prospect of a good fruit crop could not be better, as the severe weather has kept the buds dormant, and the season last year was very favourable for the growth of good clean wood; in fact, I never remember to have seen finer foliage on fruit trees of all kinds than last year, and if we get a favourable spring I anticipate a heavy crop. Bush fruits that are now being pruned have been badly injured by birds taking the buds. In this locality the sparrows are the chief enemies, and they are so daring that nothing but close netting up or the gun will stop them.

Strawberry beds are being cleared of weeds, runners, &c., and a mulching of manure applied. Newly planted beds that have had the soil loosened by frost are being trodden down firmly round the plants. Cob Nuts and Filberts are now being pruned. They are cut in very closely, only the fruitful spray being left; a dressing of old rags or town refuse suits them well. The high price of English Apples has led growers to pay more attention to our long-neglected and starved orchard trees. J. GROOM.

Gosport.

NOTES OF THE WEEK.

A red striped Snowdrop. I have a small patch of Snowdrops like those sent, *i.e.* striped with red. Can you give any idea how that has occurred?—E. PITCHER, *Cringletree, near Norwich.*

The petals are striped inside with reddish pink. These lines are fainter on the outside, but have a tendency to flush the whole flower with pink. It seems a very interesting variation, but probably no variation on the common Snowdrop can ever be made with advantage.—ED.

An exhibition of Apples and Pears will be held at Chester on March 3, 4, and 5, with the view of ascertaining the best late varieties grown in the district. A conference will be held in connection with the show, at which papers will be read and discussed.

Anthurium Andreanum.—I send you a spathe of this Anthurium, which has been in full beauty since the beginning of November last. It is one of the best of the Anthuriums, as if kept steadily moving it will continue to throw up its brilliant scarlet spathes during the greater part of the year.—W. JOPP, *Torquay, Eastbourne.*

* * A magnificent spathe, 6 inches in length and 5 inches in width, the spadix being 4 inches in length.—ED.

Destroyers of wild plants.—I observe that once again the wanton destruction of native flowers has been the subject of condemnation, and not too soon. Each succeeding year shows how rapidly even the once famous Devonshire lanes are losing their beauty, and not only so, but the same idlers who plunder the lanes and fields also steal from gardens, choosing by preference such plants as Snowdrops and Lent Lilies, which might possibly be wild. These flowers are hawked about the streets and offered for sale at houses in Torquay, Totnes, and other towns, and purchasers are only too readily found for such goods. There is but one way to remedy this evil, and that is by a general agreement to refuse to buy their wares. The sacrifice is not so very great, considering the profusion of flowers (of the same kind if preferred) which may be bought clean and fresh from respectable nurseries; and surely, independently of this resource, no honest person would knowingly abet theft. The Lent Lily robberies from orchards and gardens have just begun; but as regards Snowdrops, only last week the raid was extensively carried out, not only from the pleasure-grounds of the wealthy, but from the gardens of the cottagers; and let those who so thoughtlessly buy the stolen goods remember

that their flowers are a delight to cottagers and a legitimate profit, too, if they choose to part with them.—T. H. ARCHER-HIND, *South Devon.*

Tecophylæa cyano-crocus Leichtlini.—This, the loveliest of all the spring blue flowers, is too seldom seen. It is now in perfection here. I find that tiny offsets not bigger than a Pea will often give one bloom, and the larger bulbs throw up three and sometimes four. Mr. Wilson, I believe, has it outdoors at Weybridge, but I have not yet so tried it, as until it is really plentiful it is far too precious to risk outside. I do not, however, give it any heat, but simply a cold frame to grow in and a cold house to bloom in, and such treatment seems to suit it well, for it is increasing rapidly.—W. WILKS, *Shirley Vicarage, Croydon.*

The dates of the following Rose shows to be held in 1887 have been fixed. Ryde, June 23; Bagshot, June 28; Moreton-in-Marsh, June 30; Crystal Palace, July 2; South Kensington, July 5; Sutton, July 6; Bath, Farningham, July 7; Dis, July 12; Edinburgh, July 13; Ulverston, July 15; Wirral (Birkenhead), July 20. With the exception of the Crystal Palace Show, all the above exhibitions are held in affiliation with the National Rose Society.

Cut flowers in New York.—According to the *American Florist*, cut flowers seem to be highly valued and fetch fabulous sums in New York, judging from the following retail prices: Rose W. F. Bennett, 1s. each; La France, 1s. to 2s. each; General Jacqueminot, 2s. to 4s. each; Niphetos, 7s. per dozen; Carnations, 2s. to 4s. per dozen; Lilac, 6s. to 8s. a spray; Violets, 6s. per bunch. If our British growers could realise such prices, they would think themselves handsomely remunerated.

Vegetable trials at Chiswick.—Comparative trials of the following vegetables, viz., Cabbages, Tomatoes, Cauliflowers, Onions, Turnips, new varieties of Potatoes and Peas are proposed to be made this season, under the direction of the fruit and vegetable committee in the Royal Horticultural Society's Gardens, Chiswick. Persons desirous of contributing examples of any of these objects for the opinion of the committee are requested to forward the same as early as possible to the superintendent, Royal Horticultural Society's Gardens, Chiswick.

London parks.—Replying to a question respecting London parks, Mr. Plunket gave the following particulars. The cost of laying out Kennington Park was nearly £5000, this sum being defrayed by the Treasury. The cost of buying and laying out Victoria Park was about £133,000, which was paid out of funds provided from the land revenue of the Crown. The amount (about £1500) for laying out Bethnal Green Gardens was paid by the Treasury. Battersea Park and estate cost £350,000, of which sum Parliament voted £105,000, £200,000 having been borrowed, and the remainder applied from proceeds of sales and rents. The maintenance of Trafalgar Square was £250 a year, exclusive of the cost of the water required for the fountains.

W. MILLAR.—We should say that your *Eucharis* is infested with the *Eucharis* mite.

F. STEEDMAN.—There is little doubt that your bulb is badly infested with the *Eucharis* mite.

Names of plants.—E. H. T., *Norwich.*—A very good variety of *Dendrobium apium*, sometimes called *D. album*.—J. B. K., *Leptotes bicolor*.—J. B. L., *The Orchid* flowers appear to be a species of *Bolbophyllum*; send growth or describe it; cannot name the leaf.—F. H. B., *Brainea insignis*; 2, *Lomatia glauca*; very rare; not in cultivation as far as we know; 3, *Lycopodium taxifolium*.—K. T., 1, *Boronia megastigma*; 2, *Grevillea Priestii*; 3, *Acaea argyrophylla*; 4, *A. Drummondii*.—N. Y. Z., 1, *Lelia harpophylla*; 2, *Pithecochloa Sanderiana*; 3, *Dendrobium crassifolium*.—*Bianca*, 1, the true *Cycl-gyne cristata Lemniana*; 2, *Cattleya*, a good form of *amethystoglossa*; 3, *Begonia Carteri*; 4, *Pitunia nobilis*.—G. Thoms., 1, *Erica melibtheca*; 2, *Acaea Drummondii*; 3, *Adiantum formosum*; 4, apparently a *Hakea*; cannot name without flowers.—T. G. C., *Succisa*.—Your *Scelopendrium* is only an ordinary ugly form.—E. H. W., *Warrington*, 1, *Niphobolus lingua*; 2, *Davallia solida*; 3, *Lilonia floribunda*; 4, *Justicia flavicomis*; 5, *Dipterocarpus Herbsii*.—*Georges Soud*, 1, *Skimmia oblata*; 2, *Emponyus radicans variegatus*; 3, *Cyrtomium lucidum*; 4, *Trichomanes parvulum*.—K. G., *Epsom*.—Your aquatic Fern is *Ceratopteris thalictroides*.—E. J. H., *Glasgow*.—A curious form of *Antholyza aethiopica*.—G. V.,—Your seedling *Amaryllis* is an ordinary good form of *A. amica*.—J. B., *Cattleya Trianae* delicate.

Names of fruits.—J. Sals, *Elkbridge*.—Apple, Golden Spur; Pear, Beurré Diel.

WOODS & FORESTS.

PINUS PONDEROSA.

THE wind-swept Isle of Anglesey would, perhaps, hardly be considered as a very favourable habitat for the above Pine, but that it is so was clearly enough demonstrated to me a short time ago when making a rather hurried visit to Baronhill, the beautiful Welsh residence of Sir Richard Bulkeley, Bart. In other and colder parts of the same island, and in company with the beautiful and equally hardy *P. insignis*, it braves in a remarkable and commendable way the keen, searching winds blowing in from the Atlantic Ocean. These, and similar instances that have either come under my own notice or been recorded to me of late, impress upon me how valuable a tree for planting in certain positions this Pine is, and that, judging from how seldom it is to be seen in our woods and grounds, the sooner its good qualities are brought prominently under notice the better, for it is certainly a valuable acquisition to our stock of forest trees. As an ornamental tree, I am by no means disposed to say much in favour of *P. ponderosa*, its rather lax, tortuous foliage and gaunt appearance imparting to it more of the picturesque than the beautiful. The branches are remarkably stout and inclined to droop, arranged in sparse whorls, and usually but thinly clad with foliage, the latter being almost confined to the branchlet extremities. Great variation is noticeable in the lengths of the leaves of various specimens, but in fair-sized trees about 7 inches or 8 inches is the average; they are stiff and somewhat di-helved, and of a deep dark green, and usually arranged in threes. In large specimens pollen cones are fully produced, and as they are of large size and, when ripe, of a bright yellow, they contrast nicely with the deep green, tufted foliage. These male flowers or catkins are remarkably persistent, those for four or five years back still adhering thickly to the branches, a tuft of the long leaves marking off with great accuracy the divisions of each year's growth. The cones are ovate in shape, 4 inches or more in length, with stout foot-stalks, and are usually produced in clusters.

A peculiarity of the bark, apart from its pretty and distinct colour, is the way in which it is divided into flakes of often 5 inches square, but for all this the trunk is tolerably smooth and may, by a practised eye, be distinguished from any other at a considerable distance.

The timber of *Pinus ponderosa*, as grown in this country, is heavy and full of resin, with a very agreeable smell and prettily marked; but this is referring to a tree of nearly fifty years' growth, others of smaller size and planted from twenty to twenty five years having produced a much lighter and less solid wood, and with a marked falling off in the quantity of turpentine, as noticed in the larger specimen. The timber of no other Pine that I have had the chance of cutting up contained such a quantity of resin as did that of the large one above referred to, and the strong resinous smell given off was, in my opinion, only equalled by that of a 70-foot-high tree of *Abies grandis* that we not long ago had to cut down.

To Scottish enterprise are we indebted for the introduction of this gigantic Pine, it being sent home from Oregon, in 1827, by Douglas, where, as well as in California, it is found in great abundance. A person who resided for some time in a district where this Pine abounded tells me that the average height of the trees was fully 180 feet, and he has measured the trunks of some fully 5 feet in diameter, but there were many larger. Where the trees grew in close proximity to each other, and were destitute of branches for more than half their height, the sight of colossal stems was, he likewise informs me, almost indescribable. Some fine specimens of this Pine may be seen in various parts of the country—trees of from 50 feet to fully 60 feet in height, half as much in spread of branches, and with stems girthing as much as

8 feet at a yard from the ground. When allowed plenty of room for development of the branches the diameter of the spread of these almost equals the tree's height, one case in particular that has just come under my notice being a tree 55 feet high with a spread of branches of 42 feet. In such cases the branches are usually cone-bearing down to within a couple of yards of the ground.

Soil would not seem to influence the growth of *Pinus ponderosa* to any great extent, for in my mind's eye I am now picturing specimens growing in sandy soil, still clayey loam, rocky *abris*, and reclaimed peat-bog, and with but little difference so far as external appearance is concerned. The large specimen, the wood of which is referred to above as being so heavy and full of turpentine, was growing in almost pure gravel, while the Anglesey specimen is on shallow loam of a sandy texture, but others in peaty soil are likewise hale and sound. The nursery management of this Pine is not by any means difficult, for the ordinary treatment bestowed upon the Scotch Fir and Corsican Pine suits it well. It grows very rapidly in its young stages, and is fitted for planting out at a comparatively early age, sooner, indeed, than the majority of nursery stock. On the Continent *Pinus ponderosa* is receiving attention, for it is included in the list of trees which the Prussian Government is introducing as useful additions to the state forests. Let Englishmen, therefore, not be behindhand in utilising a tree that is so well suited for our climate and soil.—A. D. WEBSTER.

— In THE GARDEN of February 12 (p. 153) I notice an account of this Pine; I cannot agree altogether with the description of it. In the Roosenai Valley, British Columbia, it is a most splendid Conifer, old or young, but especially does one notice its grandeur as an old tree; its great height and straightness of stem, its rich, tawny, red bark with the sun shining on it, give it extraordinary beauty; its huge proportions, from 15 feet to 25 feet in circumference, and the number of noble trees of its kind scattered in park-like terraces throughout the valley, make it a tree to be remembered. The want of lower branches in its old age does not detract from its beauty, but, like the Scotch Fir, only adds to its majesty. Just before I left I rooted up about sixty seedlings, which are now doing well in my garden here; its timber is valuable.—T. BATE, *Kelsterton, Flint*.

THE PROFITS OF UNDERWOOD.

A VAGUE idea possesses the ordinary mind that those delightful coppices of Kent and Sussex through which the train flashes us are of little or no value. In summer they are supposed to be leafy strongholds of rabbits and pheasants, delightful places to wander through in quest of Primroses or Hazel nuts, and in winter they are held to serve at least to break the monotony of the landscape and to afford shelter. This is the sum of their purpose to a casual observer. Instead, however, of coppice and hanger being unproductive game coverts, they are singularly valuable, and more than one fortune in our home shires of late has been built upon a proper appreciation of their value. The main cause of existence and the prime source of their profitableness are the neighbouring Hop gardens, from whence come insatiable demands for poles of Chestnut or Ash, 10 feet to 15 feet long, and as straight as Nature can be induced to grow these tough and lasting woods. Of late, however, foreign Hops have been entering into competition with English, duty-free and cheaper, the result being that growers have had to curtail their Hop gardens, making good for a long time the waste of worn-out poles by bringing in those from the disused portions of their holdings, and this has told adversely on the value of the English jungles.

But Kentish woodlands make other things besides supports for Hops. Leaving out of sight for a moment the subject of the capitalist, who regulates the growth of large tracts of otherwise almost useless ground, and can afford to wait while his material matures into real timber and heavy wood, we will glance at the way in which the coppices of the southern wolds

have made the Kent and Sussex yeomanry for many years amongst the most prosperous of any peasantry. The enterprising man who would go in for this species of woodcraft must have a little money in hand to begin with. There is first of all a deposit to be paid upon the ripe hanger he has chosen, and which, may be, keeps the north wind from his whitewashed cottage that nestles near it. Moreover, it will be necessary for him to devote himself to the woodlands during the winter months; thus he must have something to support the little ones during such a period; but given this, it is all plain sailing. His holding is fit for cutting, we will suppose, and when the leaves are down he sets to work at once. His boys go in and with light billhooks take off the small branches and twigs from the standing Ash and Chestnut poles which have been grown so close together, that they have spent most of their time in racing up for the blue sky only visible overhead. The father comes next, and with a sharp axe fells these saplings low down with judicious care, remembering that if the rain finds lodgment on the stumps, it will certainly rot them, and leaving here and there a leader on the pollard boles to preserve the vitality of the tree and tempt it to break afresh in the spring. As these poles fall they are dragged out to the riles by willing hands, where the good wife scrapes them clean of their soft rind and takes off the useless tops or the knots with her wood knife. He looks to receive from the grower of Hops a sum which shall repay his output on account of this single work alone. All the rest of the coppice produce should be clear profit, and it is more various than would be supposed. The spray-ware, as distinct from the larger growths, produce all sorts of wood upon which in the right market a price can be made. Nothing is wasted. To begin with, the chips and the litter go home in barrows and aprons to make a comfortable pile of winter fuel, rendering the family independent of charity coal, which is but poor fare; then in an ascending scale come the Hazels, which the lads put together for fire pimps, while the larger material, too small and various for anything else, goes into fagots and stacks, and sells subsequently for firewood. Straight rods of about the height of a man are valued by the coopers as barrel hoops; the long, straight six-year-growth of the Hawthorns are known as chisel rods and are taken up by the village smiths. Big material and windfalls are cut up into lengths for charcoal, and Oak bark, if there is sufficient, goes to the tan yards. Chestnut wood, if of proper size, is split into halves for heads for hurdle gates, and when the ground is cleared of all these, then the knotty Blackthorns, the contorted ground Ashes, gnarled Oak saplings, and the wands that have been clasped overtight by the Woodbine and wild Hop are cut and dried for walking sticks and umbrella handles, the long, straight Holly shoots peeling to a beautiful whiteness and being in high demand for carriage, and others of shorter lengths for the handles of cart whips.

It will readily be understood how the cutting, carrying, cleaning, and preparing of all this takes time, but returns in a reasonably good season a sound profit. Therein lies its value, for it is work of the idle winter time when Hodge would otherwise waste his substance at the village tap, and the thiu, white visages of his little ones tell of uncertain wages and an empty meal-tub at home. But the frugal yeoman who can produce a deposit at the annual November wood sales may find work for all hands till the spring comes again; and work, moreover, which is delightful because it is for himself, which braces his muscles to renewed exertion, which teaches him frugality as well as thoughtfulness, and fills life with an interest which the daily drudgery of an alien task could never do. The drawbacks are not very many. Amongst them are the rabbits, which, especially in hard weather, gnaw off the bark of underwood as high as they can reach by sitting on their hind legs; the trespassers, again, who steal the best of the Holly and Whitethorn sticks, breaking fences and pulling down boughs. Nor do the coverts yield their silent crops oftener than once in seven or eight years, much in this respect depending on soil and aspect; but, on the other hand, their harvest is a movable festival, which can conveniently be put off for a year or two—a unique characteristic amongst crops—until better and more paying seasons shall come. The value of the

spray-ware and light material on a cant of woodland is fairly steady, but the value of the poles fluctuates with the prosperity of the Hops. In a good year an acre of prime Chestnut, ten years old, may be worth £60; in a poor season for Hops not half so much. Ordinary underwood, again, the wild garden of Foxglove and Dog Rose carrying some 3000 Hop-poles per acre, may be valued at £15 per acre; and so on, in fluctuating steps of merit, which only a keen judge or one born on the land can properly assess. But, high or low, there is a value little acknowledged in the Kentish and Sussex woodlands, and a value which deserves recognition all the more because the landlord's and the tenant's interests run together here at least.—A KENTISH MAN.

* * * Prices for underwood have lately been very low—so low as to make it hardly worth the selling. We have seen it sold for not more than £5 per acre, ten or eleven years old.—ED.

ESTATE MANAGEMENT.

THE HOME FARM.

THE outlook as regards agriculture and the land interest generally is so dark, and the influence of the depression is and will be felt so sensibly upon horticulture and arboriculture both, that I venture to think no apology is necessary for introducing this subject into these pages so generally read by those interested in such matters.

The first subject to be considered on any estate is the home farm, a very old institution indeed, originating at a time when most large country houses had to depend much more upon home-grown produce for a supply of many household wants than they do now, and which then no doubt fulfilled many useful functions. Times are altered now, however, and I think I shall be able to show that there is much need for an alteration of our home farm system if it is in future to render good service to agriculture generally, or to those who keep up home farms for private purposes. It is perhaps necessary in the first place to define clearly what is meant by the home farm, for although the name is familiar enough, it has rather a vague meaning. Suffice it to say that the home farm is that portion of the estate generally set apart by the proprietor to supply his establishment with dairy produce, poultry, eggs, bacon, sometimes beef and mutton, corn and hay for his stables, and to grow such crops as may be necessary for the house or farm itself. It also supplies the labour for leading and fetching and carrying generally for estate purposes. The home farm manager is also supposed to keep a correct debtor and creditor account of all transactions, and generally to manage as thriftily as possible, for, ostensibly at least, he is supposed to make the farm pay, and to supply the house with produce as good and as cheap (if not better and cheaper) as it could be supplied elsewhere. On the contrary, however, home farms are proverbial for their inability to make ends meet, not to say mismanagement, for waste, bad farming, and in numbers of instances they help to place the proprietor in an awkward position towards his farm tenants, for when it becomes known or suspected, as is usually the case, that the landlord with capital at his disposal cannot farm his own land profitably, the question arises, how can he expect his tenants to do it, and live and pay a rent over and above at the same time? I could name numbers of home farms that are in this position at the present time, and some that never at the best times did more than cover expenses. In this, I ask, not a discreditable state of things? What is the cause of it, and how can it be altered? I maintain that the home farm can be made to pay, and that it ought to set an example to all the tenants on the estate in that respect, instead of doing the contrary, as is not unfrequently the case. The cause of failure is simply bad management. Appearances go for nothing. It is not long since that the whole of the prize stock of a gentleman (deceased) were put to the hammer, and the whole farm reduced, because of the losses it had entailed. By whom

are estates and home farms managed? is a question which, if answered fairly, would put matters in a true light. The answer is, that they are managed, as a rule, by men who are ignorant of the duties that devolve upon them. They are lawyers residing in town, or agents or factors who are sons of gentlemen in reduced circumstances, officers of the army, the clergy, &c., and have little or no practical knowledge of estate work, which can only be acquired by patient application and experience, like anything else. The probationary career and education of such managers often consists of nothing more than a few months' or a year's residence on some gentleman's estate under an agent, who is perhaps not much older nor much wiser than themselves, but may be a little richer by the fees they pay him for the experience they are supposed to pick up at random while under his charge. A looser and more irresponsible way of preparing young men never previously subjected to the discipline of business habits could not be devised, and results abundantly prove it. Of the numerous estate appointments filled by men of this stamp, probably two-thirds fall to the lot of incapables. Landowners are often victimised by such men, thrust upon them through the interest of friends. Such estate agents take the lighter duties of the estate themselves, and if they are fortunate in securing the services of an intelligent bailiff or foreman, who is honest and trustworthy, they may get on and even learn something, but as often as otherwise perfectly illiterate men are put over the home farm who have no intelligent knowledge of agriculture, and who care less for it than those who employ them. The consequences are as has been before stated, viz., that the farm becomes a dead loss to the proprietor instead of a profit, and a demoralising example to all who farm land on the estate. The mistakes of omission and commission such agents make otherwise in the general management of an estate are too numerous to mention. Every important question affecting tenancy, rents, agreements, and valuations, which can only be determined by sound practical knowledge and experience, have to be finally submitted to, and settled by, them, and the most random and utterly foolish decisions are given, the landlord or his tenants being invariably the victims to suffer by them.

There are, of course, some home farms that are profitably conducted, but they are conducted by men who have been "bred to the plough," as it were, or those who have honestly mastered the business through sheer necessity. I know of one or two examples of home farms that pay under such circumstances, but generally they are few and far between.

The fact is the vocation of the home farm has gone long since in its original sense. Few gentlemen's establishments depend upon it for supplies, and it would be far better to divest it of all connection with the house and devote it to the purpose of showing the tenants on the estate how to farm well and make farming pay. So long as landlords cannot farm profitably themselves they cannot expect anything else but a constant clamour for reduction of rents from their tenants. A well-managed home farm is, or should be, a potent factor in sustaining the valuation of all the other farms near it, and *vice versa*. It should not be too large, but it should embrace every feature in the shape of crop and stock that can be produced in the district, and, above all, it should be managed on scientific common-sense principles and be made as remunerative as it possibly can be, and that, too, without any fictitious aid from home sources. There is nothing whatever to hinder this being accomplished on estates. It is simply for the proprietor to resolve that it shall be, and put the enterprise in the hands of a competent man who would be partially paid by results—say so much in wages, and the remainder in the shape of interest on, or a proportion of, the profits. First give a man a fair wage and a chance of increasing it by his careful management of his charge, and the chief force to ensure

success is set in operation. As it is on home farms at present, the presiding genius is usually an encumbrance and the most expensive individual on the place, his man perhaps not much better, and the general staff excessive and its members indolent. On no other principle can the present condition of the home farms be explained, and all are agreed about their uselessness and bankrupt condition even at the best of times, when other people manage to live and make money by farming under exactly the same conditions of soil and climate.

There is much need at the present time for landowners to exert themselves in this direction and set an example if they wish to preserve anything like a shadow of their former incomes from estates. Notwithstanding the reductions that have been made in rents, either by periodical remissions or permanent reductions, the farmers still clamour for more, and are, at the same time, neglecting their farms to an alarming extent. Nothing whatever is being done to improve them; fences are neglected, and culture has reached a lower ebb than it has done for generations, owing to the uncertainty of the times, ignorance and want of enterprise, and the bad management of estates.

But where are gentlemen to find competent estate agents, and how are they to know them when they find them, are questions that will no doubt occur. All that can be said is that there are plenty of capable men, and they can be found, if inquired for, in the right direction. A gentleman, unaccustomed to practical matters himself, might not be able to estimate any man's capabilities offhand, but he is ill off if he cannot find others able to do so; and if the worst comes to the worst, a man can be appointed to a post conditionally. It would hardly be believed that men have been appointed to factorships on estates who hardly even understood the rudiments of the business, who had never read a book on the subject till shortly before, who did not know where to search for information on the subject when they wanted it, and who could never open their mouths in the presence of practical men without exposing their ignorance; and yet such appointments have been made, and made often. What else than mismanagement can be expected under such circumstances? AGENT.

COST OF FIREWOOD.

THE question, "What will it cost to prepare a ton of firewood?" is more easily asked than answered. In the west of England it would cost 6s. to prepare a cord of wood fit for burning in an ordinary cooking grate and to store it away under cover. Oak and Elm are more difficult to cleave than any other wood, and may cost a little more. The best way in which to burn wood is on the hearth. In this way only the largest pieces would require cleaving; in a general way 3-foot lengths are quite convenient for such fires. The next best plan is to have long and rather narrow grates, consisting of no more than three front bars. These grates should be from 20 inches to 2 feet long and 10 inches wide in the middle, gradually narrowing at each end to a point; the front bars should curve slightly outwards. Four inches are ample between the bottom of the fire-bars and the hearth. In the ordinary kitchen range the draught is not only too great, causing quick combustion, but the deep sides and backs of such grates consist of much dead surface that takes its share of the heat, but gives off but little in return. This mode of burning wood is about as costly as purchasing coals at 21s. per ton. There is nothing gained by having the logs too large, but much loss if too small, as small pieces burn much faster than large ones. For a grate of suitable form and length logs with a circumference of from 12 inches to 15 inches are the best—*i.e.*, these sizes should predominate, but there must be a fair proportion of smaller pieces to ignite them. Cleft wood is, however, better than round; therefore all pieces 9 inches and upwards in circumference should be split into two. Cleft wood always ignites quicker than round wood. A storage for the wood should be provided. It need not, however, be of an expensive character. J. C. C.

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"This is an Art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—Shakespeare.

FLOWER GARDEN.

WILD WHITE DAFFODILS.

I HAVE suggested to Mr. G. Maw, who tells me that he hopes this spring to work upwards from Southern Spain, through Portugal, to the Pyrenees, that he should make a special effort to discover, or re-discover, the wild originals of the white Trumpet Daffodils of our gardens. There are, I think, fairly good reasons for supposing that such exist somewhere in the Pyrenees, in Portugal, or in the less known of the Spanish Sierras. Perhaps Portugal offers the most promising hunting-ground. A good deal of botanising has lately been done in the Pyrenees without the bringing to light of any white Ajax except the very small one from the Gavarnie district. And when we look southwards into Spain proper we see the *Corbularias* comparatively soon taking the place of Ajax; although the country, it is true, is large, and towards its north and west may yet give us new and interesting varieties of the latter. Portugal, although as yet barely scratched, has already yielded some most interesting Daffodils, chiefly owing to the industry of Mr. Tait, and we may reasonably hope that these are but an instalment.

The little Gavarnie *moschatus* is so variable in form and has already shown so considerable a tendency to increase in size in cultivation, that it has until lately been my opinion that it might possibly be the ancestor of all our larger garden kinds. But in reading Mr. Tait's notes on the *Narcissi* of Portugal, I have been much impressed by certain observations of his. He reminds us that when the older writers, such as Parkinson, mention Spain as the habitat of so many *Narcissi*, it is to be borne in mind that in their time the term Spain included Portugal. And, having consulted the best works on Spanish botany, he has come to the conclusion that Portugal yields more *Narcissi* than Spain. Lastly, he states, possibly from some information received, that he hopes to find "*N. moschatus*" in the mountains of North-east Portugal.

Now, I think we seem to be fairly on the way to trace back all our old garden Daffodils to Continental wild forms; already there are but few gaps remaining in this identification, and we may expect these to be filled up before long. Taking the groups of Ajax in order, according to the current classification, we find the types of garden pseudo-*Narcissus*, known as *cambricus*, *principis*, and *Telamonius*, to be wild in Italy, as are also the principal major varieties, such as *major*, *maximus*, *Tenby*, *spurius*, and *Tottenham Yellow*. From personal observation in Italy, I cannot doubt that all these are to be referred to Italian wild plants. Then minor has lately been found in the Maritime Alps; *lorifolius* is undoubtedly Pyrenean; and although the origin of bicolor (very near to *lorifolius*) has for a while been somewhat of a puzzle; yet we are now getting flowers from the Pyrenees and Portugal which come near enough to the typical garden form to satisfy us as to its ancestry. By analogy we should expect the principal types of the only remaining section—that of *moschatus*—to be similarly represented by wild sorts. Parkinson, we know, describes four white Spanish Daffodils,

of which one only, the smallest, has hitherto been identified in its wild state—if indeed it has been identified, for there are reasons, which I need not now adduce, for doubting whether the Gavarnie plant is the lesser Spanish white of Parkinson. But it is likely that they will be re-discovered among the Pyrenees or the mountains of Spain or Portugal. Our expectation is strengthened by remembering that the Dutch have long had in cultivation certain large forms of *moschatus*, which, like the rest of their Trumpet Daffodils, were probably obtained at first as wild plants, for in old days they seem to have raised no seedlings of these, but to have confined this work to the *Tazettas*. I venture, therefore, to predict the finding before long of large wild white Daffodils.

G. H. ENGLEHEART.

HALF-HARDY ANNUALS.

THESE are much prized for summer and autumn decoration. Amongst the best of them are *Asters*, which are easily grown and useful in a cut state as well as for filling up vacancies in herbaceous borders. The *Victoria* and dwarf *Chrysanthemum* flowered kinds are the best for general purposes. Some sow and grow them in heat; but that is a mistake. They do best in cool quarters. About the middle of this month plant 3 inches or 4 inches in thickness of light sandy soil on the top of a spent hotbed, and in this sow the seed in shallow drills, covering the whole lightly with soil of the same character. Keep the lights close, and shade from hot sunshine until the plants appear, which will be in a week or ten days. Then gradually give more air, and when sufficiently large transplant into cold frames, using the same kind of soil as that just named, but this time 3 inches in thickness, with a thin layer of horse manure, into which the roots will ramify, and the plants will lift with good balls of soil attached to them; thus managed they sustain no check when transferred to their permanent quarters. When growth commences give plenty of air until the lights can be drawn off altogether. If a hotbed is not available, sow in shallow boxes and place them in a cold frame. Keep them shaded from bright sunshine, and the seeds will soon germinate. Let the young plants be put out about the middle of May, selecting, if possible, dull showery weather for the operation. When a start has been made no attention will be required, except giving the roots a good soaking with liquid manure once or twice during the summer, and perhaps placing small stakes to tall-growing kinds to prevent them from being injured by wind and rain.

PORTULACAS.—Double varieties of these find, as a rule, more favour than single kinds. An open, sunny sloping bank or the top of a rockery which is warm and dry suits them admirably. They should be planted in bold masses in such a manner that one colour may set off to advantage that of its neighbour. They make capital edging plants in the kitchen garden in connection with stone or brick. A compost consisting of light sandy soil, with which leaf-mould and peat have been freely mixed, just suits them. Under this should be put some well rotted manure, and the whole should be trodden down very firmly. Then sow the seed early in April, covering it lightly. During the summer give a good soaking of water now and then should the weather be hot and dry. Where such a seed bed cannot be had, and they have to be planted in various parts of the garden, the seed should be sown in gentle heat about the middle of March, and the young plants should be pricked out into pans or boxes as soon as large enough to handle; keep them cool, and plant them out into their permanent quarters towards the end of May.

PHLOX DRUMMONDI.—Of this so many varieties may now be had, that they make a grand display during the summer. Planted in a mass in an open position they are very effective. Growths made

freely after planting should be pegged down so as to cover the soil quickly with foliage and richly-coloured flowers, which continue in perfection until cut down by frost. Sowing the seed about the middle of March in gentle heat, pricking off the seedlings into boxes and keeping them cool, and thoroughly hardening them off previous to planting them in the beds, are all that is required in order to have them in good condition.

ZINNIAS.—Of these the double forms are preferable to single kinds for border decoration, their colours, as a rule, being more varied. They look well in masses in the flower garden, where, however, they must have a rich soil in order to bring out their colours in their true character. When planted in a bed their shoots must be pegged down as fast as they grow, otherwise they become leggy, *ie.*, when planted thickly; but when planted in other positions, at distances of from 9 inches to 12 inches asunder, they assume a bushy character, and should be staked to keep them in good form. The seed should be sown in gentle heat towards the end of March, and the young plants should be removed to cooler quarters as soon as they are visible, or they quickly become drawn, which tends to weaken them considerably, and a poor show of bloom during the season is the result.

SALICIGLOSSIS.—The variety of colours to be found amongst seedlings belonging to this genus renders them very attractive. Planted in groups of three or five together in herbaceous borders or in lines where a suitable amount of space can be given them, they well deserve all the praise they get; when in lines, a distance of 9 inches from plant to plant is sufficient. The support of a small stake to each plant will be of service, as, being rather weak in growth, they are liable to get injured by wind. When sown and treated like *Zinnias*, no plant with which I am acquainted better repays any trouble that may have been bestowed upon it both in the way of floriferousness and variety of colour.

CELOSTIA PYRAMIDALIS.—It may not be generally known that plants of this *Celosia* are well suited for bedding, in the south of England at least. When planted alternately in a bed with sub-tropical plants, such as *Grevillea robusta*, *Acacia lophantha*, or *Ficus elastica*, they are very effective, the deep green foliage of the *Ficus* contrasting strikingly with the richly-coloured plumes of the *Celosia*. The seed should be sown in gentle bottom-heat early in March, and the young plants should be potted off singly in small pots. They should be kept in a temperature of from 60° to 70°, and set close up to the glass. Pinch the point off each plant when about 3 inches high; this will induce some four branches to break, which will in time bear as many flower-plumes. When well rooted and before they become potbound, shift them into 5 inch pots in light, but moderately rich soil, and when nicely established gradually remove them to cooler quarters, and thoroughly harden them off preparatory to planting them out in the beds.

CHRYSANTHEMUMS.—Summer-flowering single varieties of these are useful plants with which to fill vacant places in herbaceous borders or shrubberies. Being so showy in the way of flowers renders them useful for cutting purposes. The middle of this month is early enough to sow the seed, which should be done in gentle heat; prick off the young plants when large enough to handle into boxes or a cold frame, in which gradually harden them off and plant them out at the end of May or early in June, according to climate and other circumstances. *Segetum*, *Lord Beaconsfield*, *Burridgeanum*, and *W. E. Gladstone* are some of the best sorts. E. M.

Variiegated Kales in the flower garden.—These when well coloured have a good effect, and hide the naked appearance which is so often seen in flower gardens during the winter months. In order to keep the plants dwarf and compact and to develop their colour they must be grown in poor soil. The seed should be sown in May, and when the young

plants are large enough to handle they should be pricked out in a sunny border, about a foot apart, where they may remain until October, when they should be planted out. To have a good effect, the stems, which must be of equal height, require to be hidden by sinking the plants in the soil up to the bottom leaves. They vary in colour, some being white, pink, and purple, and there are also different shades of green, brightly veined. But care should be taken to secure seeds of the best strain, and in planting out to select only the finest and brightly-coloured varieties.—C. COLLINS.

Erica carnea.—This may be regarded as the harbinger of all the hardy Heaths that yield us such a wealth of blossoms throughout the summer and early autumn months, and where a little sheltered by an overhanging shrub or in rather a favoured nook, it is, despite the severe weather we have had, already in bloom. The flowers are, like most of its class, borne in great profusion, and are of a very pleasing tint—a sort of rosy red. There is also a white-flowered variety, which is not so common as the other, and beautiful though it be when sheltered, the blooms are often liable to be disfigured by wet weather when in the open ground. Known also as *Erica herbacea*, this little Heath is well suited for a rockwork nook, or as an edging to the larger *Ericaceae*, while I have seen it potted up and used for indoor decoration during the early months of the year. So treated, its blooms expanded beautifully, and it formed for some time a very attractive feature.—T.

Callas in masses.—I like "J. G. H.'s" suggestion regarding these (p. 163). The finest individual mass ever seen by the writer was treated as this writer describes. Small offsets were cleared away, all the strong ones left, and the plant was potted on till the largest pot obtainable was reached; then it was shifted into a tub, in rich material, and top-dressed with rotten manure every year. It thus developed into a large bush, and was a sight to see and admire when crowded with fine foliage and with from a dozen to a dozen and a half of blossoms. Such plants are invaluable for staircases, front halls, large bow-windows, conservatories, &c., though for general decorative purposes they will never supersede the one-crown plants in 6-inch or 7-inch pots now grown by thousands and tens of thousands. A very common way of growing the latter is to plant them out in rich soil about the end of May. With rich root-runs, abundance of water, and free and full exposure to light and air, the single-crowned masses grow up with a sturdiness and vigour they seldom attain in pots or under glass. These out-of-door plants, lifted about the end of September and placed in cool pits or houses, flower well throughout the winter and early spring.—HORTS.

SHORT NOTES.—FLOWER.

All sorts of **Daffodils**, says Mr. Hartland, writing from Cork on the 25th ult., are now a blaze of bloom in the open, and *Erica carnea* a sheet of pink.

Violets.—I send you a few flowers of *Comte Brazza's* Double White and *Marie Louise* Violets. I should like to know what you think of them. They are grown on the Cotswold Hills, and we pick from the last-named variety from the end of September to the beginning of May.—W. G. N.

The blooms received were certainly very fine; indeed, as fine as any that have come under our notice.—Ed.

Echeveria secunda.—This plant, so useful as edgings and outlines in the flower garden, may be kept during winter in many ways. A plan which we saw at Syon House the other day may, however, be new to some. Ridges were thrown up in a cold frame to the height of 12 inches, and on each side of these the plants were dibbled. By this way the plants are free from drip, which is often fatal to them, and space is also very much economised.

Primula obconica.—I am glad to find someone speaking favourably of this *Primula*, as I do not think there is a more easily grown or more satisfactory plant than it is for a cool greenhouse. I had a seedling given me last year; it commenced to flower in May, and has never been out of flower since, and I expect it will bloom the whole year round. It has had two shifts, is now in a 6-inch pot, in rich light soil and carries twenty heads of flower, and has leaves from 3 inches to 4 inches across.—H. B. R.

A good combination.—Tall and early **Daffodils** and *Nicotiana glauca* in a small bed cut out in the Grass and with a background of dark shrubbery. When the **Daffodil** leaves wither, the white **Tobacco** springs up and fills the bed, being a hardy perennial here. Nothing can be more

beautiful than these white **Tobacco** flowers towards dusk, seen against the dark shrubs, and filling the whole garden with their scent. They are an irresistible attraction, too, to some of the larger hawk-moths.—G. H. E.

NOTES OF THE WEEK.

Iris reticulata.—Messrs. Kelway, of Langport, have just now many thousands of *Iris reticulata* in full bloom—a grand sight. Although fully exposed to the east, they have not sustained the least injury from the late cold winds, which have been so trying to many plants.

A correspondent asks for *Edwardsia*. He can obtain *chilensis*, *grandiflora*, *macrophylla*, *microphylla*, and *M'Nabiana* at Messrs. Rodger, McClelland and Co., Newry. Mr. Smith, of Newry, offers the rare *Stuartia pentagyna* and *Gordonia pubescens*.—FRANK MILES.

Crocus Imperati has been in full flower here since Feb. 9, *C. susianus* followed on Feb. 16, and *C. reticulatus* on Feb. 19. *Bunardicus* and *Sieberi* are in bud, and other species coming on fast. They are all in sandy soil on a sunny rockery. *Galanthus Elwesii* and *Cyclamen Comm.* are also in full flower.—M. P. FORSTER, *Leisberg, Northumberland.*

Spring flowers.—We have received from Miss Owen a charming gathering of spring flowers from her garden at Knockmullen, Gorey. Amongst them are many varieties of *Crocuses*, both large and small-flowered; also *Primroses*, *Anemone fulgens*, *Narcissus minor*, *Erica carnea*, *Hepaticas*, and others, all in great beauty and showing that spring flowers are more advanced in that part of Ireland than with us.

Vernonia cinerea is a beautiful variety that gardeners would welcome could they buy it in nurseries, as it is a pretty plant and particularly well adapted for cutting. It reminds one of an *Ageratum* in flower, the small tassel-like blossoms being produced in much the same way, and are of a pale mauve-purple. It seems to be a shrubby plant, judging by the specimen in the *Begonia* house at Kew, which rejoices in the name of *V. cinerea conyzoides*.

Billbergia speciosa.—We have noticed from time to time the finest *Bromeliaceae* plants as they come into bloom at Kew. This *Billbergia* must certainly be added to the list of the very best kinds, as few others have such a good effect when in bloom. There is nothing remarkable about its growth, which is the same as that of most other *Billbergias*, and the flower-spikes are borne in much the same way as others, being long and slightly pendulous. The flowers themselves are long, pale green tipped with purple, but the flower-leaves or bracts are large and numerous, and of a vivid carmine-crimson, so that they are very showy. We do not know if this species is to be had in nurseries, but if so it is one of those we can recommend for general stove culture.

Amherstia nobilis.—This noble shrub, so seldom seen in gardens, is now in flower at Mr. W. A. Tyssen Amherst's garden at Diddington Hall, Brandon, Norfolk. The plant at Diddington is now about 10 feet high and some 14 feet through. Its flowers are borne in pendulous clusters, and there are from fifteen to seventeen flowers on each cluster. The flowers are large, of curious shape, the colour being a brilliant scarlet adorned with heavy blotches of gold. Such a gorgeous shrub as this can only be seen in large stove houses such as exist at Kew and Chatsworth, as it requires such a wide spread of branches. At Chatsworth there used to be a noble specimen in a house devoted entirely to it, and was known as the *Amherstia* house. It is an East Indian plant, and was figured in Wallich's great work called "*Plante Asiaticae Rariores*." Mr. Amherst promises us a coloured drawing and photograph of his plant, and, if possible, we will give a coloured plate of the plant in THE GARDEN.

A sweet-scented stove shrub, whose almost unpronounceable name is *Toxicophlea spectabilis*, is now one of the chief attractions among the South African plants in the Palm house in Kew Gardens. It is an Evergreen, having (as a pot plant) tall, erect shoots, with large and broad leathery leaves of a deep green. In the axils of each pair of leaves on the upper parts of the stems the flowers are borne. They are very small and white, but being very numerous they wreath the stems with clusters of white. They are deliciously fragrant, and quite scent that part of the house in which the plants are growing. It is easily grown, not requiring a great heat, as it is a Cape plant. It was figured in colour many years ago in THE GARDEN, but through some cause it is not generally grown, but those who are always seeking sweet-scented flowers in winter should make a note

of it. It is now a stock plant in good nurseries, and Mr. B. S. Williams, we believe, makes a specialty of it.

Forsythia forced.—Some examples of forced flowering bushes of the hardy shrub *Forsythia viridissima* may be seen in the greenhouse at Kew, where they create quite a distinct feature on account of being different from all other plants. The bushes are about 4 feet high and nearly as much through, and each shoot is wreathed with bright yellow blossoms, but, of course, unaccompanied by foliage. This shrub is easier to force than most others, and is a cheap plant in nurseries.

Agapetes buxifolia is a greenhouse shrub met with rarely outside a strictly botanical collection, yet it is among the prettiest plants one can have in bloom at this season in a greenhouse or conservatory. It is an evergreen bush with small leaves, something like those of the common Box, and each shoot now bears numerous tubular blooms nearly an inch long and of a bright red. It is very profuse in flower, and lasts a long time in perfection. It may be seen in one of the octagons of the temperate house at Kew.

Boronia heterophylla.—This welcome addition to hard-wooded greenhouse plants promises to be an acquisition. The flowers, which are bright violet, distinctly shaded with magenta, are produced in abundance. The leaves are in pairs, and at every joint there are four, and sometimes five, flowers. The side shoots are equally floriferous with the main branches, and even on the old wood flowers are plentiful. It is also sweet-scented. It is in flower just now in Messrs. Veitch's nursery at Chelsea.

The White Canary Island Broom (*Cytisus filipes*) is the embodiment of gracefulness and beauty when in bloom. It does not differ much from our northern kinds of Broom in growth, except that the slender shoots are pendulous, drooping on all sides of the plant in a most elegant way, and now that each shoot is covered with tiny white Pea-shaped blossoms, the elegance of the growth is emphasised. It is a greenhouse plant, we might say half-hardy, and one admirably suited for a cool conservatory. It may be seen in bloom in the temperate house at Kew.

The council of the **Royal Horticultural Society** have definitely arranged with the Commissioners of the 1851 Exhibition for the occupation of the conservatory at South Kensington for the society's meetings and shows, pending negotiations with the Royal Albert Hall Corporation. The entrance to the conservatory will be by the north-east orchard house, Exhibition Road, and the exhibitor's entrance on the east side of the Royal Albert Hall. Fellows of the society will be admitted at 12 noon on presentation of their last year's tickets, and the public at 1 o'clock on payment at the doors. Until further notice the price of admission to the public will be 1s. to the ordinary meetings, and 2s. 6d. to the larger shows.

National Carnation and Picotee Society (Southern Section).—The eleventh exhibition of this society will be held in the conservatory of the Royal Horticultural Society, South Kensington, on July 26. The same number of prizes is offered as usual, with the addition of the Turner Memorial prizes for six Carnations and six Picotees, to be competed for by amateurs who do not employ a gardener regularly. The statement of accounts is not very satisfactory, as there is a balance owing to the treasurer of £215s. 1½d. This deficiency is due to a larger amount than usual having been expended in prizes. The judges awarded £5 in extra prizes, the number of exhibitors being much larger than usual.

National Auricula and Primula Society (Southern Section).—The schedule for the present season has now been issued. The eleventh exhibition is to be held in the conservatory of the Royal Horticultural Society on April 26. Additional prizes are offered for species of *Primulas* and double *Primroses*, to be exhibited in pots or pans, and a number of plants may be placed together, so as to form a group. The Turner Memorial prizes for six show Auriculas will be competed for on that day. Rule X. has been altered, and now reads: "Seedlings, whether exhibited in collections or not, are eligible for certificates, due notice having been given to the secretary. Each plant must have the entry card correctly placed with it." The balance in favour of the society is £27 1s. 4d.

BOOKS.

THE HOMES OF WILD CROCUSES.*

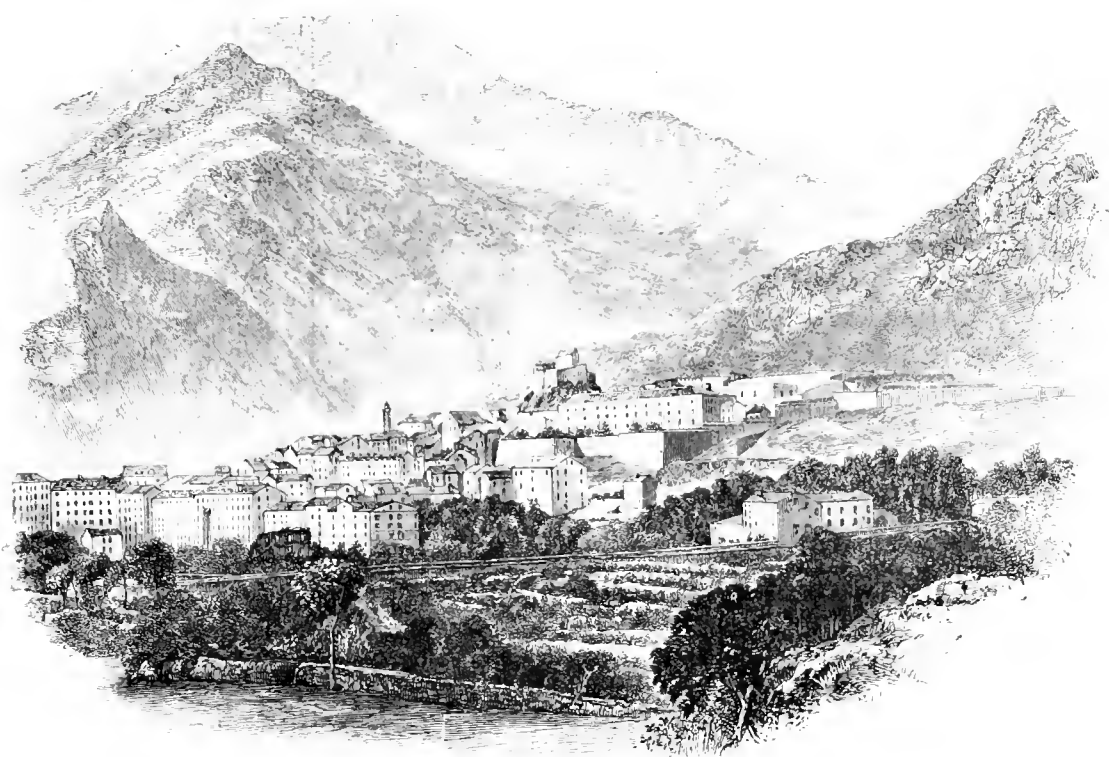
LOVERS of Crocuses, as well as botanists, have in Mr. Maw's elaborate new book on the genus *Crocus* by far the most complete work that has ever been written. It is the outcome of a life-long study of the subject by the author, who has not been content to study Crocuses under cultivation, but has gone to the native haunts of the plants—has travelled, in fact, throughout the length and breadth of the regions where Crocuses grow wild to search for new species, and to glean knowledge bearing upon the life-history of the plants in a state of nature so useful and important to the cultivator. No one, then, could be better qualified to work out a thorough monograph of the Crocuses than Mr. Maw, who has in his work dealt with everything that has the remotest connection with the subject; the work even comprises a disquisition on the etymology

gravings from drawings by Mr. Danford, who, Mr. Maw tells us, travelled during the years 1877, 1878, and 1879 throughout Asia Minor, the region where Crocuses are most abundant. The engravings illustrating mountain scenery are most picturesque, and give one a good idea of those out-of-the-way regions in Asia Minor which are seldom reached by Europeans. Two of the engravings from the book are herewith given, one showing the native mountains of the pretty little *Crocus corsicus* at Corte, Corsica; the other the monastery of Sumila, nestling in a rocky mountain-side, near to which is the habitat of *Crocus vallicola*. Other engravings illustrate other *Crocus* homes, the most striking in the book being the Vallée du Lys, near Luchon, Pyrenees; Bulgar Dagh, in the Taurus, where *C. zonatus* is found; the city of Broussa and Mount Olympus, the headquarters of several beautiful Crocuses; Mount Argeus; the pretty island of Capri; while in Palestine, where a few species occur, an illustration is given of Bethlehem, and

devoted much space to it, but what he says is to the point and most useful. He says:—

Cultural directions for a genus so easily grown seem almost superfluous; but there are a few points to which it may be convenient to refer in dealing with *Crocus* as decorative plants. Taking the whole genus of about seventy species, they must be viewed as in continuous succession, from the beginning of August till April. Of these it is only the earlier autumnal, or the distinctly vernal species that can be relied upon in our climate for open-air garden decoration. Although all are hardy, and most of the winter-flowering species will flower in the open ground, those that flower in November, December, and January are so liable to injury by frost and rain, that they are practically worthless as decorative plants for the open garden.

For such, as well as for the less robust and less floriferous species, the protection of a brick pit is necessary. The bottom of the pit should be well below the level of the ground, and it should be filled up with about 1 foot in depth of fine river silt or sandy loam, the surface of which should be a little below



Corte, Corsica, the home of *Crocus corsicus*.

of the words "Crocus" and "Saffron." An outline of the contents of the work has before been given in THE GARDEN, but what we wish to direct attention to here is that part of the work dealing with the native haunts of wild Crocuses. In each account of the species, which number no fewer than sixty-nine, the native localities are named, as well as the conditions under which the plants are found wild. Some are found in high mountainous districts, others on sunny hillsides, others in valleys and open pastures—all of which information is invaluable to cultivators of these lovely wild Crocuses. Throughout the work are distributed numerous illustrations of places in or near the localities where one or other of the species grows wild. These engravings are for the most part beautifully done, and the artistic merit of the work is chiefly due to these. Most of the illustrations are en-

graving from drawings by Mr. Danford, who, Mr. Maw tells us, travelled during the years 1877, 1878, and 1879 throughout Asia Minor, the region where Crocuses are most abundant. The engravings illustrating mountain scenery are most picturesque, and give one a good idea of those out-of-the-way regions in Asia Minor which are seldom reached by Europeans. Two of the engravings from the book are herewith given, one showing the native mountains of the pretty little *Crocus corsicus* at Corte, Corsica; the other the monastery of Sumila, nestling in a rocky mountain-side, near to which is the habitat of *Crocus vallicola*. Other engravings illustrate other *Crocus* homes, the most striking in the book being the Vallée du Lys, near Luchon, Pyrenees; Bulgar Dagh, in the Taurus, where *C. zonatus* is found; the city of Broussa and Mount Olympus, the headquarters of several beautiful Crocuses; Mount Argeus; the pretty island of Capri; while in Palestine, where a few species occur, an illustration is given of Bethlehem, and

further east are places in Turkestan, the easternmost limits of *Crocus*. The extreme western localities in Spain and Portugal are illustrated, the Escorial and the Sierra Nevada from Grenada being particularly noteworthy, also of Cintra, that much-talked-of Paradise on the western coast of Portugal. These engravings give to the work an additional interest. There is a chart given showing clearly the range of the genus *Crocus*, from which it appears that the species are most abundant in Asia Minor in latitude 40°, for no fewer than thirty species are found there. The most northerly limit is in the Alatan Mountains and the most southerly in Palestine, the most westerly in Portugal, the most easterly in Turkestan. In Central Europe, and even in England, some species have become so naturalised as to appear wild—for instance, the common Dutch *Crocus*, *C. vernus*, which is found in various parts, as is also *C. sativus*. The culture of Crocuses is so simple, that Mr. Maw has not

the level of the surface of the adjacent ground. Proper drainage is essential; but this being attained, Crocuses during their period of growth delight in a uniformly moist subsoil. *Crocus vernus* in the Alps is more vigorous in hollow, moist places than on the projecting drier ground. It is convenient to separate each species by strips of slate or tiles, which may be buried below the surface, and the corms planted about 3 inches or 4 inches deep. A mulching of rotted Cocoa-nut fibre or finely sifted peat keeps the surface uniformly moist, and prevents the substratum of loam from clogging or caking on the surface. At the time of maturity of the foliage, which generally takes place about the end of May, water should be withheld, and the *Crocus* bed should be covered up and allowed to get quite dry till the end of July, when a copious watering may be given, or the pit exposed to natural rainfall. Crocuses are easily multiplied from seed, which should be sown as soon as ripe in July. Germination, however, will not take place till the natural growing period of the species. The autumnal species vegetate in the autumn and the vernal species in the spring succeeding the summer or autumn in which

* "Monograph of the Genus *Crocus*." By George Maw, F.L.S. London: Dulau & Co., Soho Square.

they are sown ; but some of the seeds lie dormant for one, two, or even three years before they vegetate. Seedlings take from two to three years to arrive at maturity. They should be left for the first two years undisturbed in the seed-bed, and then taken up and replanted. The replanting of the old corms every year, or every other year is advantageous ; and the clearing of the corms from the superfluous tunics, and the remains of the old decaying corms seems to encourage a vigorous growth.

Of the autumnal species suitable for the open border the following may be enumerated for successional flowering :—

C. Scharoani, orange ; early in August.	
vallicola, straw-coloured ; late in August and early in September.	
nudiflorus, blue ; September.	
pulehellus, lilac ; September and October.	
speciosus, blue ; September and October.	
iridiflorus, blue ; September and October.	
Salzmanni	} in the late autumn.
asturicus } lilac or blue ; October and November.	
Clusii	
cancellatus	
Cambessidese	
sativus	
hadriaticus	

These are succeeded by a long series of late autumnal, winter, and early vernal species, which are best grown to advantage under the protection of a brick pit.

Of the vernal species suitable for the border, the earliest is *C. Imperati*, flowering in February, followed by

C. susannus, or Cloth of Gold, in February.

biflorus	} Flowering from the end of February to the first week in April.
coriscus	
cruscus	
suaveolens	
versicolor	
vernus	
Tommasianus	
dalmaticus	
banaticus	
Sieberi and var. versicolor	
chrysanthus	
aureus	
sulphureus	
sulphureus pallidus and strictus	
stellaris	
Olivei	
minimus	
Balsans	

Of the *Crocii* recently introduced, many more of the vernal species will probably be found suitable for spring garden decoration, but in the above lists I have given only those which are more generally known and easily obtainable.

Holland, with its rich, light, alluvial soil, and Lincolnshire, with its "Trent warp," have been for many generations the sources from which the English market has been supplied with the varieties of the three or four species grown in English gardens. The last eight or nine years have put us in possession of nearly the whole of the known species of the genus, and they must be commended to the care of the Dutch and Lincolnshire bulb growers wherewith to further enrich our collections.

In collecting and transmitting wild *Crocus* roots, it is necessary to bear in mind the stage of growth of the plant. At the flowering-time the young corm is just beginning to be formed, and if the growing of the plant is interrupted, the little bud-like corm is likely to perish, especially if the plant is dried. *Crocuses* in flower should in packing be tied up in bunches, with a little damp Moss, and kept, as far as possible, in a growing condition. In the later stages of growth, the new corm rapidly approaches an independent maturity. *Crocuses* dug up after the flower has completely passed away should be packed dry, and before planting, cleaned of the decaying foliage and tunics, also of the remains of the last year's corms. The smallest partially-developed corms, even of the size of a Pea, unless kept too long dry, will vegetate, and soon grow into large, full-sized corms.

It is probable that there are yet many undescribed species to be discovered and introduced. Asia Minor is the metropolis of the genus ; and I would especially point out to travellers the southern part of Asia Minor between Syria and Lycia as being likely to afford new species. The north-eastern extremity of Cyprus, The Taurus, Kurdistan, North-west Persia, and the district east of the Caspian have been little explored, and are likely to afford some new species.

This extract is sufficient to show the style of the work, which is throughout written in a way that a botanist does not repudiate, while it is engaging to the general reader.

The coloured plates show the species fairly well ; they are not meant to be mere pictures of the plants, but we think that in many cases full justice has not been given to the beauty of the flowers in the matter of drawing and colouring. One could wish that other important classes of plants could find monographers of Mr. Maw's stamp.

W. G.

BRITISH ORCHIDS.*

MR. WEBSTER has had much experience in the growing of terrestrial Orchids, and many will thank him for giving them the benefit of it in this neatly printed and handy little volume. He writes pleasantly and with commendable enthusiasm, and has evidently studied the plants which he has grown, so that the book is by no means a mere compilation. We are sorry to learn that the interesting *Spiranthes Romanzoviana*, which has more than once been discussed in these columns, is known in Ireland by the name of *S. hiberniana*, and trust our friends across the Channel are unjustly credited with a name which has neither authority nor grammar to commend it, they will, in any case, resent the styling of the plant as "British" on the faith of its Irish habitat. The variations of *Orchis Morio* seem to demand more praise than Mr. Webster bestows upon them, and he is evidently unacquainted with the beautiful forms of *O. incarnata* which adorn the Southport sandhills ; indeed, he does not appear to know *O. incarnata*, the name of which appears only incidentally as a synonym of *O. latifolia*. We do not accept his new etymology of *Morio*, which is hardly borne out by the evidence of our earlier authors. Much might have been said about the very numerous popular names of the commoner species. Perhaps this, and a description of *O. incarnata* will appear in a second edition, into which we predict this pleasant little book will soon pass.

B.

ROSE GARDEN.

T. W. GIRDLESTONE.

GROUPING ROSES.

As young folks save the best of their bonbons for a *bonne bouche*, so in the selection of Roses for planting in masses the Tea-scented varieties have been left till last as being the best and most beautiful of all Roses. If they are not the most gorgeous, at least they are the most refined ; if not the most hardy, certainly the best worth protection, and at once the earliest, latest, and most continuous bloomers. Tea Roses planted in a sheltered, sunny position may be had in flower out of doors as early as May, and will scarcely desist until the considerable frosts and rough weather of November enforce a temporary rest. As a class, they are comparatively little subject to mildew, especially when they are grown in the open and red rust does not attack them, so that the plants are seldom without abundant and handsome foliage, while their flowers are desired beyond all others, whether by the exhibitor, the florist, or (most important by far) the fair sex. Of the varieties calculated to make an effective display in the garden, Marie Van Houtte, Hon. Edith Gifford, Anna Ollivier, Madame Lambert, Jean Ducher, and Grace Darling are six of the best worth planting in quantity. A good group of the first-named is a thing of beauty and a joy for ever ; its young growth in the early summer is highly effective, but when

its exquisite pale yellow flowers, margined with peach colour, are in perfection, it is irresistible, and the number and quality of the blooms produced during September and October are hardly inferior to those developed in June and July. There should not be a garden in the country where Marie Van Houtte is not grown in abundance on walls (though in such positions care must be taken to keep the plants free from mildew, to which Tea Roses are far more liable when grown on walls than when grown in the open) for early blooms, and in the open in various aspects for supplying cut flowers as well as for making a display in the garden ; it will thrive on light or heavy soil, and succeeds admirably worked on Brier seedling or cutting stocks. In fact, all the Teas prefer these dwarf Brier stocks, and also may be grown to perfection on lighter, hotter soils than most other Roses, so that they should receive special consideration from those who are inclined to say that their soil is not heavy enough to grow Roses. Hon. Edith Gifford is a comparatively recent Rose, having been introduced by Guillot in 1882, but it has already deservedly taken a prominent position. Its white flowers are very freely produced throughout the season, and having a substantial petal, never fails to expand, and for this reason it is one of the best white Teas for growing out of doors. The flowers are also especially ornamental on the plant owing to their being held erect on stiff stems whereby their beauty is fully displayed. Anna Ollivier is a very vigorous and handsome variety and blooms freely ; its flowers vary a good deal, being generally of a pale flesh colour, more or less shaded in the centre with deep coppery rose, but are very attractive in all stages. It is generally considered one of the easiest Teas to grow and flower to perfection, and certainly deserves to be abundantly planted. Madame Lambert is one of the most variable Roses in existence, and there may be often seen at the same time half a dozen blooms so different in colouring as to give the impression that they were distinct varieties. In the first flowering in July the blossoms are mostly of a rosy buff tint, more or less shaded (often very irregularly) with rose, but sometimes with the yellow colour prevailing ; in the autumn, however, the flowers are all of a uniform rose colour, and the yellow shade is but little noticeable away from the base of the petals. This Rose makes a vigorous branching plant, and the freedom with which it flowers in autumn is conspicuous even among such thorough perpetuals as are the majority of the Tea-scented varieties ; so that a good group of it ensures a telling bit of bloom in the Rose garden during September and later. Jean Ducher is a handsome Rose both in plant and flower, growing well and strong, and blooming freely ; its flowers vary also a good deal in colour, from pale to deep tawny yellow, with a darker centre, and are seen to great advantage on the plant, whose sturdy shoots carry them boldly upright. Grace Darling is even younger than the Hon. Edith Gifford, having been sent out by Bennett in 1884 ; but that does not prevent its being one of the most continuous-blooming as well as one of the most exquisitely coloured Roses yet raised. Even in so late a season as that of 1886 proved, this variety was in flower in the open in the third week in June, and in the previous season it bloomed before the middle of the month ; nevertheless it furnished abundant and beautiful blossoms until very late autumn, the individual flowers during September being especially fine. The plant is very free, though not tall, in growth, and every shoot and twig carries a flower, whose colour is a delicious mixture of peach and cream, the petals having a pale base, shaded with rose towards the margin. The complete distinct-

* British Orchids ; containing an exhaustive description of each species, to which is added chapters on structure and other peculiarities, cultivation, fertilisation, classification, and distribution." By A. D. Webster, F.R.S.E. Illustrated. Bangor : Nixon & Jarvis. Pp. 103.

ness of Grace Darling from every other Rose, combined with the extreme freedom with which its flowers are produced, and its exceedingly attractive appearance render it indispensable even where only the very best varieties are grown.

Anyone that planted a good group of each of these six varieties would have, at any rate in the southern part of England, a supply of Rose blooms as long as Roses are obtainable out of doors in this country, namely, almost continuously from June to November, and that in the principal Tea Rose colours, yellow, white, creamy, and rosy tinted. Of course, August in the south is generally a somewhat roseless month; the weather is commonly hot and dry, mildew attacks many plants, and in proportion as the foliage suffers the chance of further bloom is reduced. But what flowers are to be had are pretty sure to be those of the Tea-scented varieties, for the hotter the weather the better they seem to like it, and they are less liable to mildew than most other Roses. Where a larger collection is desired the following varieties are the next best worth growing to make a display in the garden, and complete the pick of each colour throughout the class for the purpose. Among whites, Innocente Pirola is charming, its numerous flowers with their twisted pointed centre being carried erect on stiff stems and being freely produced in autumn, though its petals are less substantial and consequently more liable to be spoiled by wet than those of the Hon. Edith Gifford; and the well-known Niphotos is good where Roses are thoroughly well looked after, but otherwise is hardly vigorous enough. Useful yellows are Caroline Kuster, commonly classed as a Noisette, very vigorous and free, and especially good in a hot season; Perle des Jardins, deep yellow flowers produced on strong, erect shoots; and, in some localities, Etoile de Lyon, a clear pale yellow, whose very full flowers, according to some growers, do not open readily out of doors; this, however, is not the case everywhere, and though the variety cannot be unreservedly recommended, it has in a good many places during the last three seasons proved a valuable addition to the yellow Roses. The two last named Teas may claim to rank as ornamental plants independently of their flowers, from the deep red colour of their shoots and foliage, especially in the earlier stages of growth, though there is always a red-brown tint about a group of these plants throughout the season. Of tinted whites there are Rubens, a fine flower, but the leaves not very large and set rather wide apart, so that the plant is not very furnishing; Souvenir de Paul Neyron, dwarf, but stiff-stemmed, and very pretty; and the recent and charming Madame de Watteville (Guillot, 1883), very free-flowering, the blooms white, delicately washed with pale rose externally. The peerless Catherine Mermets, and the seedling from it, Jules Finger, are two of the best pale rose colours, the latter rather deeper and more bronzy in tint than its parent, and of a more open shape. For a red Tea it was until lately necessary to quote Duchess of Edinburgh, a very charming and floriferous variety, but in reality only a bright rose colour, and almost a China; but in Souvenir de Thérèse Levet (Levet, 1882) there now exists a true crimson Tea that carries its dark red colour well, and is quite without any lilac tint, unless when very poorly grown; its flowers are freely produced early and late, are well displayed on stiff stems, and make in a good sized group a striking and distinctive effect. No name has yet been invented for the combination of rose and apricot, in which the loveliest of all Teas decks her flowers, and though Comtesse de Nadaillac is not a strong grower, she is so beautiful that success in her

cultivation amply repays all the care and pains that may have been bestowed. Who that has ever seen the marvellous boxes of blooms of this Rose that Mr. Prince, of Oxford, so frequently exhibits has not promptly determined to have such flowers in his own garden? Nor will anyone fail to do so that is really a devoted admirer. Her ladyship is an exacting mistress, and demands considerable indulgence at the hands of her lover, but she is gracious to the faithful swain, and though like many another fair dame, she takes but little heed of what people may expect of her, nevertheless, gentle persuasion rarely fails to induce her to grace the rosery with her unrivalled beauty. Princess of Wales is another variety of similar type, but the flowers lack the glowing flush of colour in the centre, though they are freely produced and attractive.

All the Tea Roses so far mentioned, in addition to being those best calculated to make an effective display in the garden, are among the varieties whose blooms are most frequently seen exhibited in winning stands at all the leading Rose shows; but there are a few others whose flowers are not full enough to endure a long journey, or are not large enough to be of use to the exhibitor, but which are very pretty in the garden. Such an one is Madame Joseph Schwartz, a healthy, vigorous plant, which produces large trusses of pretty cup-shaped white flowers, tinted with rose on the margin, and boldly displayed. Another pretty variety, though not showing its flowers off quite so advantageously on the plant as the last-named, is the popular Noisette Narcisse, of which a good-sized group makes a pleasing effect. Madame Falcot and Safrano are too well known to more than mention; but red Safrano, which is distinct and delightful in colour, deserves to be more often seen. Another bud Rose of striking tint is Ma Capucine, said to be a seedling from the climbing Noisette Ophirie, and one which ought to be generally cultivated. Its nasturtium-coloured flowers are attractive in any stage on the plant, but in the bud state, for button-holes and bouquets, they are unique. The same remark applies to Madame Chedane Guinoisseau, whose long, clear, yellow buds among the semi-double expanded flowers make a charming effect on a large group of plants. There is one other of these bud Roses that never seems to have found its way into the English nurserymen's catalogues, called Madame Perny, a vigorous grower, producing abundance of very perfectly formed orange-yellow buds. On expanding the flowers become quite white, and are seen to consist of but few petals, though these are very large, and give the appearance of a bush with great white butterflies settling upon it. The great popularity of individual plants of this Rose when seen growing and in flower is strong evidence of the fact that a plant is not necessarily less effective nor less admired because it has only semi-double flowers, and raisers might be urged to let the public see and say for itself whether it does not like some of the less formal forms among their seedlings, which are so liable to be ruthlessly destroyed for not attaining to an arbitrary standard of formality.

In selecting Roses for grouping, the main point that has been kept in view is the effective nature of the display made in the garden by any given variety when in bloom, and consequently all varieties with pendulous flowers have been omitted, as, except in the case of climbers, the beauty of such flowers cannot be fully seen on the plant. Of course, in a selection intended to comprise all the most beautiful Roses considered merely as individual blossoms, some of these varieties would have to be included; but the general proposition may be allowed to stand,

that a great need in many gardens and not a few roseries is more plants and fewer varieties—not actually fewer varieties, but fewer in proportion to the number of plants grown. If there be room for five thousand plants, by all means let there be several hundred varieties, but if there be room for only a hundred plants, do not let there be anything like a hundred varieties; a tithe of that number would be preferable. If people want to plant six dozen Roses, let them eschew the fatal seventy-two distinct, and rather plant six each of a dozen carefully chosen varieties, or, better still, a dozen each of six varieties.

The accusation has of late years been formulated that the Rose is not ornamental as a garden plant, and this has arisen chiefly from two causes—first, the cultivation of many varieties not sufficiently free-flowering or not good in colour; secondly, the indiscriminate planting of them in ones and twos, here a tall one and there a short one, here a good one and there a bad one, so that there is a worrying spottiness of effect instead of a striking mass of colour. There is little doubt, however, that the charge may be disposed of, if only free-blooming, pure coloured, and, as far as possible, thoroughly autumnal varieties be grown, and that not each represented by a solitary example, but planted boldly in considerable groups.

ROSE GROWING IN AMERICA.

SUMMIT is some eighteen miles from New York, and is a beautiful, hilly, well-wooded place, fast filling up with handsome residences. As a Rose-growing depot it is famous throughout the country and in its neighbourhood, and at Madison, some four miles distant, are located many of the leading cut-flower growers who supply the New York market. Among Rose growers is Mr. De Forest, who has one of the largest greenhouse establishments in the country, and Mrs. De Forest is just as much interested in all that pertains to flowers as is her husband. His greenhouses consist of many ranges of three-quarter span houses 20 ft. wide by 200 ft. long; also some 12-ft. wide and 6-ft. wide propagating houses, but nearly all run about the same in length. They are wooden houses, built of the best material and glazed with first quality French double thick glass. I use second quality double thick French glass and think I am doing well, for it is clear, fine glass; but Mr. De Forest believes that the first quality is more than worth the extra cost. He has resolved not to build any more houses of wood, and is now clearing ground for iron structures. In the Rose houses the beds are not made upon the ground, but in all cases are raised above it on plank benches. There are two sets of greenhouses, a few hundred yards apart; one is heated by steam, and the other by hot water. Mr. De Forest greatly prefers the steam heaters; they are very efficient, quick to act, easy to regulate, easy to stoke, and so far as fuel is concerned very economical—eight tons of coal in the steam heaters giving the same results as fourteen tons in the hot-water apparatus. The steam heat has no injurious effect whatever upon the plants.

THE ROSES GROWN are Bon Silene, La France, Niphotos, Catherine Mermets, white Catherine Mermets, Bennett, and American Beauty; also, but in more limited numbers, Captain Christy, Her Majesty, Paul Neyron, Magna Charta, Mme. Gabriel Luizet, Jacqueminot, and a few other Hybrid Perpetuals. All the Teas are now in fine growth and flower, but of the Hybrid Perpetuals some are being started, while others are not yet "shut up." Bon Silene, La France, and Niphotos occupy the back and front benches, which are raised to pretty near the glass, and are planted out and kept tied down. Niphotos is not upon its own roots. Mermets comprise the majority of the stock grown, and are beautiful. They occupy the central beds, and are in most cases planted out, but one house is largely filled with them in pots. The majority are one-year-old plants, but one house is nearly filled with two-year-olds. One-year-old plants are said to yield the largest crops, but two-

year-olds the finest blooms. A cane stake is applied to each plant. The white *Mermet* is in every way, except in colour, the exact counterpart of its parent. It originated with Mr. De Forest, who considers it distinct from the white variety obtained about the same time by Mr. Taplin, of Maywood. Bennett is growing and flowering freely planted out on the front middle benches. But the *American Beauty* is truly a beauty. Planted out in the middle benches, in fine luxuriance of wood and foliage, and with one bud terminating each shoot, it does not stop till it has nearly reached the glass. Its large size, deep rose-red colour, and delicious fragrance, also the long, leafy stem that may be cut to each Rose, add much to its value. Mr. De Forest says that so far he has not succeeded well with *Her Majesty*, but he is now satisfied from observation elsewhere that he has found out the cause of its backwardness with him, and that is, that it needs a lighter and more porous soil than he generally uses for his Roses. *Mme. Gabriel Luizet* is his great favourite, and he has recently imported it largely. *Paul Neyron* and *Magna Charta* are grown for March flowers. Their immense size always commands attention. *Jacqeminot* for colour stands unrivalled. Mr. De Forest is very fond of *Captain Christy*, and grows a lot of it because he himself likes the Rose, and not for market, as it is too small for that purpose.

The soil used is from rotten turf. In the neighbourhood is an old Apple orchard that had been in Grass for many years, from which he bought the turf. He turned over the top, carted it home, and made a pile of it, putting a layer of team and one of manure alternately, but about twice as much loam as manure. This was done in the autumn, and it will be allowed to remain in the heap till next May, when it will be turned over and used for the bench-beds. Clean cow manure alone is used for manure. All the beds and pots are mulched about 1 inch or 2 inches thick with it. There are large tanks of liquid manure in the greenhouses, and steam pipes run through them to warm the water. It is applied by steam-pump power. Mr. De Forest believes in limited, rather than a liberal, use of liquid manure, and not at all till the roots have first pretty well exhausted the soil.

Mr. De Forest apprehends a great future for Orchid flowers and has resolved to supply the market. He now has, I should think, between one and two thousand plants, but this, he assures me, is only the beginning; he intends to fill several houses (and each of his houses is 200 feet long!) with Orchids alone. He does not mean to displace Roses to make room for Orchids, but to add more new greenhouses.—*WILLIAM FALCONER, in American Florist.*

FRUIT GARDEN.

W. COLEMAN.

THE APRICOT AS A CORDON.

THE Apricot is perhaps the most unsatisfactory fruit tree which comes under the gardener's management. Although thousands of trees have been planted annually throughout Britain and the temperate parts of Europe, only occasionally does it happen that large perfect specimens are met with in the best regulated gardens. Cripples are plentiful enough, as every man who has a bit of wall or a gable end to spare plants an Apricot; and so thoroughly plebeian is the tree in its likes and dislikes, that one sometimes sees the poor man's cottage covered with its bright golden fruit, whilst hard by in the duke's garden, the return from one-sided trees does not pay for pruning and training. In the north of England and Scotland where Apricots are quite as late as Peaches, a south wall is generally considered the best, if not the only suitable, site, and so strong is the force of practice—I might say the tide of northern practice to the south—that in warmer parts we frequently find the hottest wall and border devoted to this moisture-loving tree when a west aspect would suit it much better. Be this theory right or wrong, the fact that the rigid

system of training the branches against highly heated walls, and keeping the roots in borders also hot and dry, having proved disappointing, it becomes a question whether the rut, now hundreds of years old, should not be departed from and a fresh path tried. Light sandy or friable loams are considered the best for Apricots, and these should be deep in proportion to their lightness, but the oldest, if not the most handsome, trees I have met with in the counties of Hereford and Worcester are now growing in deep heavy loams on the old red sandstone. The aspect in each instance faces west, and although the roots are heavily mulched, they receive immense quantities of water early in the spring and throughout the summer.

Moorpark and a closely allied variety known as the Peach Apricot are considered the best, especially for dessert, but unfortunately they are most subject to sudden collapse or limb-perishing. Trees in full health one day are found flagging the next, and no power can save the parts affected. Sometimes one-third of a large tree perishes, but more frequently a branch here and another there goes, and although the fruit on the remainder of the tree ripens properly, once begun the disease stalks along, when, unless the owner can put up with unsightly cripples, a year or two sees them consigned to the fire and young ones taking their place. In many gardens until recently the attention given to the Peach was denied the Apricot: the roots in dry, hard borders, left undisturbed for years, having made a rapid descent into the subsoil in search of the moisture they so much needed, soon became deeply embedded in a cold crude stratum calculated to produce canker, mildew, and sudden collapse, whilst the foliage, which evaporates water, quickly languished against south walls whose temperature exceeded that of their native Armenia. Where large trees still exist, the modern remedy is careful lifting and relaying in rather deep, moist, but well drained loam early in the autumn, and although, provided they are well watered and mulched, this may mitigate the evil of limb-perishing, once in the system it does not entirely stop it. Fresh planting consequently is always going on, but instead of training to the fullest extent I have lately tried cordon training, and, judging from the way in which young trees furnish flowering wood, I venture to think the system may answer. Apples, Pears, and all stone fruits do well as cordons. The Apricot succeeds as a pot tree, and this system, which necessitates the constant addition of fresh soil and good mulching to the roots, followed by plentiful supplies of water, may ward off evils which so many growers now complain of. The Apricot being a very early grower, every operation from planting to pruning should take precedence of similar operations in the management of all other fruit trees, and when it is borne in mind that fruit is obtained from well-ripened young shoots as well as spurs, summer pinching should render winter pruning unnecessary.

Apricots this year are looking unusually well, and where the buds last season dropped by thousands, they are now bursting into a sheet of blossom. Sharp morning frosts still cling to us, and protection, as a matter of course, is necessary. This may consist of canvas, frigi domo, or the like, which must be removed by day to let in light and air, otherwise the young growths as well as the flowers will become soft and tender. Many people do not, however, care to incur expense which involves a great deal of daily attention, and to those I would say cope the walls with broad boards, drop down two or three thicknesses of cheap fishing net, keep it away from the trees by the introduction of a few light poles,

and there let it remain until the fruit is set. Meantime, look well to the roots, for, with the exception of a heavy fall of snow, we in this district have not had a day's rain since Christmas. If south borders are well drained they must be dry; therefore, after mulching with something that will prevent the water from running off, hose them until the lowest portion of the soil is thoroughly moistened. It is not well to water when trees are in flower, neither will well-managed borders require it, but, drought being the forerunner of sterility, sufficient to secure brisk root action must be carefully given and more may follow.

GRAFTED AND INARCHED VINES.

AN impression prevails that if we graft or inarch a Vine with a different variety, the character of the scion is eventually materially altered either for the better or worse, according to the nature of the stock. In reality there are not the slightest grounds for this notion, and the sooner it is combated the better: otherwise, many others besides myself may, to a certain extent, be disappointed with the result of their labours to improve the quality of good-looking, but in other respects quite worthless, Grapes. Against the practice of grafting and inarching Vines I have nothing whatever to advance; on the contrary, there is no better or more expeditious method of securing a complete or partial change of varieties without the loss of a crop. More than that need not be anticipated; otherwise, I am altogether wide off the mark, both as regards my own experiments and those carried out in other places of which I have had knowledge. The favourite stocks with most cultivators are the Black Hamburg and Muscat of Alexandria. At the present time we have fourteen grafted or inarched rods, nearly all on the Hamburg stock, and in no one instance has any improvement been effected in the character of the scion. Gros Maroc on the Hamburg stock in both early and late houses is the same good-looking, uncatable Grape it proves to be when growing on its own roots, and it also retains its rank-growing habit. Those who may wish to change a house of Hamburg Grapes into a variety that may better suit the markets doubtless will do well to inarch or graft with Gros Maroc, the latter requiring no more heat to ripen it. For home consumption, however, the less grown of it the better. Gros Colmar on the Hamburg stock is the same noble-looking Grape as on its own roots, taking quite as long to ripen, colouring no better, and also, unfortunately, still retaining its objectionable Ivy-like flavour. We have two capital rods of Mrs. Pince on the Hamburg stock, and though they give plenty of good bunches, it seems impossible to colour the fruit properly. This variety possesses a good constitution, forms stout foliage, and medium-sized, well-ripened rods are secured without much difficulty. It is not so easily set even as the Muscat of Alexandria and Alnwick Seedling, our grafted rods being quite as bad in this respect as those on their own roots. With us it colours fairly well, keeps till March, and later if required, and, on the whole, is the best-flavoured late black Grape in cultivation. In many late vineries fewer Alicante should be grown, these being inarched or grafted with Mrs. Pince, and thus be quickly superseded by a more high-class variety.

Alnwick Seedling on any stock is as vigorous and prolific as it is on its own roots. The bunches can be readily set with the hand—this being drawn over carefully and frequently when the flowers are opening; the berries will swell to a good size and colour perfectly. They can be kept to the end of November, but try them when I will none have yet given satisfaction, the quality being quite second-rate. Madresfield Court develops all its good and all its bad qualities on either the Hamburg or Muscat of Alexandria stock. The same difficulty is experienced in colouring it up to the footstalks, and nothing but special treatment arrests wholesale cracking of

the berries. In an early or comparatively early house a good circulation of air may be accorded it without greatly prejudicing other occupants of the house; this, coupled with dryness at the roots, will check cracking. In a late house where we had a grafted rod neither condition could safely be complied with, and as a consequence the berries cracked badly. When in good condition it is a grand variety, and I very much regret having to replace it in the late house with a more reliable sort. Gros Guillaume on the Hamburgh and Muscat stocks forms capital rods, the wood when cut being as hard as could be wished for, yet it is quite as shy-bearing as it is on its own roots, nor

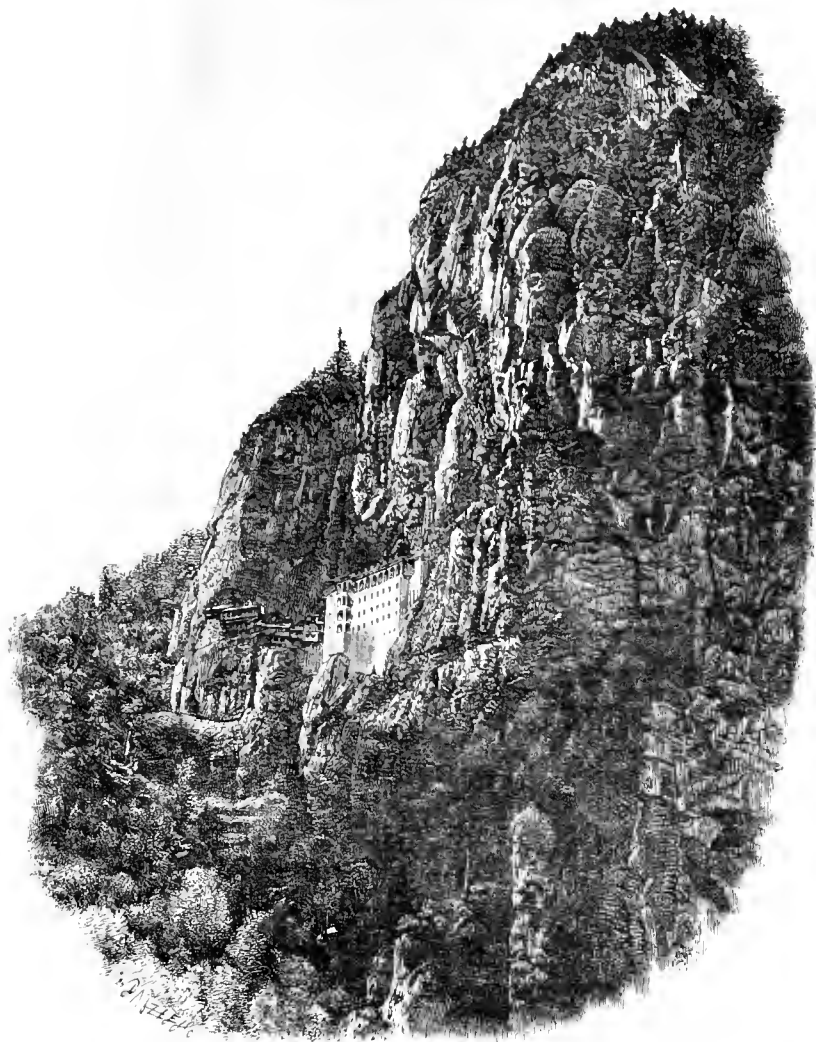
plenty of heat the berries are not mere bags of sugar and water, as is sometimes asserted, but are fairly firm and crisp, the quality also being passable. Well ripened it will keep until March or later. The most valuable late Grape, however, will be found in Lady Downes, and the wonder is so few are grown. This, again, we have on the Hamburgh stock, and not in the least altered in character thereby. The young rods break as irregularly, are as disappointing as regards the size of the bunches, the bloom as much liable to damp off, and the berries quite as much addicted to scalding as those on their own roots. We never experience any difficulty in effecting an

refreshing. This useful sort ought to be most extensively grafted or inarched on any available stock—whether a white or black variety—during the season near at hand.

White Grapes also call for comment. Buckland Sweetwater will do well on the Hamburgh stock, and well grown and properly coloured, it is of handsome appearance as well as refreshing when eaten. It is an early Grape suitable for growing with the Black Hamburgh, but is certainly inferior as far as quality is concerned. It does not set so well as could be wished, and we find it advisable to fertilise the bunches with Hamburgh pollen. Thinning out should also be done gradually, so as to eventually retain the desired number of fully developed berries.

FOSTER'S SEEDLING is also suitable for growing in a cool house or for forcing, and takes readily to the Hamburgh or any other stock. It is more prolific than Buckland Sweetwater, sets without any assistance, and the bunches are usually of good size and handsome in appearance. It requires plenty of time to colour and abundance of light, but not direct sunshine, to properly develop both the colour and quality. It keeps fairly well, is sweet and juicy, but not rich in flavour. Trebbiano, which we do not at present cultivate, is an easily grown variety, capable of holding its own when planted among Fig and Peach trees, and will do well against a partially shaded back wall. Inarching or grafting on another stock has no effect upon it. In a cool house it ripens fairly well, but grown with Alicantes and other heat-loving sorts it is materially improved in every respect. Calabrian Raisin keeps well, but I have formed a poor opinion of its merits, and would give neither this nor the still more inferior Syrian house room. Golden Queen is one of the most vigorous sorts we have. I intend trying it for a stock on which to graft its near relative Mrs. Pearson, not, however, with the idea of improving the latter in any way. Golden Queen, unless grown and ripened in a high temperature, is a most worthless sort, nor to my knowledge has either the Hamburgh or Muscat stock improved it. Our best bunches were produced from spurs, vigorous young rods giving disappointingly small examples. Mrs. Pearson is less robust, quite as prolific, and requires less heat to bring it to perfection. It is not often seen in good condition, but with us it colours and keeps well. The flavour more nearly approaches that of Ferdinand de Lesseps, which in its turn more resembles the Strawberry Grape than it does the Muscat, and in addition it has the aroma peculiar to the former. I can recommend this variety for grafting or inarching on any Vine in a late house that can be spared. Muscat of Alexandria, the last to be alluded to, is perhaps the most valuable variety in cultivation, and given plenty of this from July to the end of March, no other white Grape is required. According to my experience, its character is not in the least changed by its being inarched or grafted on to any kind of stock, and those who intend to follow the excellent advice recently given in the pages of THE GARDEN should experiment largely with the Muscat of Alexandria. It is essentially a heat-loving Grape, and although it is occasionally seen in a presentable condition under cool treatment, this is quite an exceptional case.

In connection with this subject, I may briefly describe an experiment that we are trying here. In order to utilise to its fullest extent a house of Muscat of Alexandria during the process of renovation, a strong Black Hamburgh rod was brought through from an adjoining house and disposed along the front. It was intended as a stock for the Muscat of Alexandria, and also to afford an early supply of black Grapes. So well has the rod succeeded in this position, affording as it annually does several handsome bunches, that we have hesitated to wholly change its character. Two rods of Muscats only are established on it—one, by the process known as bottle-grafting, and the other by inarching, these being trained up the roof or at right angles with the stock. Now,



The Monastery of Sumla, Stauros, near Trebizond, close to which is the native habitat of *Crocus vallicola*. (See p. 205.)

is it improved in any other respect. This variety, though not remarkable for its quality, produces noble bunches, the berries being of good size, colour, and they keep well. It is crisp and refreshing, and that is all that can be said in its favour.

Alicante, of which we had at one time several grafted rods, really seems to do better on its own roots than it does on any kind of stock we have tried. It is a sure cropper, the bunches being usually of good size and form; they set freely, too freely in fact, and badly coloured examples are the exception. It is one of the most easily grown and most handsome sorts in cultivation. Given

even break on the older rods, and invariably obtain better bunches from pruned laterals, in these respects differing completely from the Alicante, which is best grown on the long rod system. Lady Downes should be slightly shaded directly there are signs of scalding, this, in my opinion, being the best preventive. With us bunches on end rods are the most liable to scald, Muscats as well as Lady Downes being addicted to it in these positions, whether east or west. A thin shading of limewash checks it at once. Lady Downes usually colours well, keeps till May in a dry, cool room, and is remarkably crisp and re-

if the stock influenced the scion, the latter would naturally start into active growth coincident with the former. Unfortunately, this does not happen, and each season the Muscat is much the later, probably fully a fortnight, in starting, and the consequence is it loses in the race. The Hamburg seems to absorb the greater portion of the stored-up sap, and not till the roots begin to afford a supply do the laterals strengthen. The bunches naturally suffer at the commencement, but if smaller than wished for, the berries attain a good size and ripen well. At the bottom of each rod there are two or three Hamburg spurs, and these are at the present time considerably ahead of the Muscat portion. The same thing happens whether the rods are trained in the same direction as the Hamburg rod or up the roof, where they are eventually returned. Gros Guillaume also worked on the Hamburg stock, and brought through into the Muscat house by way of an experiment, although subjected to a higher temperature and earlier than the Hamburg rod connected with it, is yet much behind the latter, this affording yet another proof that the stock merely supports, but does not otherwise influence, the character of the variety attached to it.

W. LEGGOLDEN.

MULCHING FRUIT TREES.

As planting is now considerably on the increase and root-pruning has been reduced to an annual system in every well-managed fruit garden and orchard, the work is only half accomplished where mulching is neglected. When fruit trees are planted on well-prepared ground early in the autumn, the first operation is staking and watering; then arises the question, is it wise to mulch? In some few instances where the ground lies low and cold it may be advantageously delayed until the sun has lost its power, as solar warmth, be it never so slight, favours the formation of new root-lets; but once this influence has passed away, a covering of some kind should be applied to the surface for the two-fold purpose of keeping in warmth and shielding the roots from the chilling effect of snow-water and severe frost.

LATE-PLANTED TREES, unless the ground is exceptionally dry, do not require watering home, as the soil generally contains and retains moisture in sufficient quantity to serve through the winter, but mulching, as a rule, should immediately follow. Therefore, whilst guarding against keeping the newly disturbed roots in a saturated state, a good covering is a potent factor in the maintenance of an even temperature and securing a good start in the spring. Stimulating manures for this class of mulching are too often and not unfrequently detrimentally used, as it must be borne in mind that the roots of the trees are not in a condition to benefit by the rich substances which are washed down by the rain through the winter. On the other hand, soil of a rich or retentive nature is apt to become sour and unfavourable to the formation of feeders, which seem to multiply in proportion to the difficulty they have to encounter in obtaining food. The best material under these conditions is rather long stable litter, or other substances which will protect without stimulating, and these from time to time may be renewed as circumstances may dictate. As time goes on and trees attain a fruit-bearing condition, their harder, both as regards quantity and quality, must be improved, for it is a well-known fact that rich food not only nourishes the fruit and enables the trees at the same time to make wood and fruit buds, but it also keeps the roots at home near the surface, when otherwise they would descend into the subsoil in search of moisture. Trees in a fruiting state that have been root-pruned are in a somewhat different position, as it generally happens that the check upon vital force favours fertility, and when thickly set with blossom-buds every flower sets for fruit. These, then, be they ordinary orchard or choice wall trees, should be heavily mulched with good rotten manure so soon as the operation of root-pruning is complete, and the better to fit them

for the strain, which in a few weeks hence they will feel, no time should be lost in giving them an additional supply.

CHOICE TRAINED TREES, especially against south and west walls, derive great benefit from mulches, which may be divided into protecting, feeding, and retarding mulches. In many gardens people often incur immense expense—not always necessary—in excavating, concreting, and rubble-draining for their fruit trees, and when all is finished they never allow the roots to reach even the rubble, much more the drainage; for whilst following in the footsteps of their forefathers in the preparation of the borders, they turn into the modern path of root-lifting and relaying in a horizontal position within a few inches of the surface. I do not for a moment condemn this careful preparation: in many gardens it is absolutely essential to success; in others it represents money, which might better be expended in mulching. Take as an instance a newly planted Peach wall: if the trees are to succeed, the roots must be kept within the bounds of solar influence. Water in abundance is used for washing home the soil, but, owing to the porous and drawing nature of the drainage, a state of saturation soon gives way to dryness, when the first set of new roots naturally tend downwards. As this is just what we do not wish to take place, a good protective mulch, which will prevent moisture from escaping and frost from penetrating, is resorted to. Sound, healthy growth the first year being the object, this non-feeding mulch from time to time is replenished, well hoed through the summer, and roots in the autumn are found foraging on the surface. If straw, a bad conductor of heat, has been used, a portion of this is removed to let in the sun, for roots as well as shoots must be ripened. From extension-trained trees we expect fruit the second year, and lime being necessary to all stone fruits, we rake off the remainder of the mulching when the leaves fall, and replace it with an inch or two of old rubble or plaster. The borders, composed of good loam, are more likely to be too rich than poor; therefore, whilst taking a moderate crop of fruit and hastening the covering of the wall with fertile shoots the reverse of gross, the protective mulch is again resorted to. This, combined with plenty of water, supports the crop to maturity, and as soon as the Peaches are gathered every bit of old litter is cleared away as a preliminary to root-lifting. This operation, so often described, is then performed, when the roots, shortened back and relaid near the surface, being rather more than counterbalanced by a large breadth of fruit-bearing wood and foliage fully exposed to the sun, the stimulating mulch comes into requisition, not immediately after the roots are relaid, a second application of lime rubble being sufficient for the winter, but shortly after the crop is set and commences swelling. From this age of the trees forward the stimulating mulch is placed over the roots in the spring and reduced in the autumn when the times arrives for ripening the wood. In the best managed gardens, be the selection never so well made, Peaches and Nectarines will come in with a rush, and the better to prolong the supply, growers resort to shading through the hottest part of the day. Shading cannot, however, be indulged in to any great extent, as anything that obstructs sun-heat and light detracts from colour and flavour; but when a non-conducting mulch of long litter or straw is laid upon the 4-foot pathway, the roots can be kept cool and moist, when otherwise the soil would become parched and heated.

Passing from the hardy fruit garden to the vinery, containing Grapes which we wish to keep fresh and plump for a considerable time after they are ripe, slight shade keeps down the temperature of the house, but the main factor is the retarding mulch placed over the borders after they have received their last watering. Manure, or the advocates of manure, in this department, if anywhere, have much to answer for, as there exists but little doubt that the abuse of this valuable article has poisoned many a border, and, as a

natural consequence, brought about wholesale shanking. Still, manure, like all other matter, is invaluable when judiciously used; but this can hardly be said of it when it is carted steaming and dripping direct from the yard to the early border; when it is dug in spit deep, as I once saw a man with a spade burying it in a Muscat border; or, when in a decomposed state, it is laid on the surface to an extent that will keep the roots in Russia while the foliage is enjoying the climate of India. By all means let us have manure, and plenty of it; but if we are to gain the greatest good from its application as a mulch, we must make ourselves thoroughly acquainted with the condition and requirements of our trees, and use it accordingly.

W. C.

FRUIT TREES FOR COTTAGE GARDENS.

IN the majority of cottage gardens, fruit trees are, unfortunately, conspicuous by their absence. What therefore to plant in them that shall be remunerative is the first consideration. So far as the profitable cultivation of the Grape Vine out of doors is concerned, the question has been answered so emphatically in the negative, that the Grape may be put on one side; and in the case of the cottager, the Peach and Nectarine may be also dismissed. The fruits which I would recommend are the Apricot, Plum, Morello Cherry, Currant, and Gooseberry. I have seen Apricots do capitally on cottage walls, both on east and west aspects; the fruit, too, sold readily at a fair price, and all that were not sold came in well for tarts and preserves. Of course, in districts where the Apricot is a failure generally, it would be folly to attempt its culture. But, on the other hand, where it does well if largely planted, one or two trees on south, east, or west aspects would prove both useful and profitable. It should be remembered that, in all cases where the soil is dry and light, a little artificial treatment is necessary for the Apricot at planting time. A good proportion of well-rotted cow manure should be incorporated with the soil, and a firm surface maintained for at least a yard round the tree. Two of the most useful Plums that will always furnish materials for the preserving-pan, if they cannot be otherwise disposed of, are Rivers's Prolific and Denver's Victoria, both of capital constitution and great and constant bearers. They are most at home on a S.E. or S.W. aspect. For any portion of wall that is immediately at the back of these aspects, the Morello Cherry and Currants and Gooseberries may be used. In fact, walls covered with the two latter are profitable under any circumstances; for the fruit under these conditions is large and clean, and can be quickly and easily netted. Raby Castle and Warner's Grape in Currants, and Warrington, Keen's Seedling, and Crown Bob in Gooseberries, are useful sorts, and cuttings of these inserted in spring will quickly grow into nice plants, and soon furnish a wall. Where there is no spouting or overhanging coping, a tarred board 1 foot in width, fastened near the top so as to throw the water well away from the root, will be found advisable, as a constant drip will make the best soil sour and bad, and this coming close to the collar of the plant is by no means beneficial. All walls up to 6 feet or 8 feet in height can be thus covered with bush fruits, but when the height exceeds this the Morello Cherry can be substituted. This is too well known to require any recommendation; it might be planted more frequently than it is both by amateurs and cottagers on all N.E. and N.W. aspects where there is space for a tree, as, if not required for home consumption, there should not be the slightest difficulty in finding a market for the fruit.

E. B.

Watering Strawberries in pots.—A low temperature in winter before forcing begins is beneficial to Strawberries, as under such conditions their rest is more perfect. But dryness at the root, if it leads to the injury of the young fibres lying close to the sides of the pot, has a bad effect upon the future crop. The best way to keep Strawberries which are intended for forcing, is the old-fashioned one of plunging the pots up to the rim in coal ashes in turf pits. There is always moisture enough in the ashes to keep the roots plump. Plants unplunged in cold pots at this

season if not looked over sometimes and watered, may easily sustain injury, owing to dryness of the best roots, which are those lying close to the sides of the pots, and if these receive any check, the crop cannot be so good as it otherwise would have been. Very often when the flowers are imperfect, or do not set properly, or the young fruit later on turns rusty, the cause might be traced (*i.e.*, if all things could be traced to their sources) to dryness at the roots sometimes before the plants were moved into the forcing house. During the drying winds of March, if the plants in cold pits or elsewhere waiting to take their place in the forcing house become dust-dry, they must suffer.—E. H.

SEASONABLE WORK AMONG FRUITS.

Figs.

THE fruit on early started pot trees will now be swelling fast if it has not reached the flowering stage. For several weeks there will be no apparent progress, but this sudden stand need not cause uneasiness, neither must it prompt to hard forcing, as no amount of fire-heat will induce them to move until this process is complete. The trees must, however, have plenty of water, the syringe may be plied twice a day, and the temperature if possible must be kept steady within the range of 60° to 65° by night and 70° to 75° by day. In due course the most forward Figs will commence the last swelling, and as this will carry them quickly to maturity, a little more heat, especially by day, more air, and plenty of good diluted liquid will be found highly beneficial. Large established trees in well crooked pots cannot easily be over-watered, always provided the stimulants are not used too strong, and the bottom-heat is kept at 70° to 75°, but once allow them to flag, or even feel the want of this element, and the chances of the fruit standing will be considerably reduced. Top-dressing next to water is a potent factor, and should be renewed as often as it is washed in and the roots show upon the surface. Many people use rich rotten manure as a mulch for all fruit trees in pots, and Figs above all others will stand it, but for these even I always give preference to rich turf from which the small particles have been beaten, placed in good large pieces on the surface and hanging over the rims of the pots. If this is not strong enough, bone dust and warm liquid will soon be the means of converting the turf into a wig of roots resembling a door-mat, and as these will strive to escape their bondage, no harm, but much good, will follow their creeping into the plunging material. Once this is fastened upon all danger of dropping will be at an end, and the flavour of the fruit will be richer than that from trees to which solid manure has been supplied. Light and air being so essential to colour and quality, ventilation whenever the temperature touches 70° must be attended to; then, as the sun gains power, with more air, the house may rise to 80°, and 5° higher after closing. At this time, not later than 3 p.m., the syringe must be most vigorously plied, not only over the foliage, but also over the bed, the walls, and well into dry corners, for there, if anywhere, will insect pests put in an appearance, and once started they spread rapidly.

Succession houses in which the trees are planted out and trained on trellises should now be well advanced. If well thinned out at the winter dressing and ample room can be found, train all leading shoots forward, as every leaf should be furnished at the base with a fruit, and allow them to extend until they reach the extremity. Then pinch and thin out weakly growths which have started from the points of the old wood to prevent the trellis from becoming crowded. Look well to the borders, and as the roots appear give them frequent supplies of light rich turf and lime rubble. The great difficulty to be overcome in the management of these border-trees is grossness. Manure produces and fosters this; therefore through the early stages it should be used with care or dispensed with. Later on, when they begin to feel the strain of the crop, a good cover-

ing of previously fermented stable manure will be found beneficial, but then even it should not be overdone, as fresh turf, bone-dust, and diluted liquid act quickly, and produce short-jointed healthy growths, which insects do not care to interfere with. The syringe in all Fig houses of course plays a very important part, and here at least twice a day the refreshing shower will form a part of the daily routine. The temperature may range from 60° through the night to 75° by day, but the Fig being such a heat-loving subject, a few degrees higher by day will do no harm where time is an object.

Late houses.—If trees trained against walls in late houses or cases are still partially covered and resting, all protecting material must now be cleared away, as the point buds will soon be moving. As more than one crop can hardly be expected, pinching, it must be understood, will not form a prominent part of their treatment. Therefore, the principal fruit to ripen being already formed near the points of the past year's wood, as many of these spurlike pieces as will furnish the wall or trellis must be retained, whilst those not wanted must be pruned back to a dormant eye to furnish a relay of wood for another year. Some few of these summer shoots may bear fruit if the autumn is fine, but provided they are allowed to extend, they will be thickly studded with embryo Figs near the points, when those behind which have become larger than Peas may be rubbed off to save them from falling. Treated in this way, every variety of Fig met with in our gardens will ripen one crop without the aid of fire heat, but, if practicable, a flow and return pipe should be introduced if only to ripen up the wood and late shows in the autumn. If these trees were root-lifted and relaid in rather poor, but free, compost in the autumn, a liberal mulch should be placed over the balls and repeatedly watered until every particle is properly moistened. In this department, as I lately pointed out, the roots having been checked, a stimulating mulch will be necessary.

THE ORCHARD HOUSE.

Shortening back where pruning was deferred and disbudding in the earliest houses will now require attention. Trees which have set heavy crops of fruit must also receive timely relief by the removal of the least promising, as nothing can be gained by taxing them with more than a moderate percentage of the best for the final thinning. In all cases those intended to ripen should occupy the upper sides of the shoots, the nearer home the better; and, provided a good shoot is starting from the base and another from the point, all intermediate growths, especially where there is fruit, may be pinched back to two or three leaves for the present. Ultimately many of these will be removed, but for some time to come the few leaves left will foster root action and feed the fruit.

Water, of which pot trees, unless deeply plunged, will now take liberal supplies, may be tinged with stimulants of some kind; and soot-water once or twice a week through the syringe will have an excellent effect upon the fruit and foliage. On other days pure, soft water quite up to the mean of the house will be found most suitable, and this must be plied rather sharply to the undersides of the leaves, also to the stems and walls of the house, the first time when the temperature begins to rise: the second, when the ventilators are closed in the afternoon. The last syringing, be it understood, should always be performed in time for the leaves to get fairly dry before nightfall; and as progress is made under the influence of the afternoon bath, fire-heat on bright days should be shut off, to admit of early closing.

Temperature.—As days increase in length and more sunshine may be expected, a sudden rise of temperature must be guarded against by giving a little air early, and increasing it by degrees until the maximum is reached, when reducing and final closing must be performed in a similar way. As Peaches at this stage are impatient of strong heat, it will be well to err on the safe side for the present by maintaining a rather low night tempera-

ture of 55° to 58° when the weather is mild, a few degrees lower when cold, and about 10° higher by day. When fire-heat can be shut off and the sun is bright, a higher range will do no harm, as top and bottom air in proportion will be admitted. These figures, upon the give-and-take principle, will apply until after the fruit is stoned, when an increase may take place, but unless time is an object, 60° by night, always with a chink of air, should not be exceeded.

Top dressing, as soon as the fruit is thinned, must be applied to the tops of the pots. Every man has his own favourite compost, and, depending as the quality of the crop does upon this, the first care should be the preparation of sweet, sound materials that will not injure the roots; the second, their application, little and often, as feeders show upon the surface. Good rotten manure alone produces vigorous shoots and foliage, but the fruit requires plenty of lime; and the better to secure this, bone-dust and old lime rubble added to stiff calcareous loam make the best top-dressing I have yet met with.

Succession or general orchard house.—In this a mixed collection of trees is generally met with. Cherries and Plums are first in flower, then follow Peaches and Nectarines, which, as a rule, form the most valuable part of the crop. If Strawberries were started on the floor as suggested some time ago they must now be placed on the shelves, where they will have the full benefit of light and air, and the danger of the foliage becoming drawn will be reduced to a minimum. Steady supplies of water in a tepid state must be given by an experienced person, as quantities that will keep the soil in a state of constant saturation, next to the want of this element, may lead to mischief. The best time to water the trees is early morning, as one can then best judge of their requirements, but when the season gets further advanced and the foliage is fully developed the watering of all that have become dry through the day should precede the afternoon syringing. The syringe, of course, plays a very important part in the development of the flower-buds, but bearing in mind that fire-heat, never very strong, is often dispensed with for days together, a sloppy state of the house, especially towards nightfall, should be strictly avoided. Forcing with a constant circulation of air is also another cardinal point which many overlook. When fresh air is treated as an enemy and the house is kept at the proper temperature with closed ventilators, a little time at the outset may be gained, but the flowers are never so bold, neither do they set so well as when this element is freely admitted. Draughts at all times must and can be avoided, for when the wind is strong enough and sufficiently keen to produce a draught, the house must be very compact indeed if a circulation with closed ventilators is not steadily going on. Although orchard-house fruits, Strawberries especially, are open to attacks of spider and greenfly, the first does not often put in an early appearance, but the second springs into life as if by magic, ready to pounce upon the flowers as soon as they are open. As fumigating is quite as injurious as the enemy, two smokings at least should precede the flowering stage, otherwise the most promising trees will certainly be attacked and most likely ruined for the season.

THE CHERRY HOUSE.

The most beautiful sight in a forcing garden is a house of Cherries in full flower. They require very little forcing, but, like the preceding, must be kept free from aphid; they must be well syringed, and although they require a low temperature, a free circulation of air is imperative. On mild nights and bright sunny days they can be brought on without the aid of fire-heat, but when they come into flower a gentle circulation through the hot-water pipes favours the admission of more air, which, rendered light and buoyant, carries off superfluous moisture, when otherwise it would condense upon the petals and prevent fertilisation. When Cherries are in full flower they require daily attention with the camel's hair

brush, and almost before the fruit is set another enemy appears upon the scene. This is the minute grub, which sometimes devastates whole walls of open-air Cherries, and although under glass, it is greatly checked by thorough cleansing; in the best managed houses it is more or less met with. If left alone it soon pierces every fruit, insecticides are thrown away upon it, and the only remedy is catching and killing. Its destructive age fortunately is short, but during that brief period daily examination of the neatly rolled-up leaves must not be neglected.

The temperature of the Cherry house, I ought to say, should range from 40° to 45° on cold nights, from 50° to 55° by day, and a few degrees higher when solar heat favours free ventilation.

PLUMS.

Although these are often forced up to the flowering stage with Cherries, there comes a time when Plums, which are longer in arriving at maturity, require different treatment. If all the trees of the two kinds are grown in pots, they may be divided at the outset, but the best result is generally achieved by confining them to separate houses, or perhaps the same house with a division in the centre. A flow-and return pipe along the two sides of a span-roofed house of large dimensions is quite sufficient, and these may be continuous without valve or check through the two compartments. If heated separately so much the better, as the Cherry house, first cleared of fruit and trees, can then be devoted to other forcing purposes without hastening the Plums, which, by the way, make very little satisfactory progress under hothouse treatment. The management of the two up to the ripening of the Cherries being in every way identical, details contained in the preceding paper need not be repeated. One remark may not, however, be out of place, and that refers to the selection of varieties. Wherever a second house, or even a mixed orchard house, is at command, none but the best of the early sorts of Plums and Cherries should be taken in for forcing. The cream of the latest varieties will ripen under glass without the aid of fire-heat, but a cold, damp atmosphere being so detrimental to the trees when they are in flower, and again when it is desirable to prolong the season of the ripe fruit, no house must be considered safe or capable of giving full value where a simple heating apparatus is not present to fall back upon.

CHRYSANTHEMUMS.

E. MOLYNEUX.

THESE have become so popular, and are withal so useful, flowering as they do both early and late, that I feel pleased a column or two of THE GARDEN is in future to be specially devoted to them. The method of cultivation which finds most favour now-a-days is that by means of which large blooms are produced; but in the case of such cultivators as are merely wishful to have a houseful of flower from which blooms for indoor decoration can be cut and not missed, bush cultivation may be specially recommended. The plants that are to bloom earliest will now be in what are known as 3-inch pots, and those not already in such pots should be at once placed in them from the cutting pot in which they now are, &c., if fairly well rooted. It is a mistake to allow Chrysanthemums to become pot-bound, as when that happens they do not quickly take when shifted to the new soil, and thus a check is given which should be avoided. The best compost for this shift is two parts fibry loam, one half soil, and one spent Mushroom bed manure, together with a free admixture of sharp silver sand. If the loam is inclined to be heavy, add crushed charcoal freely; this keeps the whole porous. Pass the mixture through a coarse sieve, rubbing the fibrous pieces also through its meshes. Careless operators in potting the plants

sometimes leave vacant spaces between the soil and the pot through using the soil in too rough a state, but when made comparatively fine, as just recommended, this defect in potting cannot occur. The pots should be clean and well drained; place over the hole at the bottom an inverted crock sufficiently large to cover the opening; over this place a few smaller crocks, and over these some of the rougher parts of the soil, potting firmly, *i.e.*, ramming the soil evenly around the ball. Some use dirty pots, but they harm the plants, inasmuch as when shifted the roots get broken, through adhering to the soil that is attached to the sides of the pots. If the soil used is moist, no water will be required for a day or two; but after that they must not be allowed to suffer from want of it; nor must they have too much, as that stagnates and sours the soil.

THE POSITION which they are to occupy is the next consideration, and where there is but little space that is often a puzzle. House room may be economised by having shelves suspended from the rafters, and no more heat should be employed than what will keep out frost. In such a position the plants will flourish much better than when placed upon ordinary stages, which are generally far from the roof; consequently the plants become drawn, a circumstance to be avoided. The shelves in question need only be of a temporary character suspended by means of strong wire screwed to the rafters. They may be about 9 inches wide, more or less, according to circumstances, and on each side there should be a groove to run the water off to one end, which can easily be done by allowing a slight fall in that direction. If a position such as that just described cannot be had, the plants, after being potted, must be accommodated with a cold frame. Many, indeed, prefer this to growing them in a greenhouse, but I do not, as early in the season their growth is more likely to receive a check in frames than in a greenhouse. Where cuttings have not been inserted to produce plants for outdoor planting in herbaceous borders or for the production of late blossoms which are so much prized about Christmas time and during January, no time should be lost in doing so. Where convenient, such cuttings are best struck singly in 3-inch pots, but where such pots cannot be had, three or four cuttings may be placed around the sides of a 3-inch pot. The soil used should be of a sandy character, say half and half loam and leaf-soil, with a free admixture of silver or sharp river sand. On the top place some sand, to be carried down to the bottom of the hole made by the dibber to receive the cutting, as roots are formed more quickly in sand than in soil. Under handlights in a cool house is the best place for them, but, failing that, a spent hotbed, or even a cold frame will do, giving them just sufficient water to prevent them from flagging. They will emit roots readily, and after that more air will be required in order to induce stocky growth.

Chrysanthemum sports.—I think I have noticed an interesting fact about these, which perhaps other growers can corroborate or disprove. It is that the tendency of a plant to sport takes a certain number of years, more or less in different varieties, to develop, and then shows itself all over the country simultaneously. To speak of my own experience, in 1885, the year in which William Robinson, the bull sport from Bouquet Fait, appeared, my plants of Bouquet Fait showed in some instances a tendency towards bull. In 1886 I had the identical sport fully developed. Last year my plants of Ethel showed yellow petals in some flowers, and one flower was so yellow that I might perhaps have obtained the yellow Ethel (Mrs. Jones), which is now being distributed. The year before Lady Selborne, the white James Salter,

was shown I had the same sport in perfection here. This fact, if it be a fact, is not so strange when we remember that the entire existing stock of any one variety is really, in a sense, one and the same plant, and will therefore develop its latent peculiarities everywhere at nearly the same moment.—G. H. E.

GARDEN FLORA.

PLATE 586.

ENGLISH IRISES.*

IRIS XIPHIOIDES (*Xiphion latifolium*).—"The great broad-leaved bulbous Flower-de-luce" of Parkinson has a very limited geographical range, being chiefly confined to the meadows of the Pyrenees, whence it has been called *Iris pyrenaica*. It seems to have acquired the name of English Iris because it, or at least the blue form of it, was introduced to the Dutch gardens by way of England, being probably brought from Bordeaux to Bristol, where Lobelius, according to Parkinson, asserted it grew wild. The sagacious Parkinson, however, concluded that any apparently wild specimens of it in the west of England must have been "escapes."

It is closely allied to the Spanish Iris, *I. Xiphion* (*Xiphion vulgare*), but differs in the outer coats of the bulb being more fibrous and husky, in first "spearing" above ground in spring instead of in late autumn, in the flower being larger and broader in all its parts, differently formed and differently coloured; in the leaves being much broader, and in the capsule being large and swollen with large ovoid seeds, "a three-square head, somewhat long and lanke or loose, containing in it rounded yellowish seeds, which when it is ripe will rattle by the shaking of the winde in the dry huskes." It flowers, too, later than does the Spanish Iris.

All the authentic wild specimens with which I have hitherto met with have been of a blue purple colour, but the many kinds in cultivation, which seem to be varieties arising from seedling sports, bear many colours, ranging through various shades of purple, from very blue-purple to a red-purple, or, as right-hand figure in plate, a red in which hardly any blue is left. There are also forms pure white or nearly pure white, or white with red-purple or blue-purple blotches. The chief of these forms seem to have been known to Parkinson. The yellow hue so common in many varieties of the Spanish Iris is absent in the English Iris, as is also the peculiar bronze tinge so common in the former. Parkinson says he had heard of a yellow broad-leaved bulbous Flower-de-luce, but had not seen it, and evidently did not believe in it.

Some of the flowers of the cultivated forms are very large, and nearly all of them are beautiful, though I must confess that the blotched forms do not commend themselves to my taste, and while I admit that their form is more beautiful than that of the Spanish Iris, with its stiff and rigid lines, and many kinds possess a wonderfully full rich colour, I miss in them the many exquisitely tender hues of the latter.

Spach described under the name *I. spectabilis* a form which he believed to be a hybrid between the Spanish and English Iris, and the kind often spoken of as Thunderbolt has by some been supposed to be this, but I cannot recognise in Thunderbolt any traces of *I. xiphoides*; moreover, it does not answer to Spach's description, nor have I as yet seen any form which I could admit as even a probable hybrid.

* Drawn for THE GARDEN by Mr. Moon in Mr. Ware's nurseries, Tottenham, on July 11, 1886, and printed by G. Severeyns.



ENGLISH IRISES

Like the Spanish Iris, the English Iris likes a rich sandy open soil, but while it desires to be fairly dry in winter it needs much more water in the spring and early summer than does the Spanish Iris. If the early summer be rainless, it is apt, in dry localities, to go blind or flower badly.

Where the drainage is good and the winter rain not excessive, plants will thrive all the better for being left alone for at least three or four years, but in some localities I believe it is found advisable to lift the bulbs frequently. If they must be moved the bulbs should be taken up as soon as the foliage dies down, for if they are left in the ground it will be seen that after the late summer or early autumn rains roots are quickly sent out, though, as I have said, the leaves do not shoot until early spring.

The seed may be sown as soon as ripe in the open in some fine prepared soil; it will almost certainly germinate in the following spring, and the seedlings will flower, according to situation and climate, in three or more years. Such seedlings as I have myself raised merely reproduce the several varieties already known, and I imagine to obtain a new break some fresh blood of some other species must be, if possible, thrown into it. M. FOSTER.

STOVE AND GREENHOUSE.

T. BAINES.

APHELANDRAS.

Few late summer or autumn-flowering plants have a brighter or more cheerful appearance than the old-fashioned *A. cristata*, a plant that at one time was more frequently met with than it is now. Its distinct habit of growth and its dense, erect flower-spikes standing up above the massive drooping, glossy leaves render it a striking object. It blooms freely whilst quite small; a cutting struck in spring and grown on freely through the summer will flower in autumn. Not the least of the merits which this plant possesses is the fact that it is amongst the easiest of all flowering stove subjects to grow. It will also keep in a healthy, thriving state for an indefinite time; in fact, with ordinary care old specimens that have bloomed for a dozen years will be found more effective than younger examples. This, and also most of the other *Aphelandras*, succeed with a moderate amount of heat, and on that account are suited to the requirements of those who may not happen to have a stove. Another advantage belonging to *A. cristata* is, that under ordinary treatment it flowers sufficiently early in autumn to admit of its being placed whilst in bloom in a conservatory where a little warmth is kept up. Thus treated its brilliant orange-red, crested spikes contrast strikingly with anything with which they happen to be associated. In places in which the room that can be devoted to plants that require heat during winter is limited, it becomes a matter of importance to select kinds that will not occupy too much space. Those thus circumstanced will find *A. cristata* just the plant to meet their case, as after flowering it should be cut hard in, and in this way does not require much more room than that which the pots occupy. Amongst other kinds that deserve especial mention are *A. aurantiaca*, a plant that attains a medium size, and produces its bright orange-coloured flowers freely. *A. aurantiaca* Roezli, too, is a beautiful variety, which will flower in a miniature state; little plants of it in small pots consisting of a single shoot not more than 6 inches high produce flowers sufficient to admit, when grown in numbers, of their being dispersed freely about the

stove, where they have a charming effect. *A. Leopoldi* is a stout-habited sort, with broad, massive, shining green leaves. Its flowers, which are yellow, are produced like those of the others in erect spikes. There is a variegated form of this plant, which is like the type in everything except the leaves, which are distinctly marked with creamy white. *A. elegans* is distinct from any of the others just named, and well deserves cultivation. *Aphelandras* are easily propagated; they strike freely from cuttings at almost any time of the year when they can be obtained. Plants that flowered in autumn or during winter, and then had their tops taken off after the bloom was over, will have broken into growth and will soon have shoots in right condition for striking, viz., when about 6 inches long. Treated in the ordinary way in the matter of heat, shade, and moisture, and kept moderately close under a propagating glass, they will root in a few weeks, after which move them singly into 3-inch or 4-inch pots. After trying several kinds of soil, I find they do best in a mixture of half peat and half turfy loam, with a little rotten manure and some sand. There is a natural disposition in *Aphelandras* if left to themselves to spire up with a single stem, showing little inclination to throw out many side branches until they are too tall to look well. With the stronger growing sorts, like *A. cristata*, it will be as well to pinch out the leading shoot when they have made some progress; the effect of this will be to cause the production of a pair of shoots, not more, as in the case of these *Aphelandras*, stopping the leader will not make them push side growths to the extent that occurs with many plants when so treated. But unless the grower is willing to sacrifice the first year's flowers with the object of getting large examples in little time, they must not be stopped a second time the first season. After potting them off keep the plants in a growing temperature with the atmosphere somewhat close for a few weeks; then let them have more air with a little shade when the weather is bright. By midsummer they will require moving into pots two or three sizes larger, continuing to treat them as before all through the summer. They should be syringed freely once a day, for though not particularly subject to the attacks of insects, both thrips and red spider sometimes trouble them if enough water does not reach their heads. In the case of the small-growing kinds, like *A. aurantiaca* Roezli, it is better not to stop the leader, but rather to concentrate all the strength that can be got into it; in this way finer heads of flowers will be forthcoming, neither will this and the other smaller growers require so much room; 5-inch or 6-inch pots will be quite large enough the first year.

When autumn comes give more air and cease shading, but keep up the temperature fairly, as, in common with most other plants that flower during the waning year or in winter, they will not bloom so well if kept too cold. As soon as the plants have done flowering head them down to within about three joints of the collar, or of the point where they were stopped at; after this give less water, only letting them have as much as will keep the soil from getting so dry that all growth would be stopped. During winter a night temperature of about 60° will suffice; here they will break slowly, and be in a condition for moving into larger pots in spring. At the time of shifting get as much of the old soil away as can be done without injuring the roots; when the shoots have made some progress pinch out their points and tie them well out, which will induce them to break back. Treat as in the previous summer generally, giving manure water frequently when the soil gets full of roots.

Managed in this way, and each season after the flowering is over cutting the heads in moderately close, with pot room proportionate to the strength of the plants, and the more or less vigorous habit of the kinds grown, the plants can be kept going for a long time, continuing to produce flowers in proportion with their increase in size.

Nicotiana affinis.—Plants of this kept over from last year will now be coming into flower, and if placed in a conservatory the flowers when open will emit towards evening an agreeable perfume. To grow this well it should be planted out, and for this purpose seeds should be sown now; the young plants when up should be pricked off into pans or boxes, and planted out, about 18 inches apart, in a bed that has been previously well manured. When planted in a shady quarter they partially lose their reputation of remaining closed during the day and opening by night. They grow from 3 feet to 4 feet in height, and will continue to flower until cut down by frosts.—W. H.

Azalea Deutsche Perle.—To anyone requiring a white *Azalea* this can with confidence be recommended, as the blossoms possess such a massive wax-like texture that they last in beauty much longer than most of the others. The blossoms are large, of the purest white, and of a semi-double character. A very marked feature is the graceful way in which the edges of the petals recurve, rendering the whole outline of the flower more pleasing than is the case with stiffer and more formal-looking blooms. It is equally free-flowering as the old favourite kinds, and should, when better known, supersede many of them. With regard to *Azaleas*, it is by no means necessary to purchase grafted specimens, for they are not difficult to strike from cuttings, and little bushes grown in this way may be used for a variety of purposes, for some of which they are better suited than when grafted on a bare stem some few inches high. The cuttings from plants that have been forced strike root better than those that are allowed to flower at their natural season.—H. P.

Cyrtanthus McKeni.—This pretty little bulbous plant was so recently described in THE GARDEN, that no further notice of its general appearance is herein needed, but with respect to its free flowering qualities, and the strong claim it possesses to more extended cultivation, I may mention that a pan of it here containing a score of bulbs has not been without flowers since the commencement of November, and there is yet one good spike upon it with a blossom or two still to open. It has been grown in a greenhouse with no more attention than that given to *Pelargoniums* and similar subjects, the principal care being to keep it fairly dry during the resting season. It increases at a moderately quick rate, so that stock is being continually added to. A compost principally composed of sandy loam is well suited to its requirements, and, like many other bulbs, the less it is disturbed at the roots the better will it flower.—T.

SHORT NOTES.—STOVE AND GREENHOUSE.

Amaryllis formosissima.—This very beautiful variety produces dark scarlet or crimson blooms, which in a cut state are very useful. It is grown largely by Mr. Woodbridge at Syon House.

Pelargonium Niphetos.—This variety is well suited for growing in pots for winter-flowering. It is strong and dwarf in habit, and very free-flowering. The flowers are pure white. Messrs. Hawkins and Bennett prefer it to *McLane* Vaucher.

Latania rubra.—A fine specimen of this handsome Palm, from the Mauritius, may now be seen in the nurseries of Messrs. Hooper, Twickenham. The leaf-stalks are very strong and of a bright red colour. The ribs of the leaves are also red, thus rendering it very effective.

Pelargonium F. V. Raspail.—This is a semi-double variety, the flowers of which are deep scarlet and the individual pips large. The plant itself is dwarf and free-flowering. This and *Wonderful* are the only two double varieties grown by Messrs. Hawkins and Bennett for market.

Hymenocallis macrostephana.—This beautiful plant is now in flower in many collections. It has large leaves measuring over 2 feet long and produces umbels of

large, pure white, sweet-scented blooms, which are very useful for cutting. It is grown largely by Mr. Woodbridge at Syon House.

TREE CARNATIONS.

THE varieties usually included in this section are those that flower freely during the winter months, and although some of the sorts are of a tall habit of growth, many are very dwarf and compact, and it is somewhat difficult to say which do and which do not properly belong to the type; but I believe those with fringe edged flowers are the most typical, and these are invariably tall-growing. However, it is not necessary to be too particular on this point, especially as they are generally grown for supplying cut bloom, though some of the dwarf varieties make very useful pot plants, especially for autumn work. Miss Jolliffe, flesh-pink; Mdlle. Carle, pure white; A. Alegatiere, bright scarlet; Dr. Raymond, deep crimson; Mrs. Llewellyn, rosy pink; and Jean Sisley, yellow ground, flaked with red, are six of the best dwarf sorts, and are also very useful for cutting purposes. Other good sorts for cutting from are, Andalusia, pale yellow, flowers large-fringed, one of the best for winter-flowering; Sir Charles Wilson, bright rosy scarlet, flowers very large; Mrs. Keen, deep crimson, very fine; Lucifer, scarlet; Laura, delicate flesh pink; La Zonane, pink and scarlet striped; Empress of Germany, white, tipped with pink, flowers very large; Rufus, scarlet; Indian Chief, crimson.

CULTURE.—To secure good plants, the pipings should be taken as early in the year as possible, but where fresh young side shoots cannot be obtained, it will be better to stop a few plants and place them in heat for a short time. In taking the pipings it is not desirable to pull them off close to the old stem, as is sometimes recommended, but they may be cut or pulled out a joint or two away from the stem, care being taken that they are not bruised in the operation. The cutting pots should be well drained, and light sandy soil used, the pipings being put in only just deep enough to keep them firm. The best position to root them in is where there is a brisk bottom-heat, and where they can be kept quite close and well shaded; they should, however, have ventilation for a short time every morning to sweeten the atmosphere. They must also be looked through carefully, and if any signs of damping appear, those affected must be removed at once, otherwise it will soon spread and destroy a whole batch. As soon as sufficiently rooted, they should be potted off singly, and if kept close they will soon take root in the new soil, and ventilation should be given freely to induce a sturdy growth. I believe that Tree Carnations are often ruined through being kept too close and warm during the early stages of their growth. Plants that are well exposed will branch out naturally, while if kept close they run up spindly, and even though they may be stopped they never make good bushy plants, which is so essential to secure a succession of bloom. The plants should be potted on as they require it, and as soon as they are well established they may be stood out in the open where they may remain throughout the summer, but should be placed under cover before heavy rains come on in the autumn. To flower them well through the winter it is essential that they should have a light, airy position, and only sufficient fire-heat to keep off damp or frost. E.

Forced Lily of the Valley.—Given good crowns, the forcing of these is a comparatively easy matter. Why so many fail to obtain an extra early supply of flower-spikes is in many cases simply owing to the crowns not being sufficiently well ripened. When the attempt is made with either Dutch clumps or home-grown crowns, failure is almost certain. The well-ripened Viennese crowns give the most satisfaction. Not only will badly-ripened crowns fail to start early, but when thus prematurely placed in a strong heat, this seems to render them totally unable to start at any time later on. The crowns which fail to start

early will remain quite fresh in appearance, but perfectly dormant for twelve months—perhaps longer. A very high temperature is not absolutely necessary to insure an early start, neither our top nor bottom heat being at any time much above 80°. What I hold to be of the greatest importance is that light be perfectly excluded from the crowns. We find no plan to equal plunging the pots deeply in a mild hotbed of leaves, fully 3 inches of this material covering the crowns. They must be withdrawn before the spikes are far advanced, and gradually inured to the light. Afterwards, if stood on a shelf in a house maintained at about 55° to 60°, the spikes will develop slowly and strongly, thus giving time for a few leaves to be formed. The suggestion that old pot plants be started early for affording a supply of leaves is a good one. Lily of the Valley leaves are naturally the best greenery for employing with the flowers, and if a number of last year's forced plants are kept, and well watered as well as fed with liquid manure, many of the crowns will be stout enough to flower. As these forced plants naturally ripen early, they are admirably adapted for forcing in November and December. They can be made to yield a good number of strong spikes of bloom, and the leaves later on will be of great value for using with the spikes obtained from imported crowns or clumps. The Dutch clumps are profitable for flowering late in January and onwards. Early in February they were very useful, and at the present time we have them flowering freely, many of the clumps giving us eighteen good spikes, and a few even a greater number.—W. I. M.

Aphelandra aurantiaca.—Several of the Aphelandras have very bright and showy blooms, but generally the plants are apt to become leggy, and get naked at the bottom before they flower. This may be prevented to a certain extent by late propagation, and thus treated we have had a fine show, especially of *Aphelandra aurantiaca*, at a time when flowering plants are but sparingly represented. The specimens under notice were struck during the latter half of the summer, the points of the stoutest and most promising shoots being chosen for the purpose. After rooting, which does not take long, they were shifted into 5-inch pots and placed near the glass, so that the bottom leaves were retained and the plants kept dwarf. By these means we had specimens not more than 6 inches in height, each carrying a fine head of bloom, and at this size they are useful for many purposes. Perhaps the most effective method of arrangement was that of grouping about a dozen together on the stage, and relieving the brightness of their colouring with green-leaved subjects, as in this way they were rendered more telling than if dotted indiscriminately here and there.—T.

Boronia megastigma.—As far as bright-coloured blooms are concerned, this may be safely regarded as the least showy of all the Boronias, but its delicious fragrance renders it almost invaluable at this season, added to which the elegant habit of the plant and the profusion of its blossoms are both noteworthy features, for though the bell-shaped flowers are on the exterior of a dull, bronzy hue, they are delicately poised on their slender stalks, and when seen in a mass are by no means to be despised. The fragrance is such that a plant or two will serve to scent a good-sized structure, and an additional recommendation is, that the flowers last a long time in perfection. It is a plant of less delicate constitution than many of the hard-wooded subjects, succeeding well with ordinary greenhouse treatment, and during the summer may be turned out of doors. At the same time it must be borne in mind that the delicate hair-like roots are easily injured by drought, so that during the heat of the summer this must be especially guarded against. Propagation is generally effected by cuttings that are produced when the plant is cut back after flowering. They should be 1 inch or 2 inches long, and inserted in pots of sandy peat pressed very firmly. It will be necessary to keep them close, and for that purpose covering with a bell-glass is about

the best method that can be followed. They may be kept for a time in much the same temperature as that in which they have grown, and after that, if given a little additional heat, they will root freely. The cuttings are liable to damp off, especially if kept rather moist; and to prevent this as far as possible, the glass must be removed occasionally and wiped dry. Seeds are seldom obtainable, but even if they can be got the best plants are produced by cuttings, as these latter flower much earlier and with more freedom. I once raised a number of seedlings, and found they varied considerably in the colour of the flower, some being of a very deep hue, while others were a good deal tinged with green. The perfume of some, too, was much more pronounced than that of others.—T.

SEASONABLE WORK IN PLANT HOUSES.

ROSES.—Where a constant supply of Roses is required all through the winter, the chief dependence rests on the Tea varieties, especially during the last two months of the old and the early part of the new year, the Hybrid Perpetuals coming in afterwards and continuing to give a succession during spring. The hybrid varieties furnish higher coloured flowers, larger in size than the Teas, but, nevertheless, the latter are held in such estimation in many places that the indoor supply requires to be kept up until they are obtainable out of doors. This can only be done by having a sufficient quantity of plants in reserve, so as to admit of their being brought in in relays; for though the Teas when strong keep on producing flowers from the after-growth, still where they have been kept going all through the winter they ultimately fall off. Where there is a late batch that have been kept cool, these should now be moved to the Rose house, where, if the plants are strong, they will soon begin to bloom and give a supply through the latter part of April and May. The plants of the Tea varieties that have now become somewhat exhausted with flowering during the early part of winter should be moved to a cool house or pit, where, if well attended to, they will recruit their energies. It is a moot question how long Tea Roses when grown in pots for winter forcing will last. Some of the most successful of the market growers discard their plants after they have been going five or six years, whilst others equally successful keep them on for an indefinite time. My own experience leads to the conclusion that if the plants are well cared for during the time that elapses between their ceasing to flower and again being forced, they improve with age rather than deteriorate. But success in Rose forcing depends much on the plants being liberally treated during the time they are recruiting their strength. When turned out of doors, as sometimes done with plants that have been forced, before the weather is warm enough to enable them to keep on growing, it is not possible that they can be in a condition to give more than half a crop of flowers when they are again expected to bloom. It is well at this season to look over the stock and to make sure that it is sufficient to meet the demand. Where the Hybrid Perpetuals are required in considerable numbers, if not already done, a sufficient quantity should be potted with a view to their being grown on through the summer, encouraging them to gain all the strength possible by the help of manual stimulants and keeping them free from insects.

HIBISCUS ROSA SINENSIS.—The different varieties belonging to this section of Hibiscus are suitable for covering back walls in warm houses; in such positions they not only succeed better, but also look better than many things that are often employed for the purpose. Where the plants have occupied the space required it is necessary to go over them each spring, cutting in the lateral growths so far as it becomes necessary, without which the whole becomes a confused straggling mass of shoots. Vigorous growing subjects like these soon exhaust the soil, and to keep up the requisite strength rich top-dressings should be given each spring, removing as much of the

surface of the borders in which they are grown as can be got away without undue disturbance of their roots. Besides the usual addition of rotten manure mixed with the new soil, it will be well to give a sprinkling of bone meal, which will be more lasting in its effects. Later on, when the plants are in full growth, manure water may be given freely. One of the peculiarities attached to this race of *Ribes* is, that although they attain a large size they will flower whilst quite small; little plants in 4 inch or 5 inch pots may often be seen bearing their large showy blossoms. In this way, and in the form of larger pot specimens they are very useful. Large plants established in pots should now have their branches cut in; after a few weeks they will again push growth, and should have a portion of the soil removed, giving them rich material similar to that advised for those that are turned out. Cuttings of these plants should be put in; they will root readily where they can have a brisk heat.

NERIUMS.—The old *Nerium splendens* and its white variety are the best known kinds, but several of the newer Continental varieties are well worth growing. Not the least of the merits of these plants is that they force readily, flowering equally as well in the shape of small examples in 6 inch or 7-inch pots as larger specimens do. There is sometimes an inclination in the plants, either when in a small or a large state, to cast their buds, and to this, not unlikely, may be attributed their not now being so much grown as in times past. But where this mishap occurs, it is generally the effect of one of two causes: either the plants have been allowed to get too dry at the roots after the flower-buds were set, or they have been subjected to too much heat, either of which will cause the failure in question. An intermediate temperature with less moisture in the atmosphere than the generality of forced plants require is best for these *Neriums*. Where a sufficient number of plants are at hand, a portion should now be placed in gentle heat. Although they are averse to much water overhead during the time their flowers are coming on, they still like more moisture at the root than most things.

LILIES.—Successional plants of the different Lilies that bear forcing should be put in heat to follow the earlier ones. The two forms of *L. longiflorum*, *L. Harrisii* and *L. eximium*, are the best to use for forcing; the former is remarkably free-flowered, and answers for either early or late forcing. *L. eximium* will give double the number of flowers that the ordinary variety of *L. longiflorum* will, the latter rarely coming with more than two blooms to a stem, whilst *L. eximium* when strong will yield four or five. *L. candidum* is now largely used for forcing by the market growers, but it is a somewhat difficult subject to deal with in this way. Some who have been successful with it pot the bulbs in summer immediately the tops have died down after flowering, putting about three bulbs in a 7-inch pot; these are plunged out of doors, care being taken that they get sufficient water; in the autumn they are moved to pits or frames, and early in the year they are put into moderate heat, keeping them well up to the glass in light houses. In other cases the bulbs after being potted at the time named are grown on for a year in the pots, keeping them quite cool and not attempting to force them until the second season. Needless to say, that in all cases the plants are well cared for, as if with the roots confined to such a limited space they were at all neglected, it would be useless to expect them to bloom as they should. Bulbs of *L. Harrisii* and *L. eximium* that have been forced early should, after they have flowered, be moved to a cold pit or frame, where they will be out of the reach of frost, and have due attention in the matters of air and water, without which it is needless to expect them to be of further use. *L. auratum* differs from most other bulbs, inasmuch that in any given number there will be a marked difference in the rate and time of their growth and in the time they flower. Immediately their tops appear above the soil the plants should be

stood where they will get all the light that can be given them, without which they are certain to become more or less drawn, a condition that is alike injurious to the present season's flowering and the future well-being of the plants. The different forms of *L. speciosum* should be similarly treated; these last, including the dark and the light spotted varieties as well as the white sort, are amongst the most useful of autumn-flowering subjects for conservatory and greenhouse decoration. Coming in as they do when there are fewer things in bloom than at any other time of the year makes them deserving of better treatment than they often receive.

TRITONIAS.—The common *T. aurea* is the best known representative of the genus, but there are several others varying in the colour of their flowers that are equally worth growing. Like the Lilies already spoken of, they are autumn flowerers, and desirable either for decorative use or for cutting. They are easily managed, but to have them in the best condition the pots must not be allowed to become overcrowded with their bulb-like rhizomes, a state which they are apt to get into if not divided often enough. When this occurs the flower-spikes come fewer in number and individually smaller than when better treated. Plants that are deficient of room may now be divided, but unless where the intention is to increase the stock as far as possible it is better to only separate each plant into two, three, or four, for if the roots are separated more than this they are liable to get injured so as to interfere with their growth for a time. Give pots proportionate in size to that of the plants, so that they will have enough room for two years without being again disturbed. After potting, a cold pit where they can be kept out of the reach of frost will be the best place for them during the spring, until the time comes that they may be put out of doors. The plants being nearly hardy will keep on growing in a lower temperature than would suit many things.

SCHIZOSTYLIS COCCINEA.—This is another desirable plant that keeps on flowering through the autumn and early part of winter. Though hardy, it may in reality claim to be better adapted for pot culture than for growing in the open ground, as, unless protected, the flowers, which keep on appearing in succession, are almost sure to get cut off by frost. Its tuberous roots increase fast, and must not be let suffer for want of sufficient room, or the bloom will suffer in proportion. The present is a good time to divide any plants that want more space; it is best grown in moderate-sized pots, say about 8 inches in diameter. This *Schizostylis* succeeds with treatment such as advised for the *Tritonias*. Ordinary loam with some sand added is the soil required. T. B.

KITCHEN GARDEN.

W. WILDSMITH.

EARTHING-UP VEGETABLES.

Is this a necessity as regards vegetable culture? To this question a few years ago I should have said, yes, decidedly; but experience has changed my views, and now the answer I have to give is both yes and no, a paradox which I will attempt to explain. Having a very light, and, though deep, a rapidly drying-up soil to deal with, this question of earthing up forced itself on me in this wise. After a prolonged season of drought we were favoured by a grand rain, and amongst other crops that came to my mind whilst watching and enjoying the descent of the rain was a fine piece of Cauliflowers that had lately begun to show signs of distress, owing to lack of water. Imagine my disappointment, therefore, on taking a survey of the crops next day to find the Cauliflowers in question but little the better, if any, for the heavy downpour there had been. I procured a fork, dug up a couple of the plants, and with astonishment found that not a drop of

moisture had reached the last made and most important feeding roots. And now for the cause; the plants had been earthed up, and the water had run off the ridges like water off a duck's back; though it found its way into the soil, the greater portion of it was lost, as but few roots extended to the middle of the space between the rows. This forcible illustration of the evils attending earthing up, without thought as to whether the operation was likely to be injurious or the contrary, but simply because others did it, had, and still has, a reforming effect on our future procedure. Earthing up we still do, but not promiscuously, or without thought or reason. Moreover, when we think it necessary to be done, we wait till there has been a soaking rain, so that the ground is likely to continue moist under the ridges for a long time, even though following rains do not get through them. Dwarf strains of Cauliflowers, Coleworts, and Cabbages we now never think of earthing, but tall-growing kinds of Broccoli, Kale, and Brussels Sprouts must be earthed, even if only to prevent wind-waving. Apart from this, the practice is of little benefit. Peas we earth up in early springtime, only by way of protection from cold easterly winds; at all other times we prefer to mulch with a little long litter, which has the merit of guiding the rainfall directly to the roots. Potatoes, except very strong-growing kinds, we earth up but slightly, and this solely to prevent the tubers from protruding above the soil. To obviate the necessity of earthing up any kinds of Potatoes whatever, we once tried deeper planting of tall-haulmed varieties, but it proved a failure, for it was with difficulty the haulm found its way through the soil, and the crop of good tubers was less than half of that from others planted in the usual way. It should be noted that these remarks have reference to very light soil only; on heavy retentive soils earthing up would not be likely to prove injurious, but rather the contrary, for the ridging up would act as a sort of air drain to prevent the wet soil from becoming stagnant.

Pea Criterion.—This excellent variety has been in cultivation for several years, and if I am rightly informed it has steadily gained in popularity, immense quantities of seed now being annually sown. It is by no means a sensational podded variety, being in fact quite the reverse, but its good qualities will keep it in cultivation long after more showy sorts are as good as extinct. Criterion is suitable for affording a second early supply, and also for the main crop. It does not branch so much as Telephone, one of its parents, or Ne Plus Ultra, and should therefore be sown rather more thickly than these sorts. A height of about 5 feet is usually attained, but under favourable circumstances it reaches 6 feet and upwards. It produces an abundance of medium-sized well-filled pods, both these and contents bearing a close resemblance to Ne Plus Ultra, the quality almost equalling that popular variety. Lovers of really good Peas, instead of growing all the varieties they can afford to buy or fancy they require, may well confine themselves to four of known excellence. Commencing with the dwarf American Wonder, this may be closely followed by William I., or, better still, a wrinkled selection from it appropriately named William II. Telephone would form a good succession to this, and be in its turn closely followed by Criterion. Two or three sowings of the latter could be made, and if Ne Plus Ultra is used for the last, and at fortnightly intervals subsequently up to the end of June, this, other conditions being favourable, will prolong the supply till frosts intervene. Not only will the produce be fit for an epicure, but the crops will be abundant, that great enemy of Peas, mildew, not proving so destructive to Ne Plus Ultra as it is among less robust sorts. Nor is Criterion so much addicted to mildew as numerous second early and

main-crop sorts I could name. Although tall Peas are the most profitable, all cannot afford either space or stakes for them, and in this case I would substitute Stratagem for Telephone, either Gladiator or President Garfield for Criterion, and Veitch's Perfection for Ne Plus Ultra, Sturdy being also a first-class late sort.—W. I.

ONIONS FOR EXHIBITION.

ONIONS form an important part of a collection of vegetables, and in order to have them in good condition during the autumn months, their cultivation must shortly be started. Rousham Park is the best kind for exhibition; it grows to a large size, is of good shape, and excellent in colour. Seed of it should be sown at once in boxes, in light, rich soil; place the boxes in a Peach house or vinery just started, where the night temperature is kept at about 50° or 55°, with a corresponding rise during the daytime. As soon as the young plants push through the soil, they should be placed near the glass in order to prevent them from becoming drawn up weakly; as they progress, gradually harden them off until they can be moved to a cold frame, and as soon as the second leaf is formed they should be transplanted into light, rich soil about 4 inches thick, at the bottom of which is a layer of horse manure 2 inches thick; into this the roots quickly find their way, and the plants quickly start again into growth. They are planted out into their permanent quarters in the garden about the middle of April, and by that time they will be sturdy and strong, *i.e.*, if air has been admitted on all favourable occasions. An open piece of ground in the kitchen garden deeply dug or trenched and well manured the autumn previous suits them admirably, and before planting give it a sprinkle of wood ashes and soot, which will get raked in and mixed with the soil. Plant in rows 15 inches asunder, and as much apart in the rows, *i.e.*, where space is available, but where it is not, 10 inches or 12 inches will do. Plant with a trowel, so that a good ball of soil may be attached to each plant, and tread the soil firmly about it; do not plant too deeply, allow the bottom of the bulb to be just under the surface of the soil; as growth proceeds, if the weather be dry, apply water freely, and occasionally give doses of liquid manure, or thinly sprinkle around each plant some artificial manure, and water it in. Dissolved bones are excellent for this purpose, and may be applied about every three weeks after the bulbs attain the size of hen's eggs.

M. S.

Mushrooms failing.—I see that "J. G. II." attributes a good many failures to too shallow beds, and goes on to say that to make up a bed less than 1 foot thick is to court failure. Now one of our beds was made up on October 29 last year, spawned on November 6, and first showed young Mushrooms on December 18; this bed is 17 feet long, 3 feet 3 inches wide, and 9½ inches deep, so that the depth of manure is really less than 9 inches, as upwards of an inch of soil is used in sealing the bed down. The spawn was inserted 3 inches deep and about 8 inches apart. I could not give the exact temperature of the bed at spawning time, as we had no thermometer plunged in it. We have employed artificial heat during the late severe weather in order to keep up the temperature to 55°, and no one could wish for a better supply of Mushrooms than that which we have had. Provided the bed is well beaten, so as to make it firm, and the manure is in proper condition, Mushrooms can be grown even in beds less than 1 foot in depth.—G. S.

Preparing Seakale for forcing.—The most economical way of raising a stock of Seakale roots for forcing in the Mushroom house, or in pits, is to plant now the small thongs or roots which are trimmed off the large roots when they are lifted for forcing. In December, when the bulk of the roots is lifted, in preparing them for forcing, all the projecting roots are trimmed off, and the tap-root also is shortened. Some of these thongs are as thick as one's finger, and the best, to the number required,

are laid in damp sand till some time in March, when the land is in a suitable condition for planting. The better the condition of the land, the stronger the roots will be, with crowns of corresponding size and vigour. Plant with the dibble in rows 18 inches apart, and 15 inches between the plants in the rows. Few crops cost less to cultivate, as the only attention required is to keep down weeds by hoeing and to pinch off all flowers as soon as they appear. The sets should be about 4 inches or 5 inches long, though smaller pieces will grow, and the upper or thick end should be just covered with soil. Seeds sown now will also under good culture produce roots large enough to force the same season, though I do not think anyone with a stock of roots will require to sow seeds, except it may be in cases where the stock of roots falls short of the demand. Seedlings when they emerge from the soil are exposed to some difficulties; snails and slugs are fond of them, and so also are the Turnip beetles, and in some soils and seasons frequent dressing and a freely stirred surface will be necessary to enable the young plants to pass the spring safely.—E. H.

KITCHEN GARDEN NOTES.

RHUBARB.—Usually we defer filling up vacancies in old and the making of new plots of Rhubarb till forcing is over, as then the forced roots are available for the purpose, but circumstances being favourable, we are doing the work now, the plants being procured by lifting the largest roots from the old bed and cutting them with an edging iron into pieces having a couple or three crowns to each. The ground has been well prepared by deep digging and manuring, and the roots are planted at a distance of 3 feet by 4 feet; the soil, being light, is well compressed round about the plants, which are planted so deep that only just the tips of the crowns are visible. A heavy mulching with long litter will next be given, and there will then be no further trouble all the summer, except an occasional hoeing to keep down weeds. The roots remaining of the old plot will now be covered with pots, but no litter or leaves will be used, this being unnecessary at this season when growth is starting naturally. The lifted roots that are now producing the supply will be used for making good the vacancies in the plot from which they were lifted.

SEED SOWING.—The last few days of drying weather have acted so favourably on the soil, that a good seed bed is assured, and before these lines appear we hope to have sown the main crop of Onions and Parsnips, both of which cannot be got in too early. Another sowing of Peas will also be made, and a quantity of Potatoes be planted on a dry southern bank. We never use dibbers for this work, because at this early season all our Potatoes are started in leaf-soil, and so there must be room to lay the roots at full length on the soil, and this we do by drawing wide drills, in which the sets are laid at 1 foot apart and 18 inches from row to row, and the whole are covered in with about 5 inches of soil. The old Windsor Broad Bean will also be sown to succeed the Longpod variety that was sown a few weeks since. Spinach will also be sown between the rows of Beans. It is also time to sow another small lot of Cauliflowers, Kale, and early Broccoli. All of them we sow in drills on a warm bank, and so thin that it is not necessary to prick them out, as they transplant very well from the seed bed. Early Munich Turnip, Leek, Radish, Salsafy, and Scorzoneria will all be sown within the next few days.

POTATOES IN POTS.—Being short of frames for forcing purposes, we always grow a few of these in pots, as they can be conveniently shifted from time to time from one house to another, according to their requirements. At first they occupied space close to the front lights of an early vinery, but this getting too warm and shaded with Vine foliage they are now moved into a Peach house, the trees of which are just opening their flowers, and from this place they will probably have to be shifted to the latest Peach house. Three sets in a 9-inch

pot produce a large dish of tubers, which are prized very highly, because they are ready so early, and also because they prevent the necessity of commencing to dig the frame tubers till they are full grown. We have just given them a slight earthing up and sprinkled a little artificial manure on the surface of the pots, which as water is given will get gradually washed into the soil. Such restricted soil space renders liberal feeding a necessity.

RIDGE CUCUMBERS.—Provided there is frame space for an early crop, the first sowing may be made now, but if the plants are to be grown on ridges in the open, with but slight heat from litter and lawn mowings, a month hence will be sufficiently early to sow, as the plants would only get crippled by being pot-bound before it is safe to plant out. The variety King of the Ridge, when it can be had true, is such a good type of ridge Cucumber, that it might pass muster as a first-rate frame sort, not to mention its hardness and heavy productive qualities; in fact, for some years past we have taken no pains about getting any other sort early in the season and up to midsummer, and by that time the plants on the ridges in the open begin to fruit and continue doing so to the end of September; thus a supply of fruit from 9 inches to 12 inches in length may be had without frame or house room all through the summer months. It is best to raise the seeds singly in 3-inch pots, and grow them on with as little check as possible and with but a moderate amount of heat—from 55° to 60°; good loam, with the merest smattering of leaf soil and charcoal, is the best of compost in which to grow them, and it should be given them by degrees, *i.e.*, as the roots appear on the surface, for if put on in bulk at once, the mass gets soured before the roots are ready to make use of it. Next to this piecemeal adding of soil the most important point of culture is to avoid overcrowding the shoots; the plants resent this neglect of attention by failing to set their fruit; no light, no sun can get at the flowers, hence their turning yellow and dying off. Stop or pinch, peg down, and otherwise regulate growth at least once a week. Water abundantly in dry weather, and when in full bearing an occasional watering with manure water is of great assistance.

VEGETABLE MARROWS.—Very much the same treatment is required for Marrows as for ridge Cucumbers. It is not, however, necessary to be over-particular as to the description of soil. I have known them do just about as well planted on a rotted leaf soil heap and on the refuse heap of old potting soil as in a properly prepared compost, which, in my opinion, should be pure loam of medium texture. If stable litter be plentiful, then as much can be afforded to make up a bed of sufficient bulk as to generate a heat of about 60° after the first heating is over. The best way to raise the plants is to sow them on the mound where they are to grow, and protect them with hand-lights till they get strong, and the weather safe for their full exposure, which may perhaps be about the middle of May; consequently sowing ought not to be done before April, except for early fruits intended for growing in frames, and for this purpose it is not too early to sow at once, after this manner, a couple of seeds in a 4 inch pot; let the soil be light loam, and the heat that of a Cucumber frame; the pots need not be plunged, as bottom heat is not essential. The plants should not be separated, but be planted on the mounds in double form as turned out of the pots, thus growth would be continuous, and fruit ready several days earlier in consequence. Moore's Cream and Long White are old, but still the best varieties. Those who prefer small fruit should try Custard and the new variety Pen-y-hyd; both of them are very productive and as hardy as any.

RARE GREENS.—Brussels Sprouts, Cottagers' and Curled Kales seldom get so severely crippled as they have been this winter. Up to the present they have all produced moderately, but the end has nearly come; and Broccoli make but little sign of heading, as they, too, have got hardly hit,

and quite a third of the whole are killed outright, so that we are glad to have a reserve of greens on the farm in the shape of Rape, which, though sown for sheep feed, is much relished in the dining-room, and is pronounced delicious and quite equal to Brussels Sprouts. Such being the case, it occurs to me that we might do worse than spare a plot in the garden for what many consider a very rough type of Cabbage, and which it is, but its hardness and good quality counterbalance the roughness in this season of scarcity of green stuff. For the information of anyone who may be disposed to give the plant garden space, I may say that those from which we are now obtaining supplies were sown about the middle of July broadcast, and intermixed with Turnips, and thinned out by hoeing as soon as the plants were about a couple of inches high. A better plan would be to make a sowing in drills, and plant out in the same way as ordinary Cabbage. The ground need not be very rich, as I note that the produce varies but little over a field of several acres, some parts of which I should consider very poor land indeed.

GENERAL WORK.—Having nearly completed the rough, heavy work of trenching, soil and manure wheeling on to the various plots, we are now repairing the Box edgings and walks. The latter we lightly fork over, and then apply just a surfacing of new gravel for appearance sake, and next roll them till quite firm. Cutting sticks for Peas that have been raised in pots, and which will be planted out at an early date, staking being done at once to afford shelter from cold winds as well as from destructive birds. Renewing the linings round frames of Potatoes and Asparagus, and planting other batches on beds with improvised frames, made with long Hazel rods, on which to lay coverings of mats. Lifting more Parsley roots for planting in boxes and placing in heat, also a last lot of Mint. Pricking out Brussels Sprouts and Cauliflowers in cold frames, and part of the autumn-sown plants wintered in frames will be planted as soon as time permits.

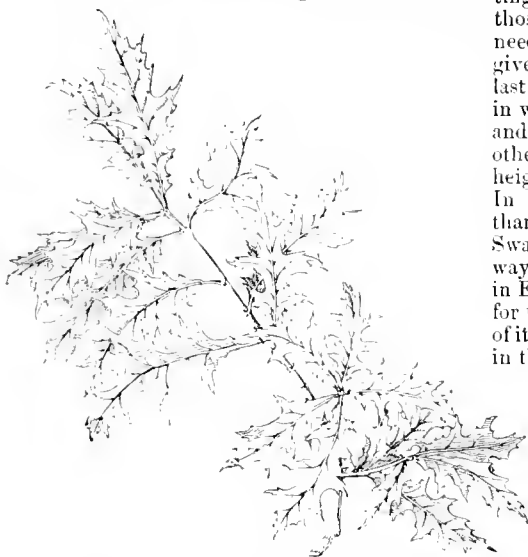
TREES AND SHRUBS.

W. GOLDRING.

THE SWAMP OR PIN OAK.

(*QUERCUS PALUSTRIS*.)

AMONGST American Oaks now under cultivation in Europe, the Swamp Oak is undoubtedly one of the most valuable as regards ornamental



Branch of Pin or Marsh Oak (*Quercus palustris*).

planting. Michaux, who knew North American trees as they grew in their native homes better than most people, considered it a handsome tree; and Loudon says "its agreeable pyramidal shape,

its far-extending, drooping branches, its light and elegant foliage, render this tree the most graceful of all the Oaks." Loudon's opinion quite accords with our own, but it is singular that neither he nor any other writer has pointed out what to me is the most important and most beautiful feature of this Oak, viz, the rich and delicate shades of orange and red which its foliage assumes in early spring as well as in its decaying stage in autumn. As an ornamental tree this constitutes its chief merit, and this one fact is far more worthy of consideration, from a planter's point of view, than a long account of how it differs in minute botanical characters from its near relatives. The Swamp Oak is one of those trees that are met with only in old and richly-stocked arboretums, planted perhaps two or three generations ago. One rarely meets young trees of it, and it is not a common stock plant in nurseries; but if planters fully appreciated its merit, especially as regards its beautiful effect in leafing-time, it would undoubtedly become popular. It is different from most other Oaks, inasmuch as it is of rapid growth. With the exception of the Grey Oak (*Quercus ambigua*), Loudon states that it is the fastest-growing of all the American Oaks. My own observation accords with this, for trees of it which I have seen in various arboreta have generally overtopped other Oaks in the same place. It is easy to distinguish a tree of the Swamp Oak from others, even in winter; it always has a denser head than that of others, small twigs being exceedingly abundant. The outline of the head is rounded much in the same way as that of the Quercitron Oak (*Q. tinctoria*), and the bark of young trees is particularly smooth and of a dark ashen grey. The leaves, like those of several other North American Oaks, are deeply lobed in the case of trees of good size, and each lobe ends in a bristle-like point. But they are smaller than those of such species as *Q. rubra* and *tinctoria*, being when fully grown only about 6 inches long by 4 inches wide. On young trees they are much less lobed than in those of greater age, and a seedling has leaves scarcely more lobed than those of our native Oak. This alteration in leaf form was of great interest to Michaux, who in his elaborate work, "Histoire des Chênes," published in 1801, dealt with the subject at great length. The other distinguishing characters of *Q. palustris*, such as those relating to the size and form of the Acorns, need not be gone into here, as the illustrations given herewith show them well. I remember seeing last spring a charming picture in a Surrey garden in which the chief subjects were the Swamp Oak and a Copper Beech planted in proximity to each other, so that the pale yellow hue of the one was heightened by the rich ruddy tints of the other. In autumn the Oak was even richer in colour than the Beech. A beautiful tree, such as the Swamp Oak is, could be combined in many other ways, and it ought to be cheap and easily procured in English nurseries. As regards the best position for the Swamp Oak, I cannot say much; the trees of it which I have seen have generally been planted in the usual way followed in arboretums. I have never yet seen a tree growing in a swampy place which one would imagine, judging by its name, is best for it. It is, however, not naturally a swamp tree, and Dr. Blomfield was of opinion that the name *palustris* was erroneous. Attached to his dried specimen of the tree collected in 1847, and preserved in the Kew herbarium, there is an interesting note about it, in which he states that, "Although this Oak prefers a somewhat moist soil, it is usually found growing in open pastures in the vicinity of the banks of rivers and streams." He also says that some trees with which he met in the Southern States of North America were

among the tallest and largest trees he ever saw in those parts. From this it would appear that a damp place is not essential to this Oak, and, judging by the vigorous growth of specimens of



(a) One-year-old seedling of *Quercus palustris*, showing leaves slightly lobed. (b) An older leaf more deeply cut.

it on dry soil in the Kew arboretum, this opinion is doubtless correct. This Oak grows wild over a wide area in North America. It extends from Lake Winnipeg, in Canada, throughout all the Eastern States to Kentucky and Virginia. It rarely forms forests, but is generally found growing in isolated positions or in scattered groups. It grows as high as 80 feet, and as much as 3 feet and 4 feet in diameter. Of its wood I know nothing from personal observation, but it is said to be fairly good. It was introduced to this country about the year 1800, and about fifty years ago, which may be called the tree-planting age, it was tolerably plentiful in nurseries and much planted. There is a dried specimen of it in the Kew herbarium cut from a tree growing



Fruiting twig and full-sized Acorns of Pin or Marsh Oak (*Quercus palustris*).

at Warwick Castle in 1823. This Oak is perfectly hardy, and as the young foliage does not appear till spring is well advanced, it does not suffer from late frosts.

Prunus sinensis alba plena.—This is a slender-growing member of the Plum family; indeed, much more so than the better-known *Prunus triloba*, but, like it, remarkably handsome when in flower. The habit of the plant is dwarf and bushy, and now, where it has been forced, all the principal shoots are completely clothed with small rosette-like blooms of a pure white colour. As a shrub for forcing, it possesses some advantages over many other subjects, one of them being that the same plants may be forced year after year, and, if necessary, kept entirely

in pots, provided growth is encouraged by the application of manure water or some other stimulant during the growing season. Not only is this a handsome little shrub for forcing, but it is also well suited for planting in the open ground in spots where a subject is needed that can be easily kept within bounds. I have seen it trained to a low wall, where the blooms, protected against unfavourable weather, made a goodly show. For larger walls, however, it is not vigorous enough to compete with its ally, the bright-coloured *Prunus triloba*.—H. P.

Vaccinium Sprengeli.—This is a pretty little greenhouse shrub of a dense, much-branched character, with slender wiry branches, all of which as well as the minor branchlets are terminated by clusters of small bell-shaped blossoms. Their colour is white, suffused on the exterior with a pinkish tinge. The foliage is small, bright green and always cheerful in appearance, while the flowers, like many of the same class, last a long time in perfection. It is one of those subjects that can be depended upon to flower at the proper season, provided it receives ordinary care and attention, and gives but little trouble in the way of potting, for once established the roots need not be disturbed for years. An open sandy peat is the most suitable compost for this, and in potting, the soil must be pressed down firmly, while the drainage requires careful attention. The red berries that succeed the flowers are an attractive feature later on.—H. P.

Wellingtonia gigantea.—It may perhaps interest your readers to have some account of the growth made by a *Wellingtonia* which we cut down to make room for two other specimens. The tree was planted in the spring of 1870. It was then about 2½ feet high, and when we felled it, it measured 39 feet 6 inches in height and 8 feet 6 inches in girth, and was a perfect specimen of what a *Wellingtonia* should be. It grew on the border of the fen, over a sub-soil of harsh clay, and the roots which it made were something marvellous. Conifers thrive well on fen soil without any extraneous mixtures of peat and clay. In fact, I do not remember seeing trees in better condition. We have some fine specimens of *Cupressus Lawsoniana* and its varieties, *Thuopsis* and *Cryptomerias*, *Yews*, *Cephalotaxus*, and others which have developed in a very short time into grand trees.—W. A. COOK, *Holme Wood*.

Andromeda japonica.—Some bushes of this that were lifted from the open ground in the autumn, and after being potted were kept in a cold frame throughout the winter, are, with the little additional heat given them for the last few weeks, in full flower. The long pendulous racemes of pure white flowers contrast well with the deep green of the neat foliage; and another prominent feature just commencing to manifest itself is the bright crimson tint of the young leaves, which, when the plant is studded with growing points, gives it at a little distance quite a ruddy hue. This kind differs in many respects from another of the same genus—*Andromeda floribunda*, a North American kind, that flowers about the same season; but in this the blooms are borne in shorter and stiffer clusters, thus the whole plant is wanting in the elegance of the Japanese *Andromeda*. As outdoor shrubs, however, as far as my experience extends, the American variety is less liable to injury from late spring frosts than the other, though, leaving the flowers altogether out of the question, *Andromeda japonica* is well worth growing as a very ornamental evergreen shrub. There is of this, too, a variety in which the leaves are irregularly margined with white, and very pretty it is when planted in a fairly moist soil and not in too hot a situation. Potted up it is bright and cheerful throughout the winter and early spring months. The dense rooting character of these shrubs, in common with most other Ericaceous plants, renders it possible to lift them at almost any season of the year without injury, providing, of course, a reasonable amount of care is exercised

in carrying out the operation. *A. japonica* can be readily increased by cuttings of the half-ripened shoots put firmly in sandy peat, and kept close and shaded till rooted. Both the *Andromedas* mentioned are also to be met with under the generic name of *Pieris*.—T.

SHRUB NOTES FROM PENRHYN.

THE DAPHNES.—There is a woodland on this estate that every time I pass it, during winter particularly, stop I must and admire the conspicuous shining foliaged, sweet-scented *Daphnes*. I am here referring particularly to the Laurel-leaved *Daphne* (*D. Laureola*), for certainly, barring the Holly, I know of no plant that can impart the same amount of warmth and comfort to a deciduous wood as the shrub in question. Then it is so inexpensive, so easily grown, spreads with such rapidity, is so perfectly hardy and accommodating, affords such an amount of shelter, and is so truly imposing and pretty, so deliciously fragrant when in flower, that the only wonder is why it is not more commonly seen massed irregularly around the outskirts of our woods for winter effect. A few plants placed here and there will soon stock a whole wood, for it seeds freely, spreads from the root in a short space of time, and forms layers by the branches coming in contact with the soil and rooting freely. I fancy, in judging from the plants here, that in opposition to the *Mezereon* (*D. Mezereum*) the Laurel-leaved plant prefers a warm, dry, sandy loam, for it certainly succeeds best under these conditions in the wood above referred to and where fully exposed to the sun. A quickly sloping, southern-facing, sandy bank has become almost covered by this plant, and presents during the flowering season a pretty and effective sight. The *Mezereon* must not, on account of its deciduous character, be condemned for the ornamentation of our woods, as pick as you will you cannot find during the early spring months a more beautiful flowering shrub. It is of easy culture and naturalises itself quite readily in any favourable wood or thicket, always preferring dampish ground and a somewhat shady situation. When in fruit it is a sight well worthy of going out of one's way to have a peep at; in fact, as a good all-round woodland plant it is not far behind even the best.

OTHER GOOD SHADY PLANTS.—On the whole, and when one comes to turn over in his mind the number of shrubs that will thrive in a fairly successful manner beneath the shade of our forest trees, the list swells to one of large size. What can be more ornamental for semi-shady corners than good, bold patches of the *St. John's-wort* (*Hypericum calycinum*), the *Vineas* (*V. major* and *V. minor*), *E-callonias*, *Skimmia japonica*, *Per-nettya mucronata* and its variety *angustifolia*, *Phillyreas*, the *Bateher's Broom* (*Ruscus aculeatus*), the *Dogwood*, *Euonymus*, *Brambles* of sorts, the *Snowberries*, *Mahonia aquifolia* and *M. japonica*, *Laurel* (*Portugal* and *common*), and the well-known *Laurustinus*. With such a list to pick from who would have his woodlands bare and cheerless, or who would neglect to cover the untidy, grass-bare spots beneath his lawn *Beeches* and *Limes*? Being of low, creeping growth, the *St. John's-wort* and *Vineas* are particularly well adapted for edging paths and walks in the woodlands, while the taller growing *Mahonias*, *Per-nettyas*, *Honeysuckles*, *Yews*, and *Elders* may find suitable places at a greater distance from the frequented roads and walks. In planting the *St. John's-wort*, we have found it best to cut, from some places where it runs wild, squares of the plants and their roots with the attached soil, and to transfer these intact to the intended positions. It is not necessary to plant closely; we have found for 18-inch square tufts a distance of 3 feet close enough, as the roots soon run about underground and send up shoots in all directions. The *Vinea* is more difficult to manage, but with care in planting and by having well-rooted clumps to start with, it soon becomes established and runs wild amongst its neighbouring vegetation. A

very pretty and attractive bank may be formed by planting the *St. John's-wort* and *Vinea* in combination, the co-mingled yellow and blue flowers being particularly pleasing.

THE OVAL-LEAVED PRIVET AS A HEDGE PLANT.—This (*Ligustrum ovalifolium*) is far superior to the ordinary form as a hedge plant, being of stronger and freer growth as well as with a far greater inclination to retain its foliage during winter. In this latter respect it is, indeed, almost an Evergreen, for if cut in during the late summer months it soon throws out numerous shoots that remain fresh and green even during our severest winters. Planted alone, it forms one of the prettiest and closest of garden fences, and bears trimming so well that repeated switchings but increase its value and appearance. Another valuable point is this, that the *Privet* in question is, when suitably placed, of very rapid growth, it requiring but two years to get up a well-formed, serviceable hedge, and that even in partially exposed situations provided the soil is good. We have some fences of this *Privet* not a foot wide at base, and perfect wedges of 6 feet in height, so close and firm of growth is the plant. Strong, well-rooted plants of nearly a yard in height should be used in the formation of hedges of the oval-leaved *Privet*, and these, if planted in well-prepared ground and at 15 inches apart, will, in two years, make one of the most serviceable and prettiest of fences. The oval-leaved *Privet* has not been long in use in this country, but it is certainly rising gradually, but surely, in the estimation of planters. For ease of propagation it has few rivals, cuttings inserted at the right season and the right class of soil taking root and shooting away rapidly. As a game covert plant I have not much faith in this plant; it is of too strong, unyielding growth and wanting in the clampering, creeping properties of the normal form. A clump of a hundred or more plants placed in an open portion of the wood, and attended to regularly in the way of pruning and heading over, is, however, a by no means unornamental feature; and if the plants are kept far apart and well headed down and hard cut back annually, game have no objections to rest under their shade.

ELDER IN WOODLANDS.—Although occasionally we hear of the *Elder* being recommended for covert purposes in our woodlands, it is not by any means desirable for this purpose; such at least is the experience of one who, unfortunately, has had too much to do with the plant in the way of extermination. It is a regular nuisance, an unprofitable plant, and like all of such a class grows far too rapidly, and spreads about in a most mysterious manner. We expend a great deal of time and labour in annihilating this plant, for all the sportsmen who visit our game preserves are enemies to the *Elder*. It is good enough in summer, and when of low stature for covert purposes, but during winter when destitute of foliage, and especially when of large size, it is about as useless an underwood plant as one could imagine. Far better to grub up the *Elder* and allow other and better natural vegetation to take its place. It is, perhaps, unnecessary for me to say that in striving to get rid of the *Elder* it should never be cut over, for, cut low as you will, the stocks will send out abundance of shoots, and the last state of that plant is worse than the first. Take a grubbing axe or pick and uproot the *Elder*, and then only will you get rid of it; but, indeed, in many instances, not even then have you destroyed its vitality, for it is no uncommon thing to see *Elder* stems without a root in contact with the ground, sending forth, in moist woods particularly, an abundant crop of shoots. Burning of the uprooted plants should be set about at once, unless, indeed, some butcher cares to have them for the making of skewers.

Hard as we are on the common *Elder* for underwood in our woods, yet some of the varieties are amongst the most ornamental plants we possess, their scarcity being alone to be lamented. The gold-striped, silver-edged, scarlet and white-berried, as well as the cut-leaved, are very desir-

able shrubs for ornament, and should be sought after and planted in suitable places.

A. D. WEBSTER.

Andromeda japonica.—At one time this pretty evergreen shrub was considered much too tender to stand our winters, but it has proved far hardier than was anticipated. In the Knap Hill Nursery, Woking, where it is grown largely, being a great favourite with Mr. Waterer, it stands out quite unprotected, while others which have been protected by a cold frame are coming into flower, each strong shoot being terminated by a graceful cluster of flower-buds, which in a few weeks will present a beautiful sight. The pretty shining green foliage of this shrub renders it quite ornamental, even when not in bloom. Perhaps its greatest value is as a greenhouse pot shrub for early spring bloom, for there is not a more elegant shrub cultivated for the purpose.

The Oak-leaved Arbutus (*A. Unedo quercifolia*) is a little-known, yet handsome, shrub quite distinct from any other variety of *Arbutus*, or, in fact, any other shrub. It is denser in growth than the ordinary form, forming a compact, dense bush. The name *quercifolia* is appropriate, as the leaves resemble those of the common Oak in regard to their lobes and outline. The leaves have crisped edges, which being of a much lighter green than the rest of the leaves, give quite a distinct look. The stalks of the leaves, moreover, are red, as are also the leaf-veins and bark on the stem, and this colour is seen throughout the year, but is most noticeable in winter. It is not a common variety in nurseries, but is unquestionably one that should be taken up by nurserymen.

The dwarf Weymouth Pine.—The pigmy variety of *Pinus Strobus* is a tree that could be put to good use in ornamental planting, for there always occur positions where one would like a small-growing tree or shrub that would not outgrow its bounds and mar the intended effect of grouping. The dwarf Weymouth Pine is a tree that one need never fear would outgrow its allotted space, for it never gets more than a few feet high, and always forms a dense rounded mass of that beautiful soft bluish grey tint which renders the glaucous-leaved Pines so telling in tree grouping. There is a plant of the dwarf Weymouth in the old tree nursery at Knap Hill that has occupied the same spot for many years, and now it is only about 4 feet high and some 6 feet or 8 feet through. The place to plant a tree of this kind is a prominent outlying part of a large group or mass of trees, a spot where it could be well seen. It should have been included in the list of Scrub Pines given a short time ago.

The Golden Lawson Cypress.—I heard it remarked the other day that most of the Golden Conifers are "frauds." That is so. Among the few that are not "frauds" is *Cupressus Lawsoniana lutea*, which I consider one of the most strikingly attractive among all the Golden Conifers. I thought so the other day when I saw in the Knap Hill Nursery a plantation of several hundreds of this tree shining in the midday sun like burnished gold amidst the luxuriant greenery with which this plantation was surrounded. I thought at the time that I never saw a more effective sight in any nursery. Every tree glowed with a uniform yellow; no green or shabby patches, which mar the appearance of other so-called Golden Conifers. The Golden Lawson Cypress is one of the "good things" among trees, and, like many other good things, should not be abused. A few in a place would heighten the effect of other trees. Many scattered about indiscriminately would give to any place a jaundiced aspect. The great value of the Golden Cypress is that it retains its yellow hue throughout the year, and is unaffected by the winter's frosts or midsummer's suns, and everybody knows what a capital tree this Cypress is in almost any soil or aspect.—W. G.

SHORT NOTE.—TREES AND SHRUBS.

Magnolia Halleana.—This *Magnolia*, which has attracted so much attention of late, opened the first bloom to-day (February 25) under glass, and a succession is likely to be maintained for some little time. In the greenhouse

the flowers are safe from inclement weather, which is very liable to injure them, as well as those of the more vigorous, but allied, *Yulan* (*M. conspicua*) when they open outdoors.—H. P.

PROPAGATING.

TREE CARNATIONS.—Where these plants have been kept in a genial temperature throughout the winter for the sake of their flowers, they will now have made a considerable number of young shoots which may be used for propagating. Plants struck thus early in the season have plenty of time to attain a good flowering size before the winter. The cuttings will strike well if kept close in a temperature rather above that in which they have been grown. In taking the cuttings it should be borne in mind that the very stout, succulent shoots do not strike so well as more slender side branches, for the former are liable to decay, and besides, even if rooted, they do not branch out so freely afterwards. The cuttings should be formed entirely of the current season's growth, and must not be too long, as if that is the case they are more difficult to root. A length of about 4 inches is sufficient, and, the bottom leaves having been removed as far as necessary, the cutting is then ready for insertion. A very convenient sized pot for this purpose is one about 4 inches in diameter, and this should be drained with broken crocks to about one-third of its depth, and the remainder made up of soil with a layer of silver sand on top. In a compost consisting of loam, leaf mould, and silver sand, in equal parts, they root readily, and when potted off generally carry a good cluster of healthy fibres. The soil in the pots should be pressed down moderately firm, and in inserting the cuttings care should be taken that the whole of the underground portion is in immediate contact with the soil, and no open space allowed to exist at the base, for if such is the case the cutting is very liable to shrivel up and perish. One of the most common errors a novice at propagating commits is to insert the cutting in such a way that the soil does not close up around the underground portion, and consequently the air has access to the base thereof, and especially in the case of delicate subjects is very liable to cause them to perish. The better way to put in a cutting so that such a mistake will not occur is to make the hole just as deep as required (which, rather difficult at first, becomes easy with practice); then place the cutting in position and insert the dibber perpendicularly in the soil at about half an inch from the cutting. If the dibber is pushed down as far as the buried portion of the stem and then slightly pressed towards it, the entire hollow will be completely filled up. The Carnation cuttings, after they are inserted in the pots, must have a good watering, when, if they are placed in a close propagating case or kept in some way to prevent too rapid evaporation, they soon root. One caution to be observed is that the cuttings are quite free from aphides, which greatly injure the young shoots, and care must also be taken that they are not allowed to remain in the close atmosphere of the propagating case longer than is necessary, as they then soon become weak. To obviate this as far as possible the young plants must be kept close to the glass during their earlier stages.

RHODODENDRONS of the hardy kinds are usually grafted on seedling stocks of the common *Rhododendron ponticum*, and the present season is the best for the purpose. The stocks are potted up in the autumn, and sheltered in a cold frame or in some rather favoured spot; then, two or three weeks before they are required are placed in a gentle heat, in order to incite a more rapid circulation of the sap. Various methods of grafting may be employed, but that most commonly used is known as saddle grafting, in which the stock is fashioned in the shape of a wedge, and the scion having had a corresponding piece removed is put in position and tied securely in its place. The grafts are formed of the preceding season's growth, and the bark of the stock should be as near as possible in the same condition as that of the scion. In grafting, the chief point is to fit the two portions as closely together as possible. If they are then placed in a close case under glass, kept at the temperature of 50° to 55°, no clay or grafting wax is necessary, and in six weeks or thereabouts, many of them can be re-

moved from their confined quarters. This should be done very gradually, and at the same time it must be borne in mind that all are not ready at once; consequently before any air is given, the plants should be gone over, and those that are undoubtedly united remove to one case, while the doubtful ones are placed in another. The change to more airy quarters must be gradually effected, and in time the plants can be removed to a cold frame. A point of great importance with nearly all plants confined in close cases is, that the lights should be taken off for an hour or so every morning, otherwise the air of the case becomes so much saturated with moisture that decay is often apt to set in. Though enormous quantities of *Rhododendrons* are raised in this way by nurserymen, but few others attempt the operation, as considerable appliances are needed, and the room in the propagating department is in most gardens very much occupied at the present time. Where large plants exist in the shape of bushes, not standards, a limited number may be obtained without the intervention of frames or glass houses. This may be done by layering some of the branches that are most conveniently situated and likely to form good plants, at the same time keeping an eye on the future appearance of the specimen. The portion of the branch that is to be buried in the soil must be partially cut through on its underside, the knife brought up for 2 inches or 3 inches, thus leaving a tongue of that length. The cut part of the branch must be covered with soil to a depth of from 4 inches to 6 inches, and held in position by a stout peg or pegs. The fact of bending down the branch will, owing to the cut being on the under-surface, cause the wound to partially open, and this becoming filled with soil will greatly accelerate the formation of roots. It will be necessary to leave them undisturbed for at least two years before separating them from the parent plant, as if severed before they are sufficiently rooted, failure often results. Seeds are available for the increase of most *Rhododendrons*, but in the case of the many hybrid varieties they cannot, of course, be depended upon to produce any particular kind, though, at the same time, all are beautiful. The seed may be sown either when ripe, or, if more convenient, kept in a dry place till the following spring. A good way to raise seedlings is to place some drainage material in a cold frame, then over this is put a layer, some 5 inches or 6 inches deep, of sandy peat, pressed firmly and finished off with a perfectly level surface. A good watering should then be given through a fine rose, and on the damp surface the seed must be thinly sprinkled. It may then be covered very thinly with the same compost sifted fine. All the attention now necessary will be to keep the soil fairly moist and to shade from the sun. When the young plants are large enough, they can be pricked off under the same conditions, and so treated will grow away without check.

PELARGONIUMS, that is to say, those of the zonal, nosegay, and variegated-leaved sections which in some places are so much used for hedging out during the summer months, can be readily propagated now, and if struck thus early will grow into good-sized plants by hedging-out time. This method of increase is very valuable where the autumn stock of cuttings was of limited extent, and also to replenish any losses sustained during the winter. The most successful way is to keep the autumn-struck plants rather warmer for a week or two, when they will push forth new growth quickly, which can be taken off as cuttings, and the fact of the tops being removed will cause the old plants to break out into two or more shoots and thus improve their appearance. These remarks apply more particularly where autumn-struck cuttings are the only available source for propagating from, but where large plants are available, these, if encouraged with a little heat, will yield a good crop of cuttings. A shelf near the glass in a warm structure is the most suitable spot for the cuttings, which, if short, need not have any of their bottom leaves taken off, for in very young cuttings the cut portion of the leaf is apt to decay, but if allowed to remain entire it dries up and may then be removed. Any light compost will do for this purpose, as the cuttings root in a few days, and if potted off quickly establish themselves. This mode is especially useful in the case of the tricolor-leaved kinds, for when required in quantity, however careful one may be, some varieties

are apt to dwindle should the weather be severe, and in that case those that are required can be encouraged to grow early, and thus yield a crop of cuttings. In the case more particularly of the delicate kinds, the small leafy scales that are produced on the stem had better be removed before insertion, as if the atmosphere of the house is in any way moist they sometimes rot and form a seat of decay which spreads to the cutting. These Pelargoniums, unlike most other plants, strike best when in a position fully exposed to the sun. T.

Propagation by roots.—Propagation by roots is a simple and valuable means whereby many hardy plants and also some sub-tropical plants, such as *Aralia papyrifera*, *Wigandia caracasana*, may be propagated for bedding purposes. The best roots for the purpose are those of medium size, neither too strong nor too weak, and care must be taken that they are not of a woody character, otherwise they will be useless. The roots having been selected, procure a few shallow pans, well drained, and fill them nearly full with light sandy soil. Cut the roots in pieces about an inch long, and lay them on the surface of the soil. Cover them with a thin layer of sand, and then fill the pan up with light soil. Some surface the pans with sand, but soil is preferable, because sand drying so quickly is apt to mislead as to the condition of the soil beneath. Place the pans in a propagating pit, but great care is necessary in watering, especially when growth commences, or the young plants will rot off. When root-action has freely started, the young plants can be potted. *Aralia papyrifera* is an effective plant either in pots or bedded out. When lifting plants that have been planted out, plenty of roots are obtainable. I have raised as many as 100 plants from two small pans of these root-cuttings. They were inserted in autumn, and made nice plants the following season. *Bouvardias* used to be propagated in this way, but young growing shoots are now generally adopted. Roots will also answer in the case of *Pelargoniums*, especially the fleshy-rooted Cape varieties. *Senecio pulcher* is a very good hardy plant, and not readily propagated except by division, which is a slow process, yet the fleshy roots, if treated as described, will soon yield a number of plants. By way of experiment, I tried *Nicotiana affinis*, and my bits of roots soon became strong plants. This can be raised easily from seed, but the above-named fact is worth knowing, for if we should happen to have a bad season and not be able to depend on the seed, we have only to pull up the old plants and cut off the roots to get our young stock. Doubtless there are many more plants that may be propagated from roots. The important point is to secure roots of sufficient firmness without being too woody.—A. HERRINGTON.

GARDEN DESTROYERS.

G. S. SAUNDERS.

THE MULLEIN MOTH.

(*CUCULLIA VERBASCI*.)

THE *Verbascum*, or Mulleins, are deservedly favourites in many gardens, as they are exceedingly handsome plants, and deserve to be more often grown than they are, as at the back of mixed borders and in the wild garden they are very effective. A figure of a very fine species, *V. olympicum*, was given in THE GARDEN of 5th February. One drawback, however, to the cultivation of these plants is that they are so often disfigured by the attacks of the caterpillars of the Mullein moth, which not only eat the leaves, but are also very partial to the flowers. The caterpillars are such handsome creatures, that it is a great pity that they have to be classed among the gardener's foes; but it cannot be helped, for they certainly are very destructive; and though I would rather not have mentioned them on account of their beauty, I feel obliged to do so. The moths are by no means remarkable in appearance, and may be found from April until the beginning of June. The caterpillars, which are of a pale greenish colour, strikingly marked with yellow stripes and black spots, may be

found in June and July. They may easily be removed from the plants by hand-picking, as they do not cling to them so tenaciously as some caterpillars do. There is no other way of effectually getting rid of them. If the plants are carefully examined early in June and again later on, the caterpillars may be destroyed when quite young and before they have done much mischief; and though they will be more difficult to find than if looked for when they have grown larger, the trouble is worth taking, as a plant when once freed from them is not likely to be again attacked. Sometimes these caterpillars, like those of various other moths, are found in unusual profusion. They are said to have been found, during the summers of 1858, 1859, and 1860, in extraordinary numbers on Branton Burrows, in Devonshire, where every plant of *Verbascum Thapsus* was covered with them, and that in July ten or twenty thousand might easily have been collected, varying in size from full-grown specimens to those only just hatched.

THE MOTHS may, of course, be caught in the evening in a butterfly net, but unless a person is



Mullein moth and caterpillar. The caterpillar is copied from Kirby's "European Butterflies and Moths."

well practised in the uses of such an implement and knows the moth well by sight, it is not worth while to try and destroy this insect by this means, as probably very few would be caught in the course of several evenings. The moth is about three-quarters of an inch in length, and measures an inch and three-quarters across the wings when fully extended, the thorax and body of a brownish yellow colour; the former is densely covered with hairs, which form a kind of hood in front, and behind the hood a pair of epaulettes; down the middle is a row of very dark brown tufts; the first four joints of the body have each a dark brown tuft on them, and the three last joints are darker than the others, and are of greyish brown colour. The fore wings are of a pale reddish brown-colour, the front and inner margins being of a rich chestnut brown colour; about the middle of the inner margin is a wavy, nearly white, transverse line; the ends of the wings are deeply notched; just inside the indentation is a fine white line. The hind wings are greyish brown, gradually darkening towards the edges, which are fringed, but the fringe is much paler.

THE CATERPILLARS when fully grown are about 2 inches long; they are provided with eight pairs of legs; these are placed one on each of the first three, the sixth, seventh, eighth, ninth, and last joints. The caterpillars are of a greenish white colour; each joint has a bright yellow band extending from one side across the back to the other; in this stripe are a number of black spots, many of which bear hairs; two are placed on either side of the middle of the back; below these on each side are several others, the face is yellowish with blue spots.

When fully fed the caterpillar buries itself in the ground, and forming a cocoon round itself, becomes a chrysalis, in which state the insect remains until the following April or May, when the moth emerges.

ORCHIDS.

W. H. GOWER.

THE AERIDES.

THESE are natives of India and the Indian Islands, with but a single exception, viz., *A. japonica*, which comes from Japan. The genus contains numerous species and varieties, some of the finest being of comparatively recent introduction, and the majority of them are remarkable for their large, graceful trusses of showy flowers, many of which possess a delicate and grateful perfume. *Aerides* are, however, not wholly dependent upon their blooms for their beauty, as their erect habit of growth, and their graceful two-ranked rich green foliage render them quite as effective as many of the so-called ornamental-leaved plants, which have nothing else but leaf beauty to recommend them. The *Aerides* grow naturally upon branches of trees; hence the name Air plants. They cling by their roots, which they spread out into the air, and thereby absorb moisture on which they depend for sustenance. As, however, under glass a sufficiently moisture-laden atmosphere cannot be provided, pot culture has to be resorted to. The following will be found to be a good and well varied selection from the numerous species and varieties now in cultivation, all of which possess beauty of a different character from that of Orchids from the western hemisphere. *A. odoratum* is one of the earliest Orchids introduced to this country in a living state. It was brought from China in 1800; hence it was called a Chinese plant, but we have never heard of its being found in that country by recent travellers. It is a free-growing species, bearing flaccid, strap-shaped leaves, leathery in texture, and pale green. The racemes of bloom proceed, as they do in the case of all *Aerides*, from the axils of the leaves. In the typical form the racemes are short, but in the variety called *majus* they are long, drooping, and many-flowered; the sepals and petals, which are creamy white, are of a wax-like texture, more or less broadly tipped with pink; the lip, which is pink in front, is bent up to and pressed against the column; the side lobes are erect, and there is a long incurved spur. The flowers of this species have a delicious honey-like fragrance, and usually are in perfection from May till July; the variety *purpurascens*, which flowers about the same time, is a more robust grower, and has broader, dark green leaves. Its racemes of bloom are more dense than in the type, through the individual flowers being larger, and the colour is more intense. *A. quinquevulnerum* is a somewhat slow-growing plant. It bears long, strap-shaped, leathery, bright green leaves, which tightly clasp the stem at the base. The flowers, which appear at the end of summer, are deliciously sweet scented, and produced in long,

dense, pendulous racemes; they resemble those of *A. odoratum* in shape and texture; they are, however, larger; the sepals and petals are tipped with rosy purple, and freckled with dots of the same colour; the middle lobe of the lip is rich crimson, the erect side lobes pink, and the spur green. *A. nobile*, which usually flowers in July and August, has about the same habit of growth as that of *A. odoratum*, but its leaves are longer, and it is less branched than that species. The racemes of bloom, which are pendulous, are branched, upwards of 2 feet in length, many-flowered, and very fragrant. The sepals and petals are white, suffused with rose; the side lobes of the lip are large and creamy yellow; the middle lobe being white, freckled with rosy purple; the spur is pale yellow, and is furnished with a few red dots. *A. virens* is a spring bloomer, producing its long pendent racemes sometimes early in April, but oftener towards the end of that month and in the beginning of May. The flowers, which are creamy white, are suffused with a delicate shade of peach, and dotted with purple; the lip is dotted with crimson, and the spur, which is green, is curved upwards. *A. Lawrenceae* blooms during October, November, and December. It is by far the grandest of the section to which it belongs. The first plant of it introduced to this country flowered, for the first time, a little more than three years ago, and its beauty was so remarkable that when offered for sale by auction it realised the large sum of 235 guineas! Its habit, which is bold, is somewhat like that of *quinquevulnerum*, especially in its leaves, which closely clasp the stem at the base. Its racemes of bloom, which are drooping, are densely set with flowers for upwards of 1 foot in length, and very fragrant; the sepals and petals, which are broad, are creamy white, broadly tipped with purple; the side lobes of the lip have the appearance of being puffed out, are erect, and creamy yellow, the middle lobe being fringed and stained with purple. The spur is very large and green. *A. suavissimum* is a variable plant, and produces its fragrant flowers during the autumn months. Its racemes are long and drooping; the sepals and petals, which are white or bluish, are tipped with rose, and the middle lobe of the lip and the spur are soft pale yellow, the latter being rose-coloured at the point. In the above-named species the lip is funnel-shaped and pressed against the column, and all belong to the *A. odoratum* type.

In the following the middle lobe of the lip is flat and spreading. Of this section *A. crispum* may be taken as the type. In this species the leaves are broad and deep green, their sheathing bases being almost black or blackish purple. The flowers, which are produced during June and July, are sweetly scented; the sepals and petals are white; the lip deep rosy pink and fringed. In the variety *Lindleyanum* the flowers are produced in branched panicles; whilst the form known as *Warneri* is much more slender in growth, and the leaves are erect rather than horizontal. Its flowers, which are produced freely during the summer months, are white, with the exception of the lip, which is deep rose. *A. Houletianum*, a rare and beautiful plant, blooms in spring in the shape of a many-flowered, pendulous raceme. The sepals and petals are canary-yellow, and the lip creamy white, stained in front with magenta. *A. japonicum*, which was first introduced into this country about twenty-five years ago, is a dwarf, slow-growing species with short, broad deep green leaves; the racemes, which are drooping, each bear from six to eight or more flowers during the summer months; the sepals and petals are white, the lower sepals being transversely streaked with brown lines.

The front lobe of the lip is spoon-shaped, white, variously blotched and dotted with rosy violet. *A. Fieldingi* is popularly known as the Foxbrush *Aerides*, on account of its racemes of bloom being long and dense. In habit the plant may be said to be handsome, and in some of the varieties the base of the leaves, which clasp the stem, are purplish black. The racemes of bloom are occasionally upwards of 2 feet in length and sometimes branched, and the flowers, which are large, are bright rose, but whitish towards the base, where they are dotted with rose; the lip, which is ovate and tapering to a point, is bright rose; the column is curiously beaked, and bears a striking resemblance to a young pigeon. *A. falcatum* is a very distinct kind, owing to its peculiar blue-green foliage; the racemes, which are pendulous, are many-flowered, and produced during summer; the sepals and petals are white, freckled with crimson at the tips; the lip, which is large, is crimson in the middle and white in front, faintly barred with rose. *A. affine*, a graceful plant, produces during May and June somewhat erect, densely-flowered spikes of pink and white flowers, spotted with rose. In the variety named *roseum* the racemes are much branched, and the flowers deep rose, profusely spotted with purple. *A. Veitchi* strongly resembles *affine* in habit. Its racemes are very long, much branched and drooping; the flowers are not large, but closely set on the racemes. The ground colour is white, suffused with rose, and dotted with rosy pink. It blooms in July. *A. Lobbi* belongs to the *affine* section, but may be easily distinguished from that species by its broader and closer set leaves, which, moreover, are dotted with dull purple. It produces branching racemes nearly 2 feet in length, densely covered with flowers, which are white, more or less heavily suffused with bright rose, and the lip is violet. It is a summer bloomer. *A. crassifolium* flowers in spring and early summer, and is a Burmese plant of great beauty, but slow in growth; its racemes, which are, as a rule, about double the length of the leaves, bear numerous large flowers, which yield a very grateful perfume; the sepals and petals are purplish rose, and the lip is rich amethyst-purple. *A. Schroederi*, which was introduced into this country from Bombay some years ago, is supposed to be a natural hybrid between *A. crispum* and *A. maculosum*; one plant only of it has as yet been introduced, and it was bought by a Mr. J. H. Schroeder, of Stratford Green, after whom it has been named. In habit it somewhat resembles *crispum*, but the leaves are longer and not so horizontal; the flower-spikes are semi-erect, much branched, and bear numbers of large, handsome flowers, the sepals and petals of which are white, tinged with lilac, and dotted with rose towards the tips; the lip, which is large, is rosy magenta in front, and the spur yellowish green. It blooms during June and July.

The smaller-growing *Aerides* may be managed successfully in baskets suspended from the roof, but we prefer pots for the others. Large pots should not, however, be used; in fact, the majority of Orchids appear to do best in shallow ones. It is now more than twenty years ago since we commenced to use shallow pots for these plants; the special advantages claimed for them were reduction in the quantity of charcoal, potsherds, and other drainage material used; lightness, enabling them to be more easily removed from place to place; and an improvement as regards the general appearance of the collection through half the red pot-surface being removed. These shallow pots, however, did not find favour at that time, but we see lately that they are coming into use again. *Aerides* require more heat all the year round than *Odontoglossums*,

Masdevallias, and other plants that are grown at greater elevations in the western mountains, yet they do not need the enormous amount of heat and moisture that was at one time considered to be necessary for them. The majority of East Indian Orchids, and *Aerides* in particular, thrive well during winter in a temperature of from 60° to 65°, and during summer from 70° to 75°. This will naturally rise higher with sun heat, but that does not matter provided there is an abundant supply of air; at the same time the atmosphere must be sufficiently moist to prevent the hot air from injuring the roots. Pots for *Aerides* should be well drained, and the best material for holding the plants in position is sweet and living Sphagnum Moss. During the growing season—spring and summer—an abundant supply of water is necessary for their full development, but after that time they require rest. In a natural state this is oftentimes a severe trial in the case of these plants. Under cultivation our experience goes to prove that good results may be obtained by reducing the temperature and judiciously withholding water so that the plants may have entire rest, but the leaves should not be allowed to shrivel. As spring returns a gradual rise in the temperature and a corresponding increase in the way of water will start the plants into fresh growth and flower, and when this is attained, carefully avoid wetting the blooms, for upon this depends whether they remain in perfection for a long or short period, and at all times of the year a sufficient command of the temperature should be kept to allow of air being freely admitted. An exception to the rules just laid down for temperature must be made as regards the species from Japan (*A. japonicum*), which we have found to grow and bloom well in the *Odontoglossum* house suspended near the glass.

Odontoglossum Ruckerianum.—This fine Orchid is figured and described in Veitch's "Manual of Orchidaceous Plants." It is now in flower with Mr. Pollett, at Bickley. One plant has produced two spikes from the same bulb, and on the two spikes there are thirty-three flowers. Mr. Pollett also possesses a fine form which has been named *O. Ruckerianum insigne*. There are several varieties, varying but slightly from the form that first flowered in Mr. S. Rucker's garden at Wandsworth. The flowers open with a yellow ground, subsequently changing to creamy white.—J. D.

Odontoglossums.—"C. A. B." (p. 199) does not state what kind of *Odontoglossums* he has attempted to grow; but if they were *O. Alexandro*, his mistake arose in shifting them into the stove. He will find them to do well in a cool house, where the temperature ranges about 50° through the winter. The best compost for them is peat and live Sphagnum, giving them well-drained pots and avoiding overpotting. I would also advise him not to plunge them; they are great lovers of fresh air, and should have copious supplies at all times, but be careful to avoid draughts, and let the air circulate freely round about the plants, and also avoid a dry atmosphere. It is impossible to say anything about the *Cattleyas*, unless something more is known about the treatment they have had.—G. H.

SHORT NOTES.—ORCHIDS.

Odontoglossum Uro-Skinneri.—This is now in flower in Messrs. Veitch's nursery. The lip is blue, slightly shaded, and the petals and sepals pale green, with distinct brown markings. The great peculiarity of this variety is the long time during which it continues to bloom, it having been known to be in flower for six months.

Odontoglossum Wilckeanum is now producing a handsome branched flower-spoke with thirty-five flowers on it in Mr. Pollett's collection. This is most probably a hybrid between *O. crispum* and *O. luteo-purpureum*. The sepals and petals are sulphur-yellow, blotched and spotted with reddish brown.—J. D.

Dendrobium Wardianum.—The variety of this fine species called *giganteum* is much superior to the typical

form; its growths are very stout, and often reach 4 feet or more in length. The flowers are also larger, and more fleshy in substance than those of the old variety; the sepals and petals are waxy-white, broadly tipped with magenta; the lip is of the same colour, but stained at the base with orange, and blotched at each side with velvety crimson. Hundreds of plants of this *Dendrobie* are just now opening their flowers at Mr. Low's nursery at Clapton.

Cypripedium villosum aureum.—This distinct and pretty variety is now in flower in Mr. Measures's collection at The Woodlands, Streatham. Its blooms, which are large, are wholly of a clear, soft canary colour, with the exception of the upper portions of the petals, which are chestnut. Its beauty is enhanced by the polished or varnished appearance which is characteristic of the flowers of the typical plant.

Scuticaria Steeli.—This singular Orchid has been in flower for the past fortnight in the Orchid house at Kew. It has several rhizomes, which are conspicuously marked with membranous rings at short intervals. From the tips of the rhizomes arise the long whip-like leaves peculiar to this plant. In this particular case they have attained a length of about $4\frac{1}{2}$ feet. They are about as thick as a good-sized goose-quill, round, and channelled on one side. The scape bears a single flower, the sepals and petals of which are of a pale yellow colour, copiously dotted with chocolate. The large tri-lobed lip is creamy white, the front being beautifully striped with violet, while its base is ornamented with a bright yellow crest. This *Scuticaria* is a native of British Guiana, where it grows plentifully in some districts. *S. Hadweni* is the only other species at present known belonging to this genus, and it may be distinguished from *S. Steeli* by its shorter leaves and brighter flowers.—A. Z.

FERNS.

W. H. COWER.

SELECT VARIETIES OF PTERIS.

THIS genus, according to old authors, originally contained a vast number of species, many of which, however, after careful examination have been removed to other genera, whilst not a few have been found to differ only in name. The majority of Pterises are tall-growing plants, their fronds when fertile being ornamented with marginal lines of brown sori. Many Pterises are coarse and common in appearance, but some, such as *P. cretica*, *tremula*, *argyrea*, and *serrulata*, are largely grown to supply the London markets, a sure indication of their popularity. The few species enumerated here will be found well deserving the attention of Fern-lovers. *P. heterophylla* is an elegant little stove Fern from Jamaica, which seldom exceeds 6 inches in height, and when bearing its sterile and fertile fronds together it is not, at the first glance, so very unlike robust examples of the Parsley Fern (*Allosorus crispus*). The fronds, which are ovate, are usually twice-divided, and the small segments are stalked, mostly opposite, smooth, and pale green, those on the sterile fronds being serrate at the edges. In addition to this small form, however, we have a plant of the same Fern from Jamaica, in which the sterile fronds are nearly 10 inches high, and the fertile ones 14 inches. This form is very handsome, not at all delicate, and, if properly cared for, it may be grown in a Wardian case. *P. Kingiana*, from Norfolk Island, a noble Fern, assumes a beautiful appearance in about a couple of years if planted out in the rock garden. It must, however, have a cool position, as too much heat speedily disfigures it. It has a creeping root-stock and bears broad fronds some 3 feet or more in height; these are bipinnate, the ultimate segments being large and vivid green; the sori, which only extend about a third of the pinnule, are bright brown and very conspicuous. *P. crenata* is another slender and distinct plant well adapted for Wardian-case culture. It has smooth, twice-divided fronds some 12 inches or 18 inches high; the pinnules, which are narrow linear, are acuminate in shape, deep rich green,

and heavily bordered on the under margins with bright brown sori.

P. arguta, from Madeira and the Canary Islands, thrives admirably in a cool house, and with a little care always produces a cheerful and pleasing effect; the fronds, which are massive, are from 3 feet to 5 feet in height, deltoid in outline, and about three-times divided, the last divisions being large and decurrent. *P. tricolor*, a supposed variety of *aspericaulis*, is one of the most beautiful of coloured-leaved Ferns. It is a native of Malacca, and requires stove treatment, but even then it is not the easiest of Ferns to maintain in vigorous health; we have found it to thrive best when kept in small pots and somewhat root-bound. It enjoys strong heat and moisture and exposure to bright light, though not to full sunshine; the fronds in vigorous plants grow about 2 feet high, but they are often not half that height. They bear about two pairs of pinnæ and a terminal one, all of which are deeply divided or lobed; the fronds when first expanded are bright rose, and have a central stripe of white. These colours they retain for a few days, when the rose gradually changes to deep reddish brown, and eventually bright green, the central white band being retained. *P. cretica albo-lineata* is another variegated Fern, which in general outline resembles the type. In the sterile fronds the pinnæ, which are deep green, are furnished with a broad central band of silvery white; the fertile fronds differ from the others in having the segments long and linear with smooth edges, the others being toothed. This variety came originally from Java, and was at first supposed to be a stove plant, but soon after its introduction it was found to be very common in Japan, where there is little doubt the Dutch obtained it and sent it to their garden in Java. It makes a handsome window plant, has a fine effect when planted out in a cool fernery, and may be used with advantage in a Wardian case. Another variegated Fern is the variety of *P. quadriaurita*, called *argyrea*, a kind which produces a striking effect when planted out in a fernery raised a little above the common level. Its fronds are from 2 feet to 4 feet in length, and from 1 foot to 2 feet in breadth, all the segments being lengthened out into narrow tail-like points. In colour it is a brilliant green, and it has a very broad central stripe of silvery white on each segment. It is of robust and vigorous growth and largely in demand in all the flower-markets. It comes from the hilly parts of Madras. *P. sulcata*, a tall, handsome plant, produces fronds about 3 feet high and bears some ten or twelve pairs of pinnæ and a terminal one; these divisions are again deeply divided or lobed, the lower ones having each a pair of smaller pinnæ on the outer edge (bipartite); the colour is brilliant deep green. It comes from Jamaica. *P. scaberula* is a spreading, low-growing Fern, from the creeping rhizomes of which ascend a profusion of fronds, which are somewhat triangular in outline, from 12 inches to 15 inches long, and many times divided; the segments, which are narrow linear, are rigid in texture and bright green. In this country it seldom bears fruitful fronds, but in its native home it appears to seed freely, the sori being bright reddish brown. It comes from New Zealand, and is almost hardy; it looks well on a projecting boulder in a cool house, and it also thrives admirably in a Wardian case. In *P. semi-pinnata* we have not only a beautiful, but a singular plant, the fronds of which are erect, borne upon black foot-stalks, and usually about 2 feet in height. They are pinnate and rich green, the pinnæ being lobed, or again divided, on the lower side only (semi-pinnate). It is a native of the Philippine Islands and requires

stove heat. *P. aspericaulis* is a compact-growing stove Fern, the fronds of which are pinnate and from 12 inches to 18 inches high; the footstalks, which are red and rough, bear about three pairs of deeply lobed, bright green pinnæ, the lower pair being again divided on the lower edge (bipartite).

Pterises are for the most part easily cultivated; the soil for strong-growing kinds should consist of equal parts peat and loam, with an admixture of sharp sand; the smaller kinds thrive best in a lighter compost. Like all Ferns they enjoy copious supplies of water, to which may occasionally be added a little soot, which tends to intensify the rich colours of their fronds.

SHORT NOTES—FERNS.

Nephrolepis rufescens tripinnatifida.—This variety, which is tall and vigorous in growth, has fronds from $1\frac{1}{2}$ feet to 2 feet long, the pinnæ of which are very much cut. When seen in a mass it has a light and elegant appearance, and in a small stove ought to commend itself to market growers. As a basket Fern it is also very useful. A first-class certificate was awarded it when shown 1st year at the Live pool Exhibition.

Making albums for Ferns.—Having made several handsome Fern albums, I can answer "F. C." Any good-sized album with white paper will do. The Ferns should be picked when the fronds are well grown, placed between blotting paper under a weight for some days, and starch is the best thing for pasting them into the album. Moulding is difficult to make adhere, and can be done best by rubbing with a small brush the starch first on the paper.—MAY BLOSSOM

A note from Mr. Gilbert.—I am waiting to show round the Earl and Countess of Rosslyn, and I cannot employ my time better than in giving you a bit of my mind. In the first place, you tell the public I should raise young seedling Apples, and get varieties to match the American. You do not say as much, but I read between the lines that you mean as much. Let me tell you I have been raising Apples for twenty years, but, unfortunately, have not yet got a good one. At the Great Apple show I picked out two varieties out of \$000 dishes which I thought the best, ordered the trees (eight) at 7s. 6d. each, but these were reported sold! I write to let you see I am preaching progress. I will send you a dozen seedlings by post. Now, I hope in the next issue of THE GARDEN that you will put me on my merits. Do not let it be said I raise Cabbages alone. If you could only see my houseful of Harbinger Primroses you would say and think differently. Next week I am going in for Peaches outside that nobody appears to grow. Depend upon it this is a matter of over-building Peach houses, exactly the same as in the case of Melons. Nobody can grow Melons now in frame frames, because they have houses!

* * An interesting and suggestive note, as most of Mr. Gilbert's are. We are glad to hear of all his doings. Peaches out of doors and Melons in frames are, we hope, not to disappear from our gardens, of which they were once the pride. The last time we were at Burchley we saw good Peaches on walls there. The place is not nearly so favourable for that fruit as many districts in the south and west of England.—ED.

Peat Moss litter as manure.—Perhaps some of the numerous readers of THE GARDEN will be kind enough to give me, through its columns, the benefit of their experience as to the use of farmyard manure in which one of the component parts is peat Moss litter instead of straw. I am told that it will not do for plants that are liable to be injured by cold, as the peat will attract the frost. The litter, I think, ought to make superior manure to straw, as being extremely porous, it absorbs all the liquid, which usually runs away. It also has the advantage of being cheaper than straw.—F. R. II. S.

Names of plants.—H. A. W., *Sagolla*.—*Cypella carulea*.—L. N., *Rhyn.*—1, *Phalenopsis Schilleriana*; 2, *Vanda tricolor insignis*; 3, specimen withered; 4, *Bromelia*.—H. B., *Chipping Norton*.—*Dendrobium chrysanthum*.—*Andromeda*.—Apparently a *Sisyrinchium*; specimens too much shrivelled to identify.—L. G.—Violets are usually bunched in dozens, i.e., a dozen flowers in the single bunch, and a dozen single bunches in the market bunch.—E. Brownhill, *Acaena pubescens*; it is a small flowered species; Messrs. Low, of Clapton, will no doubt be able to supply it; others next week.

WOODS & FORESTS.

"YORKSHIREMAN."

FORESTRY NOTES.

THE CHARCOAL TRADE.—I see a correspondent inquiring about the disposal of his timber for making charcoal. I fear he will have little chance to sell it for that purpose if he is far from manufacturing towns. In the steel and iron trades a large quantity is used, but, owing to the depression of trade these last few years, the demand has fallen off to such an extent, that foresters find it difficult to dispose of cordwood to charcoal-burners except at very low prices, and the timber must be near the towns to reduce the price of carriage. Vendors of timber who are unfavourably situated in these respects will therefore find it difficult to trade on any terms. Some years back, in the iron manufacturing districts, vast quantities of charcoal were consumed, and it then paid to cut and rank cordwood and sell it by auction or tender, in woods not too distant, but now it is not considered worth while to cut and rank it, and in some instances it has been almost given away to burners, just to get the ground cleared. Oak and other hardwoods are preferred for charcoal. For all that it fetches at any time, I doubt if it be worth while allowing the cordwood to be removed from the wood. The removal of the timber must impoverish the soil very seriously, and the tops might well be left to till the ground. The manuring of woodlands is a subject that has never given foresters much, if any, concern, but no one can deny the impoverishing effects of reaping repeated crops of heavy timber from the soil generation after generation. There are woods in England from which crops of timber have been taken regularly for long periods, and in some cases the impoverishment of the soil is visible in the poor condition of the young plantations, that have been put back in their places without any addition to the ground in the shape of manure. I daresay the manuring of woods is practically out of the question in the ordinary sense of the word, although the beneficial effects of top-dressings to the roots of timber trees is well known to gardeners; but still there is no need to aggravate matters in plantations by the removal of tops and branches, which should be left except where they have to be removed for special reasons, such as the attacks of insect pests and diseases.

BOLE & TOPWOOD.—The conditions that produce these separate portions of a tree are quite different, and an intelligent appreciation of this fact lies at the bottom of the successful culture of trees for timber. Comparatively, the branching top of a tree is worthless, and if this had been realised in times past, our hedgerows would not have been encumbered with trees, to the detriment of both the landlord and the tenant. No doubt it was ignorance of vegetable physiology and arboriculture generally that caused our forefathers to plant and preserve so many hedgerow trees, in the conviction that they were thereby "killing two dogs with one stone," by getting a crop of timber and a farm crop off the ground at the same time. On many estates great care was taken of the hedgerow timber. Where the fields are large they do not do quite so much harm, but where the farms and the fields are small, they are positively destructive to good farming of any kind. Under any circumstances, the trees themselves never produce either as useful timber or as much of it as they would do if planted by themselves on a less piece of land in the form of a plantation. I have calculated from the most reliable data gained on the estate that the whole of our hedgerow timber is not at the present time worth half the same number of good plantation trees of the same age and kind. Nor has it ever been different, while the farm lands have been reduced in value by the presence of the trees and brought less rents than they might have done. In the case of some falls of hedgerow Oak and Ash set out during the past few years and sold standing, the tops were about equal to the trunks in their cubic contents

or more, but where a trunk would perhaps fetch 10s. or 20s., the tops would not realise above a shilling or two. In one case the tops of over 700 trees were sold to a charcoal-burner for £15, on condition that he would clear the ground according to contract and get it off the farms. These tops were rough limbs fit for nothing but cordwood; but had the trees been grown in a plantation they would have had trunks, and been worth perhaps some hundreds of pounds. Do as you will with hedgerow trees, or trees isolated anywhere, they will develop an immense head of far-spreading limbs and a short, rough trunk, and when felled the first count for almost nothing. The Beech affords a fine example of the behaviour of trees under such conditions. I am acquainted with some of the fine park specimens in Scotland that have been so often described and praised for their wonderful dimensions. As timber trees they are the worst examples to be found, having short trunks, the tops of which you can almost touch with your hand, and a whole canopy of limbs and branches fit for nothing much except firewood. We know of other plantation examples with trunks straight and clean, and running up to 60 feet in length, that as timber trees drive the park specimens into insignificance, although perhaps half the age. It is bole or trunk we want in timber trees, and foresters cannot be too strongly impressed with the fact that the conditions that produce useful timber of that kind only exist in plantation culture judiciously managed.

RED OAK.—What causes old Oak timber to become red? All old Oaks do not become red, for we have seen plenty of trees hundreds of years of age that were just the natural colour, while other trees of the same age were as red as mahogany. I saw a tree in a woodyard lately of this colour, sawn up into 4 inch planks for furniture purposes, and which would fetch an exceptional price for doors, wardrobes, wainscoting purposes, and the like. For any purposes requiring strength it is useless, being very tender, though not rotten. There were plenty of old Oak trees in the yard that had been felled because they were dead-old or dead, but this was the only red one in the lot. Brown Oak is much commoner, and trees vary in the shade of colour greatly, but the ordinary colour of Oak timber is a lightish brown.

PINUS PONDEROSA.—This Pine is praised at page 201 for withstanding the "keen searching winds from the Atlantic Ocean," but that is not a very great recommendation, for, as a matter of fact, the Atlantic winds, although boisterous, are neither "keen" nor "searching," and there is no aspect more favourable to the Conifer tribe in this country than the Atlantic seaboard, barring gales that blow the trees down altogether. The fine Conifers at Castle Kennedy, the magnificent Spruce woods in the west of Scotland, and many other examples between the Western Isles and the Land's End all testify to this. Hereabouts, inland, with an eastern exposure subject to really keen searching east winds, compared with which the worst Atlantic winds are "balmy gales," the *Pinus ponderosa* makes just a scarecrow skeleton, and cannot be said to be either useful or ornamental, and I fear it behaves in the same way in many other situations. Some of the other Firs, notably *P. excelsa*, *Laricio*, *austriaca*, the *Deodar*, and others, beat it for bulk of timber and height in the same time. My conviction is that the whole of the Pine and Fir tribe should be divided into two sections, viz., those that prefer a dry keen atmosphere, and those that prefer a damp climate. The first suit our eastern seaboard and high-lying, exposed situations, and the others the moister west coast. If your correspondents would give you a list of the species that thrive best in these situations, I am sure it would be useful.

PROFITS OF UNDERWOOD.—I agree with the remark made last week on this subject, that these are not much, except in a few parts where there is a special demand for underwood, for the demand is by no means general. Underwood is the product of "cultivated" plantations and game-preserving, and would find no place in woods in which

the trees were left to grow as thickly as they should be. I notice that whenever the timber is thick and regular on the ground there is no underwood worth speaking of. It only thrives where the timber is thinner than it should be, and represents poor timber culture. The editor speaks of £5 an acre for underwood; it is long since that amount was got here, or anything like it, and for some years back it has been the custom in setting out timber in our older woods to reserve the underwood.

Preparing ground for planting.—Will you kindly give me your opinion respecting the following matter? My employer has a piece of ground on some property at a distance, on which about forty years ago Scotch Firs were planted. These have reached their best and are now decaying. The soil is black, but not boggy. My employer would like to plant forest trees of some kind again on the same piece. I recommended grubbing up the old trees and trenching the ground; unless this is done it will be useless to plant trees of any kind with any chance of success. But I am told that the price of timber in that part is so very low that the expense of grubbing and trenching is considered too much. Then, I say, if planted with undergrowth, such as Laurel, Rhododendron, &c., these may succeed, but such good results must not be expected as those from properly cleared and worked ground. Do you think any forest trees would succeed planted among the old roots of Scotch Fir? and if so, from what kinds do you think that fairly good results might be expected if planted with undergrowth under the same conditions?—S. N.

* * * We are sure that some of our readers will help "S. N.," but we may say that it is possible to go to too much expense in draining and trenching—that is to say, if the great cost of such labours be considered in relation to the probable result. We have no doubt ourselves that by changing the kind of trees a fair result might be got without any expense of turning over the ground; otherwise, how would all the great woods of the world that have never been drained or trenched exist? By far the most beautiful woods that we have ever seen are those that have never been planted by man. Of course, if people have unlimited means and choose to grub ground at the rate of £15 an acre (which is sometimes more than its freehold value), they are within their rights in doing so. Merely grubbing woodlands 1 foot deep and clearing out the stumps have cost us this year over £14 an acre. If we had trenched the ground the cost would have been much greater. A simpler way must be found for doing the work.—E. H.

Abies polita and brachyphylla.—Of these two Conifers the latter is with us by far the faster in growth, and is likely to be a decided acquisition. A young tree planted in 1883 has done remarkably well, and has made in the four years a growth of 6 feet, and also keeps well furnished as it increases in growth. I shall watch its progress, now that it is thoroughly established, with considerable interest, as, judging from last year, it should make a yearly growth of from 18 inches to 2 feet, and if it will do this it will soon develop into a good specimen. Our tree is in a very light loam, with a rather damp subsoil, and enjoys a warm and well sheltered situation. *Polita* does not make anything like this annual growth, but will doubtless make in time a handsome tree. It is very dense in habit, and even more stiff and formal than *Pinsapo*.

Steaming timber.—Careful observation of the quality of timber before and after steaming, and also after bending, reveals the fact that a change in the nature of the wood takes place. For instance, take a piece of green timber and you will find it will split much easier than when dry; you will also find that you can saw it as easy again green than when dry, and the former will warp much more than the latter. By the process of natural drying the sap stays in the timber, and the drier the wood gets the harder it becomes. Many concede that when green timber is steamed it loses much of its strength, but that when steamed and bent partially dry it is much stiffer than

green bent timber. We do not know for certain the quality of the timber in this case, but experience teaches us that thoroughly drying, after steaming and bending, renders it exceedingly hard. As an instance, bent-back corner pillars, when thoroughly dried, are very hard, much more so than they would have been if the wood had not been steamed. This same fact we have observed in rims. One feature with wood naturally dried is that it is less liable to warp or twist than when steamed; we do not refer to bent pieces, as all know that they will twist in all changes of atmosphere; it will warp somewhat, but not as much as the steamed wood. We have had dried Oak timber at least 200 years old taken from the joist of a building, from which we made a straight-edge and square, with the hope of its keeping true, but it warped out of the straight line the same as other dried timber but a few years old.—*American Monthly*.

THE PROFITS OF UNDERWOOD.

A "KENTISH MAN" (p. 201) is a lucky fellow if he can "realise" all of which he writes in his article. Had he put it in the past tense, or dated it ten or more years back, one would not have read with open mouth and envious spirit. If he ever succeeds again in getting £60 for an acre of Chestnut ten years old, we hope he will not keep his good fortune all to himself, but will let us know where it is to be done. The reason of the fall in price for underwood is not hard to understand. For many of the uses to which it was once invariably put it is now no longer required. Long hoops used to be most profitable; now-a-days they come from the iron mines instead of the woodlands, and the dealers are scarcely able to find any sale for them—at least, at a price which will cover expenses. Charcoal does not pay; ditto powder-wood or toywood (before long, even Pea-boughs and Bean sticks will become perhaps things of the past); and in this neighbourhood not only have all the brick-kilns been altered to burn coal, but almost all the cottage grates, too, so that rough fagots are going "for a song." Near the large Hop gardens things may not be so bad; but we have all heard a good deal about foreign Hops and also railway rates, and it does not entail a great mental strain to discover one of the consequences. The chief value of these Kent and Sussex underwoods, which are often so fair to look upon, lies in the employment they afford through the winter months. When the summer and autumn work is over, the men go "into the woods" to work, often with their families as described, and, what is more, when they come out again they always appear more regularly than clockwork even, for that sometimes breaks down, every evening on their way home with a fagot carried perched on a stick over their shoulder—the biggest fagot which they can put together, and the largest and longest stick they can find or carry, so that the wife will have no excuse for not baking at home, provided she has, as most of them do, her own oven. One cannot put forward as a general assertion that underwood is an absolute loss to the landowner, for it may be on poor land for which no tenant could be found who would be at all likely to pay any rent; but for the technical uses to which it was once put, the number of which would astonish many people, they have been superseded largely by the inventions of modern civilisation. There is something primitive in the appearance of a colony of charcoal-burners or hoop-shavers, when one comes upon them unexpectedly encamped round their fire, that cannot fail to strike the attention of anyone not acquainted with their ways, but, like most other things primitively picturesque, they are fewer and farther between than one could wish. The editorial note at the end of the article states that underwoods have been selling as low as £5 per acre. I am sorry to be able to add my testimony of having sold this year good long material nine years old at less than this price; but for all this, I should be sorry to live in any county which had not broad hedgerows and frequent woodlands. C. R. S. D.

Sussex.

Conifers in Ireland.—The notes in THE GARDEN on tree growth and forestry are excellent and very interesting. The only way to ascertain the

trees to plant with success is to note by various correspondents the various circumstances which attend in different situations the same trees. I have planted most of the best introductions of late years. They vary greatly; in one place they do well, in another they fail completely. Many refuse to grow where there is limestone in the soil, others when the prevailing south-west wind straight across Ireland from the Atlantic prevails. *P. ponderosa* has not grown at all; *Laricio* and *Cembra* but indifferently. The Austrian and Maritime always well, as do also the Blue Highland Pine, Spruces, and common Silver. Nordmann's Fir does not like very high winds, and the Spruce is decidedly tender. The Douglas is beautiful where there is no limestone, and so is the *Cupressus macrocarpa* slightly out of the wind. Why is the common Larch of a good variety not more usually planted as an ornamental tree? It is charming in autumn and spring. I have introduced it with great effect, and it minds neither the limestone in my soil nor the great winds which blow over the west and centre of Ireland.—BRINSLEY MARLAY.

TRANSPLANTING TREES AND SHRUBS.

IN order to do this work well one requires an intimate knowledge of the special and distinctive characters of trees and shrubs as regards habit, size, colour, height, &c., and it is necessary, moreover, that soil and situation also be taken into consideration. My purpose now, however, is not so much to describe what should be planted in this or that position as to direct attention to the best methods of doing the work and the proper season at which it should be done. In all kinds of ordinary soils generally the best time for planting is considered to be, for deciduous trees and shrubs, the autumn and early spring months, and for evergreen trees and shrubs autumn, winter, and spring. Summer planting is not carried out to any great extent, neither is it considered judicious. No doubt there are many potent reasons why this should be so. One has an objection to see the pleasure grounds in a state of confusion consequent upon planting operations at that time of the year; there is also the liability of the roots becoming dried in transit, as, for instance, from a nursery, and the risk attendant upon delay, the scarcity of water, &c.; with care, however, these are preventable causes. Let us first consider the question of

SEASON.—I am of opinion that in some soils transplanting may be done successfully throughout the whole year; in others autumn, winter, and spring are the best periods; whilst in the summer months and in certain soils the operation is more successful than at any other season of the year. The soils in which transplanting may be successfully carried on at all times of the year are those which are black, rich, and friable, and rich, deep mellow loams. Those which are preferable for autumn, winter, and spring planting are those which are warm, light, gravelly, sandy and well drained, whilst in heavy, wet clay the maximum of success will be attained in summer. This will, on reflection, I think, appear to be perfectly reasonable and natural, the desideratum being to maintain the roots in a healthy condition, heal up the mutilated parts and induce new growth as soon as possible. The conditions of soil and seasons mentioned above will materially tend to produce such results. The following are the results of experience of planting in various soils and at different periods of the year. Conifers, including *Abies canadensis*, *Douglasi*, *Cedrus Deodara*, *Libani*, *atlantica*, *Cupressus Lawsoniana*, *Picea nobilis*, *Nordmanniana*, *Pinus austriaca*, *sylvestris*, and *Thujas*, in rich black soils and deep, mellow loams.—Summer, 2 per cent. died; autumn, winter, and spring, 1 per cent. died. In sandy, gravelly, and light warm soils.—Summer, 28 per cent. died; autumn, winter, and spring, 6 per cent. died. In heavy and wet clays.—Summer, none died; autumn, winter, and spring, 30 per cent. died. It will thus be seen that in heavy and wet clays summer planting was highly successful. The trees transplanted were from 8 feet to 20 feet high, and many had made growth from 4 inches to 12 inches in length; every one was moved with balls of earth varying from a quarter to one ton in weight; an average of a cartload of good soil was put round the roots of each, all were mulched with well-rotted ma-

nure, and an occasional soaking of water given. These trees showed no signs of suffering in either colour or quantity of foliage; indeed, many benefited by the change, and all are in a most promising condition. The reason of success is perhaps not far to seek, the earth being in a warm and moist state, and therefore in a condition most conducive to root formation and nourishment; dull, warm weather is best suited to the operation.

PLANTING IN WINTER, it will be remarked, was a partial failure, and should in all cases be avoided wherever it is desired to move valuable trees; in this instance the soil being cold and wet was therefore not suited to produce new roots. The feeding points rotted, the roots decayed, and no new roots were formed; the whole became attacked as by a contagious disease, and total inaction took place. This was followed by the stems becoming affected, rendering the sap putrid, in which state trees are soon preyed upon by insects, causing certain death. The cause of all this is coldness, excessive moisture, the imperviousness of the soil to air and the dormant state of the sap, which soon becomes incapable of performing its functions. Well drained, sandy, gravelly, and light soils are best suited for planting in autumn, winter, and spring, for the very good reason that they are warmer, better aerated, and not liable to become excessively dry, as in summer. These soils contain but a small percentage of vegetable constituents, and without the aid of moisture in moderate quantities are incapable of producing the necessary nourishment for the formation of rootlets, and consequently are unable to maintain the trees in a growing condition. In summer these soils are too hot and dry for the purpose of transplanting; the roots wither and perish, the foliage becomes deteriorated, a general disorganisation takes place, and even should the trees live, they take some years before they regain their normal condition and become thoroughly re-established. Soils of this description are unsuitable to transplant from, the roots being generally less fibrous, and by reason of their want of adhesiveness it is almost impossible to maintain a ball of earth intact, which is so necessary for success in transplanting trees. I am acquainted with no soils where mulching is so absolutely essential as with these; indeed, periodical mulching is necessary in order to maintain healthy trees and the foliage of good colour; mulching will likewise maintain the necessary degree of moisture.

RICH BLACK SOILS AND MELLOW LOAMS are best for all ordinary purposes, and with the addition of peat and sand may be made suitable for every known tree or shrub. Planting in such soils is most simple, as the most careless planter will generally meet with success. Should soils of this description become impoverished from any cause, as, for instance, the rapid and luxuriant growth of shrubs, or, in consequence of their vicinity to large trees and hedgerows, the most desirable kinds of surface-dressing are well-rotted manure and leaf-mould. In these soils the least disturbance at the roots the better it will be for the shrubs. If the ground is properly trenched before planting, no further care will be necessary in the majority of instances for very many years, except the keeping down of weeds for the first two or three years. Although the practice of pruning shrubs indiscriminately is most injudicious and destroys their distinctive characters and individuality, in rich soils the pruning-knife may in some cases be used freely; this would be the case with shrubs which are desired to produce the maximum quantity of flowers, and which would produce an abundance of foliage only, unless they were pruned and thinned out. Overcrowding in rich soils should be especially avoided, being both injurious and unnecessary. Planting of nursery material should be done as expeditiously as possible after being received, and the same rule applies when transplanting. The practice of laying in by the heels, as it is termed, and allowing trees and shrubs to remain so for any length of time, is not advisable, the effect being that they are compelled to make new roots a second time when once would be more advantageous to them. It is not desirable to plant two or three shrubs together in order to make a mass at once, one well-developed shrub being in every way better than two or more starvelings. E. D.

No. 799. SATURDAY, March 12, 1887. Vol. XXXI.

"This is an Art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—*Shakespeare.*

ROSE GARDEN.

T. W. GIRDLESTONE.

HYBRID TEAS.

THERE has been a good deal of discussion among Rose growers of late as to what constitutes a Hybrid Tea, and whether hybrids produced by the intercrossing of a Tea and a Hybrid Perpetual should be classed as Teas or as Hybrid Perpetuals. Some growers have grouped them under the one head and some under the other, and in the meantime in certain quarters the practice has arisen of constituting them a separate class under the name of Hybrid Teas—apparently a logical proceeding, but in reality far less so than would appear at first sight, and open to the great objection of inconvenience.

A term used to designate any class of plants should be exactly defined or definable, but it will be found very difficult to define the term Hybrid Tea so that it shall include just the varieties intended by those who first made use of the expression and no others. Of all classes of Roses that of the Tea-scented varieties is perhaps the most distinct and the most clearly defined. By common consent it has been jealously reserved for the numerous varieties raised without the appreciable interference of other species from *R. indica*, and all of which have a vast number of characteristics in common. The proposal of some growers to include the Hybrid Teas of various origin and mixed race in the class for pure Teas will never be tolerated either by exhibitors or by the majority of those who grow the Tea-scented varieties only to enjoy at home the refined beauty of these most exquisite of all Roses, and as it has been laid down by the National Rose Society that Hybrid Teas shall not be exhibited as Teas, it is not likely that any serious attempt to class them as such will be maintained. It remains, therefore, to be shown whether they have sufficiently prominent characteristics in common to form a separate and clearly definable class, or whether they ought not rather to be included among the Hybrid Perpetuals.

Out of some four dozen so called Hybrid Teas now in existence, the following list includes all those that are worth growing, and gives, in all cases where it has been recorded, their reputed parentage: La France (Guillot, 1867), Captain Christy (Lacharme, 1873; V. Verdier Safrano), Cheshunt Hybrid (G. Paul, 1873; Mdme. De Tartas Prince C. de Rohan), Cannes la Coquette (Nabonnand, 1877; from La France), Reine Marie Henriette (Levet, 1878; Gen. Jacqueminot Mdme. Berard), Jules Finger (Lacharme, 1879; V. Verdier Sombreuil), Pierre Guillot (Guillot, 1879), Camoens (Schwartz, 1881), Countess of Pembroke (Bennett, 1882; President Chas. Lefebvre), Distinction (Bennett, 1882; Mdme. De St. Joseph Engéaie Verdier), Lady Mary Fitzwilliam (Bennett, 1882; Devoniansis V. Verdier), Gloire Lyonnaise (Guillot, 1884; Baroness Rothschild Mdme. Falcot), American Beauty (Bancroft, 1885-6), Waltham Climbers 1, 2, and 3 (Wm. Paul, 1885; from Gloire de Dijon), and W. F. Bennett (Bennett, 1885), said to be useful for forcing as a market Rose, but not valuable out of doors. The three additions for the current season are Attraction (Dubreuil), Mdme. Joseph Desbois (Guillot; Baroness Rothschild Mdme. Falcot), and Mdme. A. Schwaller (Bernaix).

This is the pick of the varieties which raisers have designated Hybrid Teas on the seemingly obvious deduction that a Hybrid Tea is a Rose of

whose parents one was a Tea-scented variety; but if this is to be held as the definition, the class must be allowed to include all sorts of other Roses, which have originated through hybridisation with Teas, such as Bourbons, Noisettes, and Hybrid Polyanthas. These two last classes, however, are justly grouped separately, for the Noisettes are nearly all climbers having very characteristic foliage, and the Hybrid Polyanthas have foliage, habit, and inflorescence very distinct from all other Roses, though the varieties differ little from each other, except in the colour of their flowers. But, again, no such similarity or distinctness of habit is admissible as characteristic of the Hybrid Teas, for a definition wide enough to cover the habits even of the first three varieties in the list would include a majority of the Roses in cultivation, and the same objection applies to the consideration of inflorescence, form, colour, or any other permanent character; the conclusion being that these Hybrid Teas have no definite character sufficiently distinctive to constitute a basis for a separate class.

It will be worth while to notice that, owing to the very various origin of many Roses and to the innumerable crosses that have been effected at different times between species and varieties, that it is impossible to define a Hybrid Perpetual more exactly than as "a Rose of mixed race, that flowers more than once during the season." It will be at once seen that there is nothing in this definition that could possibly exclude the so-called Hybrid Teas, which, in fact are most of them fairly free autumnals; and it may be incidentally remarked that until lately several of these Roses, such as La France and Captain Christy, were always classed among and considered to be Hybrid Perpetuals.

The Hybrid Perpetual class among Roses is what Asia Minor is to the mind of the ungeographical schoolboy—a sort of general receptacle for anything not immediately referable elsewhere—and there is no imaginable reason why it should not be allowed to contain the Hybrid Teas, especially when its inclusion of such varieties as Etienne Levet and others of the Victor Verdier race has never been questioned. For it will hardly be contested that Captain Christy and Lady Mary Fitzwilliam bear a greater general resemblance to Etienne Levet, for instance, than to Anna Ollivier; and if, on the other hand, it be held that Captain Christy is a Hybrid Perpetual, then it may well be asked why Lady Mary Fitzwilliam should be considered something else.

In view of the fact, therefore, that there already exists a definable and universally recognised class of Roses to which the varieties under discussion can be referred, it is obviously not worth while to make them into a separate class, the distinguishing characteristic of which cannot be clearly laid down, and, regarding Hybrid Teas as being in every sense of the word Hybrid Perpetuals, growers may well be urged neither to class them as Teas nor to employ the term Hybrid Teas as a name for a class at all.

If only compilers of catalogues will avoid using the term or the division, and if it is thought necessary to allude to the parentage of any variety to do so in the description thereof, much unnecessary confusion will be avoided; but, especially, no hybrids should be catalogued as Teas, lest an unfortunate exhibitor should find himself disqualified for including in his stand a Hybrid Tea that he had purchased as a Tea; or, worse still, lest anyone who had ordered a collection of Tea-scented Roses should find his Rose-bed, when the blooming time came, marred by the presence of some of the dull red Hybrid Teas which are so little worth growing at all, and are certainly not worthy peers of the most refined and delicately beautiful of all Roses.

The new Rose, Archiduchesse Maria Immacolata, sent out this season by Soupert et Notting, is said to have been raised from Madame Lambert fertilised by Socrate, and, judging from the coloured plate of the novelty in the *Journal des Roses*, it has

the open form and somewhat jagged petals of the latter with the red colour of the former. Like its seed-parent, moreover, the colour is said to be variable, and the freedom of bloom remarkable. That the perfume is described as delicious will not cause surprise in view of the fact that one of its progenitors was that most delightfully fragrant of all Tea-scented varieties Socrate.

MARECHAL NIEL IN POTS.

Good plants of this charming Rose may be obtained on their own roots for forcing next spring in the following manner: In many places old plants of this Rose will now be in flower, and therefore plenty of young wood may be had. Of this cuttings should now be made and inserted in pots filled with a compost consisting of loam, well decayed leaf-mould, and plenty of sand; give them a good watering, and plunge them in a brisk bottom-heat; place a bell-glass over them, and if kept moist and shaded from the sun when very bright they will soon root. When rooted pot them singly in 4-inch pots, using good fibry loam mixed with some spent Mushroom manure; place them in a warm house, and when established give an ample supply of water to encourage growth as much as possible. Do not stop the shoots, but support them on sticks. Some plants will push two shoots, but, as a rule, when grown on this principle and not stopped they only make one long growth. When the pots are filled with roots shift into 6-inch pots; the compost for this potting should consist of rough fibry loam mixed with half-inch bones. After this potting place the plants in the front of a house, and train them up the roof like pot-ives. Keep them well syringed in order to keep down green fly. In July some of the strongest may be shifted into 8-inch pots and kept growing on in heat until August, when they should be removed to a cool house, and finally placed outside in autumn so as to harden their wood well. They may be kept out until frost appears, when they should be removed to their winter quarters. Cuttings struck in March and grown in this way often make shoots 8 feet and 10 feet in length, and as thick as a man's little finger in one season. When grown in this manner and twisted round stakes they make grand plants the following spring for many purposes, for, as a rule, they produce a bloom at every joint. ORTOR.

Rose Captain Christy.—It is surprising to see in Mr. William Falconer's interesting account of Rose growing in America that Captain Christy is not much grown there for cut flowers, because it is "too small for the purpose"! In this country it is one of the largest light Hybrid Perpetuals and is what exhibitors with unpardonable familiarity describe as a "back-row" flower. But probably where such enormities as Paul Neyron command attention and can find a market, the word "large," which must always be only a relative term, conveys a different impression from that generally attributed to it among florists in this country. There seems a prospect of some confusion ahead, from the intimation in Mr. Falconer's article that there are two white sports from Catherine Mermet in existence. No doubt, however, their distinctness will be thoroughly tested before The Bride's double is generally distributed.

Persian Yellow and Harrison's Yellow.—In Mr. Girdlestone's charming notes on the grouping of Roses (p. 190) I am not a little surprised to find this writer preferring the double Persian Yellow to Harrisoni. They are also described as each bearing a strong family likeness. The writer, however, is surely mistaken in stating that Harrison's Yellow is the stronger grower and Persian Yellow the freer flowerer of the two, and for this reason it is recommended that preference should be given to the Persian Yellow. There must be some confusion here; no Rose can bloom more freely than Harrison's, while generally and on most sites the Persian Yellow is considerably the stronger grower. There are other wide differences of habit, size of bloom and perfume between these two Roses which render it very material that where only room can be found for one of these, Harrison's Yellow should be the one selected. In fact, for brightness of colour, profusion of bloom,

and fulness of fragrance, *Harrisoni* is doubtless the first and best of all the yellow Briers, Austrian or other, and is far and away ahead of the double yellow *Per-ian* with its pancake form, and suspicious odour.—HORTUS.

P.S.—As to the beautiful *Rosa macrantha*, I have never seen it perfect except against a wall.

Rose Papa Gontier.—This Rose seems to be working its way into public favour. A correspondent of the *American Florist* says of it—

I went the other day to Mr. John Henderson's place at Flushing to see the *Papa Gontier* Rose. I had heard several good reports of it, but found on examination that none of them did it justice. As a cut flower it combines good qualities; it is free-blooming, fragrant, and of clean, vigorous growth; the colour is brilliant and rich, and each bud has the now necessary appendage of a long stem, clothed with handsome foliage. When this Rose was sent out by Nabonnand, four or five years ago, several of our Rose-growers tried a few of it, but from carelessness or a want of discernment none of them discovered its merits.

SHORT NOTE—ROSES.

Old yellow Rose.—Having seen in THE GARDEN of Feb. 12 a paragraph signed "F. W. Y." asking for the old double yellow Rose, *Lady King* writes to say that she can supply it, and wants to know if "F. W. Y." wishes it sent at once, and to what direction.—Address, *LADY KING, 21, Fitzwilliam Square, Dublin.*

NOTES OF THE WEEK.

Reading Horticultural Society.—The annual early summer exhibition of this society announced for June 22 will take place on June 2.

Double Daffodils.—Mr. Hartland sends us from Temple Hill, Cork, flowers of the double Daffodil called *Rip Van Winkle*, a peculiar-looking flower, and no improvement on single flowered kinds.

We understand that Messrs. Atlee Burpee & Co., of Philadelphia, have opened a branch establishment at 133, Cannon Street, London, E.C., for the sale of American seeds for English gardens.

Amaryllis formosissima.—From Mr. J. Woodbridge, The Gardens, Syon House, we have received boxes of *Amaryllis formosissima*. It is of a remarkably dark scarlet colour and very effective. It also lasts well in a cut state.

We have received from the Director of the Royal Gardens, Kew, "a bulletin of miscellaneous information." It contains a description of *Cape Boxwood* (*Buxus Macowanii*) and the correspondence relating to the industries at the Mauritius.

Evelyna Kermesina.—This somewhat resembles a dwarf *Sorbaria* in its habit of growth. It bears upon the ends of its reed-like stems pendent heads of blooms, each of which is sheathed in a long-pointed, pale purple bract, which is longer than the flower. Of this genus, the only other species which we have seen in cultivation is *E. caravata*, in which the bracts are pinkish mauve, and the flowers orange-yellow. We recently saw *Kermesina* blooming freely in Sir Trevor Lawrence's collection at Dorking.

Single Camellias.—I send you a box of single Camellias. Our collection, which is extensive, contains many very beautiful varieties not common in gardens. They are great favourites with the king and queen.—HENRY KNIGHT, *Chateau de Louken, Belgium.*

* A charming collection, consisting of both red and white single blooms of great beauty and substance. Along with them came also flowers of *Camellia reticulata*, of which we have in our own gardens here and there some grand specimens.—ED.

Winter Aconites and Ajuga.—On the rock garden at Kew one of the prettiest masses of colour is a mixture of winter Aconites and the common purple-leaved Bugle (*Ajuga reptans*). The Aconites are planted in a spreading mass of Bugle, and the contrast of its vinous-purple foliage with the bright gold of the Aconite flowers is charming. It is worthy of imitation.

Seedling Christmas Roses.—I send you a few of my Hellebore seedlings, which I think you will like to see. Two are especially pretty—a very large-cupped white, and a large fimbriated white with spots in the centre. There are thousands of blooms out at present, and every season adds to the variety.—P. H. ARCHER-HIND.

** A lovely assortment both of white and red-coloured kinds—quite as good as named sorts.—ED.

Calliandra Tweediei.—This Brazilian shrub is only to be met with in such gardens as Kew, though it is so beautiful, flowering at a time when the stove-houses are not over-bright with colour. It is one of the multitude of tropical shrubs belonging to the Pea family, though it looks more like a Bottle-brush Tree (*Callistemon*), as the flower-heads are composed of tufts of crimson stamens. The leaves are finely divided like a *Mimosa*; hence it is a very elegant as

well as bright-flowered shrub. It comes from Brazil, and requires stove treatment. It may be seen in bloom in the Kew Palm house.

M. Godefroy-Lebeuf has started a French gardening paper, for which he adopts our own name. "While taking from an English journal, THE GARDEN, its name," he says, "we intend to follow its programme, and we avow that we aspire to its success." We wish success to *Le Jardin*. The old French periodicals, excellent as they are, appeal to but a limited class.

Thunbergia Harrisii.—The extreme beauty of this stove climber was well shown by the fine specimens exhibited at South Kensington on Tuesday from the *Pendell Court Garden*. The large, deep mauve-purple flowers are surpassed in brightness by few other tropical climbers, and as it blooms habitually at this season its value is increased. It is a free-growing climber, just the plant for a large stove where there is plenty of room for the long, slender shoots to extend freely or hang in graceful festoons. It is a plant readily procured at a nursery, and the wonder is that it is not more common.

Alseuosmia macrophylla.—This pretty *Caprifoliad* seems at present to be but little or not at all known, except in a few establishments. A small specimen now flowering in the temperate pits at Kew was obtained a couple of years ago from Mr. E. G. Loder, Floore. It is a native of New Zealand, where, in the form of a shrub, it reaches a height of 7 feet or 8 feet. The plant is glabrous throughout, bearing leaves 3 inches or more in length with an irregularly toothed margin. A dark, shining green on the upper surface adds to their beauty, while the under surface is of quite a dull green colour. The midrib is prominent, especially on the under side. The flowers, which emit a pleasant odour, arise from the axils of the leaves, borne on short peduncles.—A. Z.

Narcissus committee.—Will you allow me to inform your readers, in case they may not have seen the notice, that the meetings of the *Narcissus committee* for this spring are fixed for March 22, April 12 and April 26, when we hope to carry on our work of former seasons. Any objects of interest that may be sent addressed to me at South Kensington in time for one of these days will be cared for and brought before the committee. What we endeavour to do is: (1) to acquire information as to wild and typical species from their habitats; (2) to identify the names of specimens unknown to the sender, and to correct any errors in nomenclature which may occur among those exhibited at the shows of the Royal Horticultural Society; and (3) to pass an opinion as to the distinctiveness and value of hybrid or seedling forms, and, if considered worthy, to register them under distinctive names.—C. R. SCRASE-DICKINS, *Hon. Sec., Narcissus Committee.*

Anthuriums at Burford Lodge.—Sir Trevor Lawrence's garden contains some grand specimens of these plants, to the cultivation of which a whole house is devoted. The kinds grown are chiefly *Andreanum*, *Scherzerianum*, *ferrierense*, various forms of *Rothschildianum*, and others, and the effect produced by their brilliantly coloured spathes is strikingly grand. A *ferrierense* has almost round spathes some 6 inches in diameter and creamy vermilion in colour. With these the heart-shaped, brilliant scarlet spathes of *Andreanum* form a striking contrast. Associated with these are the mottled forms of *Rothschildianum* and the scarlet-crimson *Scherzerianum*, of which there are here numerous improved seedlings. The only want is a few white kinds, of which many fine ones are in cultivation.

The silvery Rhododendron (*R. argenteum*).—One can only get an idea of the grandeur of the great Sikkim *Rhododendrons* as they grow on their native mountains by seeing such noble specimens as those in the large temperate house at Kew. Every spring the rich collection of these shrubs at Kew is one of the main features of the place, for nowhere else in Europe can such large specimens be seen. Already they have commenced flowering, and two or three species are in full bloom; a huge shrub of *R. argenteum* is now an object of amazing beauty. It is between 15 feet and 20 feet high, and carries no fewer than thirty large heads of blossoms. These

heads are some 8 inches through, and are globular and compact, the flowers being numerous. Each flower is $1\frac{1}{2}$ inches across, of a pure ivory white-like wax with a deep stain of crimson at the interior base. The leaves are handsome, being nearly a foot long, proportionately broad, deep green above, silvery beneath. They much resemble those of the *Loquat* (*Eriobotrya*). In contrast to this lovely *Rhododendron* is the rich crimson *R. arboreum*, of which there are gigantic trees, glowing with brilliant flower-trusses richer in tint than that of any other *Rhododendron*. A few days will see other species in bloom, and onwards till May this house will be visited by many in order to see these noble shrubs.

Imantophyllum miniatum.—This is a robust-growing member of the *Amaryllis* family, but, as most of us know, it is neither bulbous-rooted nor deciduous. It produces stout, strap-shaped leaves, arranged in a two-ranked fashion, smooth, and intensely deep green. The scape, which rises above the leaves, bears a dense umbrella-like head of large showy campanulate flowers, which last a long time in perfection. The greater portion of the flower is rich orange-vermilion, but at the base it is yellow. We recently saw several dozens of this plant in the gardens at Park Hill, Streatham, producing a grand effect. There are several forms which differ from each other in size and depth of colour. The genus is also spelt *Himantophyllum* and *Umatophyllum*.

Staphylea colchica.—This plant, a member of the Bladder-nut family, must not be confounded with the genus *Styphelia*, which belongs to *Epacrids*. It is a much-branched deciduous shrub, with bright green leaves and pure white fragrant flowers borne on the points of the young shoots. It forces very easily, and is invaluable for decoration early in the season, a purpose for which it is grown in quantity by Mr. Howe at Park Hill, Streatham, where we recently saw it in great beauty. The plants are grown in pots, plunged in the open air during summer and autumn, but placed under cover before hard frosts set in, and brought into the forcing house from time to time. We also saw this plant in great perfection recently with Messrs. Henderson and Sons, of Maida Vale.

Alpine Primulas.—These being very much in vogue just now, the following note may be of interest. By a recent publication in the *Annals of the Zoological and Botanical Society of Vienna*, a vagueness in the nomenclature of a natural hybrid between *Primula Clusiana* (Tausch) and *minima* (L.) has been cleared up. There are two forms of this hybrid. The one next to *Clusiana* is *P. intermedia* (Portenschlag), *P. Portenschlagiana* (Becker), *P. Floerkiana* (Salzer). The other nearest to *minima* is *P. Wettsteini* (Wiemann). *P. intermedia* was discovered on the Schneeberg, in 1851, by Salzer, and by Portenschlag on the Wildalpe. Since then it was much sought after by botanists, but in vain. On the 10th June, 1885, M. Wiemann, of the Imperial Botanical Garden, Vienna, found it, in company with *P. Wettsteini*, on the Schneeberg, and my head gardener, M. Obrist, on the same day, in quite another direction, near Admont.—O. F., *Lechenhof.*

The weather and spring flowers.—With the exception of two dull days, we have had fifty-three days of more or less sharp frost at night, and bright, stimulating sunshine in the daytime—alternations of weather very destructive to vegetation; flowers in consequence are scarce, and everything is backward. *Iris Histro*, which, as a rule, flowers about the end of January, has only been out two days. *Colchicum luteum*, from the southern slopes of the Himalayas, is, on account of its purity of colour, showier than any *Crocus*. *Colchicum crociflorum*, from Central Asia, white striped with purple, has sent up six flowers, the produce of one tiny bulb. *Bulboodium ruthenicum* both in form and size makes a good companion to it. Its bright starry flowers resemble those of a small *Crocus*; its brilliant magenta-purple colour makes it highly attractive, and when better known it cannot fail to become a favourite. *Muscari azureum*, *Galanthus Elwesi* and *latifolius*, *Leontice Alberti*, and the rare *Coptis brachypetala*, with its quaint white spider-like flowers, complete the present floral wealth of my garden.—MAX LEICHTLIN, *Baden-Baden.*

GARDEN IN THE HOUSE.

A COTTAGER'S WINDOW GARDEN.

It is surprising to see how good a display a cottager who is fond of flowers can make in a very small space and with but few appliances. In the case of the cottage whose summer show of flowers we here engrave, the space is about 6 yards in breadth by 4 yards in depth. This includes a tiny greenhouse, which gives winter shelter to the Hydrangeas, Fuchsias, Geraniums, and other plants that form part of the summer display. A few boards are roughly nailed up at gradually decreasing heights under the cottage window and form a stage on which the plants are arranged with good effect, so as to form a mass of flower, beginning at the ground level in front and gradually rising to the window. Here and there appear the graceful arching sprays of the Maiden's

in the greenhouse without water, and though withered still adhere to the stems. I attribute this to the use of a certain chemical manure that we have been using in a liquid state all the winter. Azaleas are also operated on with grand results, *A. mollis*, &c., keeping cut for over a week. This is no doubt a most valuable discovery made by accident. Yet before I say more on the subject we shall try its effects on greenhouse Pelargoniums during the summer, the latter being so apt to drop their blooms. I have also used it on indoor Daffodils, and with great effect. For instance, *Ard-Righ*, *Tenby*, and others, are now nearly six weeks open, and perfect yet.—*W. B. HARTLAND, Temple Hill, Cork.*

* * * Mr. Hartland will perhaps give the public the name of this precious chemical agent.—*ED.*

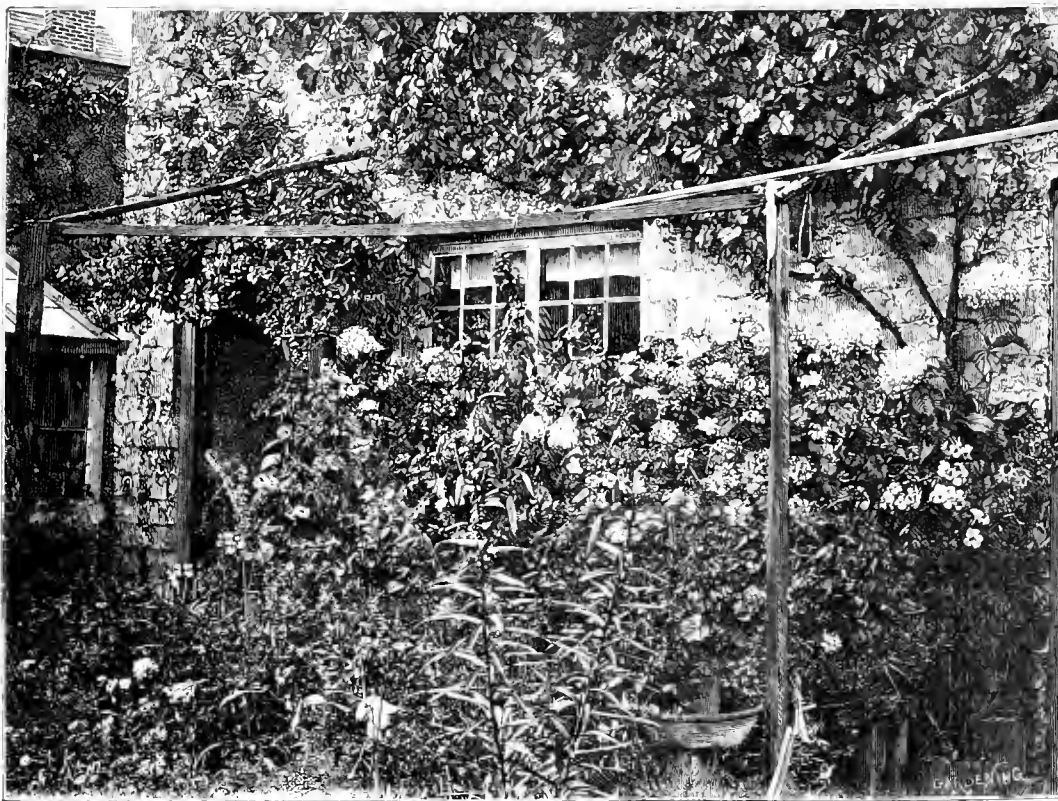
Wallflowers for window boxes.—Amongst early flowering plants easily raised from seed none are better than bushy little plants of single Wallflowers; they are very hardy and when kept dwarf by being planted out in single lines early in the sea-

they are allowed to stand for two years, by which time they form handsome clumps, and are available for forcing again.

PROPAGATING.

NEPENTHES.—These will now be actively in growth, and where it is desired to increase the stock, cuttings may be put in either at the present time or later on. The length at which they are taken will depend upon circumstances, some being more vigorous than others; but nothing is gained by making the cuttings too large, as they not only take a longer time to form roots, but are also liable to lose their bottom leaves before they strike, and thus give the plants a naked appearance. The soil best suited for the cuttings is a mixture of fibrous peat, Sphagnum, and silver sand, thus forming a very open compost. From the heavy character of the leaves, the cuttings require to be inserted firmly, and on that account

may be safely put in deeper than many other subjects. The larger ones are better potted like established plants than inserted as cuttings with a dibble, for, by the first-named method, far greater security is attained. A very good mode of procedure is to place a few crocks in the bottom of a small pot, then put in the cutting so that its lower portion rests on the crocks, and then fill the pot firmly with the above-mentioned compost. After this is done, and a thorough watering given, they may be plunged in gentle heat in the propagating house. It will be necessary to keep them in a close case till rooted, and as a moisture-laden atmosphere is very essential to their well-doing, this should be borne in mind in selecting the place for them. The lights of the case must be kept quite close, and the cuttings require to be very carefully shaded during sunshine. One caution to be observed is, that from the top-heavy character of the cuttings they are rather liable to fall over, even if at first fixed securely, and such a thing will often injure the young roots, so that it must as far as possible be guarded against. If fastened to a stake, they are then rendered more secure, but to be effective, the stake used for the purpose should be first placed in the bottom of the pot, then the crocks added, and after that the cutting and soil, so that the stake is in this manner held in its place by all the later additions. Before consigning them to the propagating case, see that the pitchers do not contain any decomposing matter; otherwise, in a close atmosphere this will often cause the plants to decay.



A cottager's window garden.

Wreath (*Francoa ramosa*); *Lilium auratum* shoots up through dwarfier plants, and *Campanula fragilis*, so well grown by cottagers, is in well-furnished pots, sometimes hanging from the slight framework that a thin cotton blind is tied to, in hottest sunshine. The little garden is also full of good hardy flowers, the pot plants being stood between them. A Sweetwater Vine covers the front of the cottage, and *Clematis Jackmanni* adorns the little porch.

Floral gum for fixing flower petals dispensed with.—Have any of your readers used a chemical manure in a liquid state that acts and gives vitality to flowers so as to preserve them in water for a prolonged period after being cut, even in rooms where a fire is kept all day, with gas at night? I have at present some cut blooms of *Geranium West Brighton Gem* actually in this condition for over a fortnight. Some blooms have been also cut and put on the shelf

son, so as not to get drawn up in the seed bed, they make sturdy growths well set with flower buds, and overcome removal about as quickly as any plants with which I am acquainted. We grow the Blood Red and Belvoir Castle Yellow, both of which we sow in March in open-air beds, and plant out the seedlings in lines in any spaces in the kitchen or fruit garden not otherwise occupied. If not required for other purposes they yield a capital supply of flowers for cutting.—*J. G. H.*

Christmas Roses.—These, coming in as they do so usefully for cut flowers, are made a speciality of by Mr. Walker, of Hounslow, who annually forces a great quantity of them in pots and baskets underneath the stages of the houses devoted to Cyclamens. They are all lifted from the open ground about two months before they are required, potted in any ordinary garden soil and placed underneath the stages, where they yield a rich harvest of bloom. After having flowered they are shaken out of the pots, and if need be divided and planted out in rich soil, where

PHLOXES AND PENTSTEMONS, as well as the various Pyrethrums (now such favourites), can be readily increased by division, but in the case of at least the two first named, where a larger stock of any one kind is needed than can be obtained in this manner, the plant which it is desired to increase can be taken into a gentle heat, or even sheltered by a cold frame, in order to cause young shoots to push up quickly, and when long enough they can be taken off as cuttings, and treated the same as Fuchsias and similar things. The entire shoot should not be taken to form the cutting, but a strong eye or two must be left at the base in order to cause other shoots to push therefrom. By these means the second crop is larger than the first, and the early struck cuttings soon grow sufficiently to have their tops taken off and treated as above. In this way a very large number can quickly be obtained from a plant or two. In the case of any that are divided, if they are of a delicate character or insufficiently rooted,

the best results are obtained by sheltering them for a little while in a frame till the roots are again actively in operation. *Chrysanthemums* will now strike root readily under anything like favourable conditions, and on that account many do not propagate till this time of the year, or even later, but, of course, those who grow flowers for exhibition have their plants rooted sometime since. Dibbled into pots, placed in a cold frame, and treated carefully, they quickly root, and may then be potted off. The principal points to observe are to see that the cuttings are clear of aphides before putting them in, and not to keep them too close, as not only may mildew set in, but the future plant is much weakened if kept too close during its earlier stages.

IPOMŒA HORSFALLIÆ, which is such a valuable flowering plant for furnishing the rafters and similar situations in the stove, is a very difficult subject to propagate from cuttings; still it can be easily increased by grafting either on its own roots or on those of the allied *Batatas paniculata*. It is a very simple operation, the pieces of roots chosen being about the size of a straw, with, if possible, a few attendant fibres, while the scion is formed of the point of a growing shoot. The upper portion of the root may be split for a little distance, then the lower part, being fashioned in the form of a wedge, is inserted therein and tied securely in its place. Soft grafting cotton should be the material employed for tying purposes, as any bruise will greatly militate against the chances of success, and, of course, the union should be as complete as possible. After this is done they must be potted, the roots being twisted round in order to allow the point of union to be below the surface of the soil. They must then be placed in a close propagating case, and the success of the operation may be determined when the shoot commences to grow. When this takes place a little air can be given by tilting the lights, and they must be gradually inured to the air of the house. The shoot of the *Ipomœa* used as a scion may be from 3 inches to 6 inches long.

PRIMULAS of the Sieboldi section, of which there are now so many and beautiful varieties, can, of course, be increased by division, but where a greater quantity is required than can be obtained in this way, cuttings of the roots is the method generally employed, and if this is carefully done large numbers can be propagated from even a single plant, provided it is an established one and well furnished with roots. The plant being turned out of its pot and the soil shaken off, all roots that can be spared are taken away, leaving, of course, enough attached to each crown to support it and bring the flower to maturity. The remaining roots are then cut up into lengths of an inch or so, and dibbled thickly into pots or pans of light sandy compost, burying them at such a depth that the upper part of the root is just covered with the soil. They are then treated as seeds, keeping the soil just moist and sheltering them in a frame. Then, as spring advances, clusters of young leaves push forth from the upper part of the root and grow away quickly. When sufficiently advanced they can either be potted off or pricked out in a bed of prepared soil.

CRATEGUS PYRACANTHÆ.—It may not be generally known that this is far from a difficult subject to strike root as cuttings, and plants raised in this way are, in their earlier stages at least, far more prolific of berries than seedlings are. Besides this, cuttings can be employed to perpetuate any superior variety, such as *Lelandi*, seedlings of which are not always equal to their parent. Last summer I was very successful in striking a quantity of these Thorns by the following method. The cuttings were taken in the early part of July and formed of the current season's growth, each being about 5 inches to 6 inches long. The leaves were removed from the bottom portions of the cuttings, and the latter dibbled into pots of sandy soil. Five-inch pots were employed for the purpose, and being drained for one-third of their depth the soil was then pressed firmly in. After the pots were filled with

cuttings a thorough watering was given, and all were then placed in a frame and kept quite close and shaded. The cuttings were watered when necessary, and any signs of decay removed before the sun was very powerful, and with these exceptions the lights were kept quite close. So treated the cuttings rooted before winter, and are now potted into small pots, the intention being to plant them out in about a month. If the cuttings are placed in the open ground the best time for the operation is early in the autumn, and, of course, they need to be much longer than when put in pots and sheltered by a frame. They should be from 9 inches to 12 inches long, of which about three parts must be buried in the ground, and fixed firmly in position in order as far as possible to protect them from cold and drying winds.

FERNS.

W. H. GOWER.

ANEMIA.

THIS genus consists of elegant, compact-growing species, characterised by having free veins, and a thin paniculate fructification on the lateral branches of the sterile fronds. This arrangement produces an appearance like that of a spike of bloom; hence they are popularly known as Flowering Ferns. The varieties of this genus already in our gardens are extremely ornamental, and some of the kinds not yet introduced are even more beautiful. *Anemias*, with but few exceptions, are natives of the West Indian Islands and Tropical America. They thrive in a cool stove and enjoy a moist atmosphere, but dislike having their fronds drenched with water by the syringe. They should be planted in peat and sharp sand, and kept in rather small pots. Thus treated, they form charming stove plants, and are available for room decoration, whilst some of the kinds are suitable for a Wardian case. *A. adiantifolia* is one of the most beautiful, and perhaps the hardest of the *Anemias*, producing fronds from 9 inches to 12 inches long, and from 4 inches to 8 inches in width. They are triangular in outline and three-times divided (tripinnatifid), the segments being wedge-shaped, toothed on the edges and deep green. The fertile branches rise erect in pairs, from the base of the sterile pinnae, to about 6 inches in height or more; these are also three-times branched, the segments being wholly fertile and ferrugineous. It is plentiful in Jamaica and in various other West Indian Islands. *A. hirsuta* grows from 6 inches to 12 inches high; the fronds are once-divided (pinnate), the segments being broad and dentate, and the stems are clothed with short reddish brown hairs. It comes from Brazil. *A. Dregeana* is one of the few kinds found out of the western hemisphere. Its fronds, which are about 8 inches high, are simply pinnate, the segments being entire and deep green. The stems are clothed with short, woolly, brown hairs, and the fertile branches are longer than those that are sterile. It is a native of South Africa. *A. cheilanthoides*, sometimes called *tomentosa*, is an elegant Brazilian plant, the fronds of which grow from 6 inches to 12 inches in length. They are twice-divided, the segments being finely cut, pale green, and furnished with rusty-red hairs; the fertile branches are very conspicuous; they rise from 6 inches to 12 inches in height. *A. collina* is also a Brazilian plant, the fronds of which are from 9 inches to 12 inches high; the stems, which are clothed with bright chestnut hairs, are pinnate, the segments being broad, obtuse, and dull green; the fertile branches are 9 inches high. *A. Mandiocana* is a pinnate-leaved species, the segments of which are broad, oblique, crenate-edged, and bright, shining green; the stems are

clothed with dark brown woolly hairs; the fertile branches rise from 6 inches to 9 inches high. It comes from Brazil. *A. Phyllitidis* and the two following kinds have reticulated veins, and therefore have been separated from *Anemia*, and placed in the genus *Anemidietyon*. *A. Phyllitidis* is a bold, robust plant, with fronds from 1 foot to 2 feet in height and once-divided; they usually bear about 6 pairs of pinnae and a terminal one, all of which are some 4 inches long, and an inch broad at the base, serrated on the edges, and bright green; the fertile branches, which are from 9 inches to 12 inches high, are very dense and bold. In the variety *longifolium* the pinnae are much narrower, and vivid green; the fertile branches are also narrower, but dense, and upwards of a foot high. The variety *fraxinifolium* is very handsome; it grows from 18 inches to 2 feet in height, and bears about nine pairs of sterile pinnae and a terminal one; these are about 2 inches long and an inch broad, crenate-edged, and deep green; the fertile branches, which are a foot high, are very dense. The *Anemidietyons* are very hardy plants, and widely dispersed over Tropical America and the West Indian Islands.

AMERICAN MAIDEN-HAIRS AND WILD FLOWERS.

REFERRING again to two essays on hardy Ferns, in which our North American species are noticed in THE GARDEN of October 2 and 23, I would like to speak of the peculiar beauty of our very common *Adiantum pedatum*. It grows with us in the leaf mould of shady or moist woods, and does well in dense shade, not thriving in competition with Grasses in sunny, exposed places. Its pretty black stem and branches, its horizontal and gracefully-massed fronds, make this plant very beautiful, especially to one familiar with the exotic kinds of Maiden-hair Ferns. Our Maiden-hairs would do well planted below trees and by shady walks in leaf mould, and would take care of themselves in such localities. A good stock could be readily mailed by anyone familiar with plants in this country. Your correspondents do not mention two North American plants which would be pretty planted out for companions to other hardy natives or exotics—our pretty *Trillium grandiflorum*, or Wake Robin, and the *Dodecatheon Meadia*, commonly called Shooting Star. The *Trillium* is a very showy plant, which, in June in rich woods, dots the whole surface of the ground with its showy three-petaled, vase-like flowers. It grows from 10 inches to 18 inches in height, and is one of our most beautiful wild flowers. Plant the tubers, small though they are, about 4 inches or 6 inches deep, as they seem always to occur at that depth or deeper, and you will have no further trouble with them, as they are very well able to care of themselves. They will thrive equally well in shade or sunshine—perhaps better in the sun, but on the bare ground, in the shade of trees, they more readily catch the eye. No more attractive plant could be used among hardy Ferns or fernery rockwork than this. When the Ferns are unrolling their fronds this would be ready to hide their nakedness from the beholder's gaze. The *Dodecatheon* is also a low growing plant. Its leaves make it look at first glance like an *Auricula*, but its flower-spike rises a foot high, and has numerous flowers somewhat like the flowers of *Cyclamen*. It grows and rapidly increases in any situation. It would look well among hardy *Cyclamens*.

CHAS. L. MANN.

** Mr. Mann will, no doubt, be pleased to know that these plants have long been valued in our gardens.—ED.

Alsophila Rebecœ.—This is a very elegant, slender-stemmed Tree Fern of recent introduction, originally discovered in the north of Queensland, in the neighbourhood of Rockingham Bay. Its slender stems attain a height of about 8 feet, and bear numerous arching, deep green fronds some 12 inches

or 18 inches long; these are twice-divided (bipinnate); the segments are large, firm, and leathery in texture, and somewhat obtuse. The sori are usually disposed in two medial rows. We recently saw good plants of this Fern in Mr. William Bull's nursery at Chelsea.

Adiantum peruvianum.—Amongst large, bold-growing Maiden hair Ferns this species stands pre-eminent. We recently saw fine examples of it in the fernery at Beddington House. It grows several feet in height, and the fronds are beautifully arched; the stipes, or stems, are stout and jet-black, and the segments are upwards of 2 inches across, ovate in shape, and deep green. This Fern should receive the attention of those who are about to plant a fernery or have accommodation for large specimens.

FLOWER GARDEN.

SEEDLING AURICULAS.

ONE of the chief charms in growing seedling flowers, and especially seedling Auriculas, is the uncertainty that prevails as to what the seedling plants will be; and so to watch the expanding pips is an occupation of some interest. Seedling-raising gives a good deal of pleasant work to the cultivator. If I can gather seed early enough to sow in August, I like to do so. Time is gained in sowing at the end of the summer, as the seeds germinate, and the seedling plants make some headway before the cold weather sets in. I sow in 5-inch pots, filling them nearly half full of drainage. Over this I place a little Cocoa fibre, and then place at the top of this some rough soil, filling up with a fine, light compost, composed in large part of leaf-mould and sand, with some yellow loam sifted fine. The surface is flattened down, the seeds sown as thinly as possible, a little silver sand placed over them, and they are then stood in a shady part of my Auricula house with a piece of glass on each pot. As soon as the seeds show signs of growth, the pots are stood in pans of water, and then there is no necessity for surface-watering. Before the seeds germinate, if water is required, I immerse the pots in water nearly to the level of the soil, and when the contents are saturated, the pots are allowed to well drain, and are returned to the house.

As a matter of course the development of the seedlings is greatly helped if they can be put in a house all through the autumn and winter where there is a slight and genial artificial warmth. In a cold house the tiny plants are practically stationary from the end of October until the end of February, and then they begin to be active again, and it is during the spring months following the time of sowing that they should be encouraged to grow to their very utmost. To this end, as soon as the fourth or sixth seed-leaves are formed, the seedlings should be carefully pricked off into pots of light, sandy soil previously well drained, and so carefully transplanting as that some soil can adhere to the roots. I find it best to use 3-inch pots for the first pricking off, placing the plants only round the sides of the pots, then giving them a slight sprinkle; they are then stood on a bed of moist Cocoa fibre in the Auricula house, and shaded from the sun where necessary. Unless the plants had the advantage of a little warmth to keep them growing during the winter, they can scarcely be expected to flower in the autumn following, but a good many will the following spring, but much depends upon how they are treated during the summer. About August I pot all the more advanced singly in small pots, to bloom the following spring. As a matter of course it is only from the best varieties carefully fertilised, that one can expect to get something showing first-rate properties.

I have to bloom this spring seedlings from the finest edged and self flowers in my collection, also from alpine, double, and fancy flowers. A few of the alpine and double varieties bloomed late in the autumn, and all those that showed the possession of merit were marked; those of indifferent quality are planted out on a south border in the open ground. This border is raised 6 inches or so

above the ground level, and is edged towards the south with a border of *Aubrietia violacea*. During the summer it is surfaced with Cocoa fibre, and a few pieces of broken pots are laid between the plants to prevent them being injured by cats. A few plants will die during the autumn—fog and frost try them somewhat—but those that bloom are very pretty in spring.

It must not be thought that those among Auricula growers who prefer to cultivate their choice varieties in pots are insensible to the value of the Auricula as a border plant. All who have garden space have their outdoor collection of Auriculas, and the raisers of fine varieties are found advocating that the inferior seedling forms should on no account be thrown away, but be planted in the flower garden. Many a one who has but a small piece of garden ground can grow a few Auriculas in pots in a cool frame, and find in them a great source of delight.

Here, at Ealing, I find the cold, raw, London fogs very injurious to the Auricula. These prevail during the end of November, December, and January, and find their way into the Auricula house, and, despite one's utmost care, plants will die. I find it becoming more and more difficult to winter such sorts as Colonel Taylor, Alexander Meiklejohn, George Lightbody, Victor, and a few others of the highest quality. To do so with anything like safety they must be in small pots, that is, as small as they can be conveniently placed in; the pots must be well drained, and the soil light and composed largely of vegetable mould.

R. D.

Mimulus.—Although seed of *Mimulus* is so fine and apparently liable to injury from cold, yet it germinates very freely in a cool house. Seed sown in pans three weeks since, and stood in a house where there is no heating power, the soil in the pans having been frozen twice since being placed there, has germinated freely, and the soil has now a green aspect. It is so much the practice to advise *Mimulus* seed to be sown in heat, that this capacity to germinate freely without warmth cannot be too well known. A little later the seedlings will be dibbled out into a cold frame, and from this transferred with balls of soil into the open ground. A cool, partially shaded place suits them admirably.—A. D.

Perfume of *Iris reticulata*.—Not the least of the many good qualities of this most useful plant is its delicate perfume which many think is even superior to that of Violets, to which it certainly promises to be a powerful rival. During the warm sunshine, of which we have had a more than usual quantity during the latter half of February, the perfume of this lovely plant was very marked. If its blooming is at all accelerated by heat the perfume is by no means so apparent as when it is allowed to flower naturally. Those who depend largely on cool-house plants ought to cultivate largely this pretty *Iris*, which increases freely, the main point being to treat it rationally after it has done flowering, for if stored away under the stages before it has completed its growth it cannot possibly perfect it for another year. We set ours in a cold frame, or else on a light shelf in the orchard house, and keep them regularly supplied with water until they show signs of going to rest, when they are allowed to become quite dry, in which condition they remain for a month, and are then shaken out and re-potted, as I find they keep better in the soil than in any other way.—J. G. H.

Effect of the winter on Stocks.—Whatever may be found in more favoured localities, certainly in this neighbourhood Stocks have wintered badly; indeed, the Bromptons seem quite destroyed. Possibly in specially sheltered gardens a few may be found alive, but still somewhat crippled. It is very much to be regretted that so much difficulty should be experienced in keeping these very beautiful flowers, but they suffer materially three winters out of every four. I am preserving some choice double scarlet Bromptons in pots in a cool house, but the plan, I fear, can hardly prove satisfactory, as some damp off, and all are of indifferent size, being of necessity restricted in pots. Brompton Stocks, however good the strain, have nothing special to recommend them, unless fine

also; indeed, it is the dimensions of the spikes of bloom which command admiration. Even prior to the advent of the snowstorms considerable mischief seemed to have been done by fogs allied to sharp frosts; indeed, we have no greater enemy to many assumed hardy plants than heavy fogs. From these, as a rule, gardeners in rural localities are naturally exempt. Happily, we can, in the capital white and scarlet intermediate Stocks, have a good show in the spring by simply preserving a few hundreds through the winter in small pots under the protection of a frame. These planted out in sheltered positions towards the end of March will give a fine mass of flowers and enrich the garden with strong sweet perfume.—A. D.

THE DOUBLE PRIMROSE.

IN THE GARDEN of Jan. 22 and Feb. 5, 1887, appeared two articles on that charming little plant, *Primula acaulis flore-pleno*, of which at one time I possessed a very fine collection, and if my experience is of any interest to your readers, they are quite welcome to it. The cultivation of the rarer varieties is at all times attended with difficulties which in some localities are insurmountable. Three things they cannot abide—a stagnant soil, a draughty situation, and constant removal or disturbance. As to the kind of soil in which they ought to be grown, it matters little except so far as colour in the bloom is concerned. It will be observed that if a plant of the common single yellow be taken from the hedgerow and highly manured, it will in a year or two push blooms of a sickly pink or mauve hue, though, strange to say, the reverse treatment does not produce opposite results to any marked degree.

I have grown that most delicate of all the varieties, *atro-rubra* (dark maroon), to perfection on a bank which was as dry as dust, and I have seen it luxuriate under the wall of an old castle, beneath the dark rich soil of whose precincts slumbered many an old Roundhead. When planted in a damp, or what is called a sour soil, the Primrose will as it were endeavour to rise from its bed, and will exhibit rough root-stalks something like those found on an old Seakale stool. This is an infallible sign that the locality is unsuitable. I would not recommend pot culture except in the case of a young and delicate plant, which may require protection at first, but the blooms of these are always inferior; in fact, the Primrose requires three or four years' growth to secure satisfactory results. The greatest enemies of this plant are the wire-worm and the tidy gardener. The old leaves ought never to be removed; they are Nature's protection against sudden changes of atmosphere. To those who are unfortunate as to locality and soil I would recommend a north-east border, not under, but in the shade of trees, and a compost composed of one-fourth silver sand, one-half well rotted stable manure, two parts well rotted leaf-mould, and two parts loam from an old orchard. When planting, the roots should be carefully spread over a little mound below the surface of the bed, then covered and well pressed down.

MOMUS.

The Periwinkles.—"W. G." does well to call attention to these (p. 161). Few plants are more valuable for clothing banks or bare places under trees where hardly anything else will grow. They are well worth growing for their foliage alone, though their flowers are also beautiful. For many positions they are far more valuable than Ivy, as they are by no means such greedy monopolists, though some of the larger sorts will hold their own against all comers, and give less timorous growers but a poor chance where they are fully established. Only a night or so before reading "W. G.'s" article I was called in (in a dream) to give advice about getting rid of Periwinkles in a roseroy. The larger varieties had completely overrun and killed most of the Roses. The roseroy was on a sloping bank near to the drawing-room window, and the Periwinkles looked their best on this incline. I shall never forget the reception my suggestion to grub them up received from the

owners of the garden. "Never," was the emphatic reply; "we may have Roses there; we must have the Periwinkle." The difficulty was surmounted in my dream by placing several earthenware oval jars among the Periwinkles, filling these with rich compost, and planting choice free-growing Tea Roses in the jars, my latest advice to the lady of the house being to let the Roses scramble over the bank among the Periwinkles. I doubt if I could have given better advice or shown better practice if ever so wide awake. A light spread of Roses over a bed of Periwinkles in or out of blossom must needs prove a thing of beauty, if not a joy for ever; and the Roses, with their food safe above the strife and struggle of the Periwinkle roots, could not fail to thrive. Periwinkles also form far safer block or stone clothers in ferneries or wild gardens than Ivies. Such beautifully marked and vigorous varieties as *Vinca elegantissima variegata* speedily cover the bases and lower portions of roots or blocks, while comparatively seldom encroaching much on the plants growing in the upper portions of root or rock masses.—HORTUS.

Spring flowers.—Amongst these nothing is so interesting or so enjoyable as the Wallflower, borders of which edged with lovely Primroses have a grand effect. Wallflowers sown last July or August may be lifted with balls of earth attached to them and planted forthwith. All cultivators of Primroses are aware that in a young state they suffer from full sunlight; therefore we sow them under north walls, and protect them through the winter with Bracken. Walking along by my Primrose beds to-day, I found that they were bristling with flower-spikes, and asking me in a language peculiar to themselves to remove them so that they might have a peep at the sun. All kinds of Daisies should be broken up into single eyes and planted near the edge of borders. Pansies, too, make an admirable show in such positions. These we propagated under hand-glasses, also close to north walls, in July, and they have now grown into nice little plants. They should be carefully removed with a trowel, and after planting shaded if possible. The present time is the best for planting Carnations, Pinks, &c. These plants have been wintered in cold frames in pots, so that they turn out with every root attached to them with perfect safety. If not already done, do not delay planting Rose trees, both standards and dwarfs: if the latter are in pots, so much the better.—R. GILBERT.

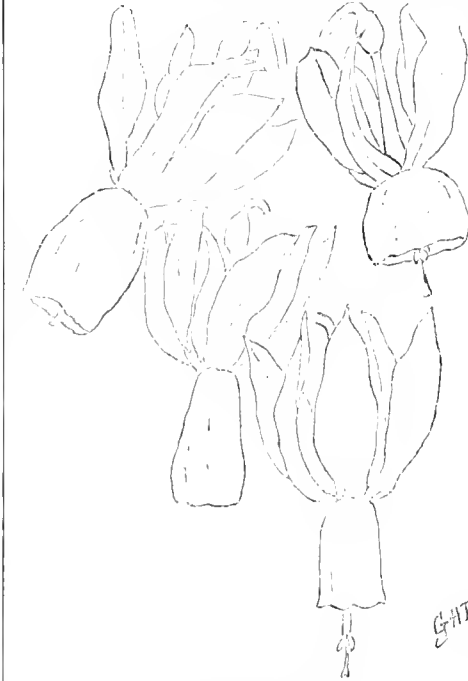
Narcissus cyclamineus.—Mr. Wolley Dod is surely right (p. 188) in denying this a place in Ajax or *N. pseudo-Narcissus*. I would go further and say that it cannot be, as has been suggested, a hybrid between *N. pseudo-Narcissus* and *N. triandrus*. It is scarcely conceivable that in such a hybrid the perianth should be reflexed more sharply than in *N. triandrus* itself. I believe that in all known hybrids of *N. pseudo-Narcissus* and *N. triandrus* the perianth, as might be expected, is bent back towards the tube less than the perianth of *triandrus* and more than the perianth of *pseudo-Narcissus*. And if *N. cyclamineus* were a hybrid of *N. triandrus*, it would in all probability sometimes have more than a single flower on a scape. I think that *N. cyclamineus* must be classed alone until some plant akin to it is found. Mr. Burbidge's statement (p. 160), that seed of *N. cyclamineus* germinates in about a month after being sown, surprises me. Seed sown here with all care did not germinate until February—at least, young plants did not appear until then—i.e., was some eight months in germinating. I once knew seed of *Narcissus* to appear above ground in about five months, but, as a rule, my seed lies from about June or July to December. Will Mr. Burbidge kindly give the exact dates, or as nearly as possible, of his sowing this seed and of its appearance, and help me by describing his special treatment?—G. H. ENGELHEART.

Primula obconica.—This little *Primula* is one of the very best that can be grown for furnishing flowers in winter. It has been in bloom continuously since the end of November, and is now,

March 1, quite a sheet of flowers, individual plants having from twenty to thirty trusses. It is alike invaluable for the side stage of the greenhouse, as a small plant for indoor vases, or for cutting purposes. Although it is so hardy and will throw up its flowers in a low temperature, it is, in common with the varieties of *sinensis*, seen at its best with a little extra warmth, and a batch should always be kept in a warm corner to furnish flowers for small vases, bouquets, &c. When once a stock is secured from seed it can be readily increased by division, and I fancy plants obtained in this way flower rather more freely than seedlings. Our plants are shaken out as soon as they have done flowering, pulled to pieces, and potted in small 3 inch pots; they get one shift some time during the summer either into 4½-inch or 6 inch pots as they may be required, and when these pots are filled with roots they receive occasionally some liquid manure.—E. B.

NARCISSUS TRIANDRUS.

The variation of *N. triandrus* in shape and length of the crown and exertion of the style are curious and interesting. The accompanying pen-and-ink sketch (of a single flower from each scape) is from a comparatively small number of flowers sent me by my friend, Mr. Wolley Dod. They were not



Variation of *N. triandrus albus*.

sent in order to illustrate this variation, which could probably be shown to be much more extreme. G. H. E.

P.S. — Since writing the foregoing I have noticed that the flower of *N. triandrus pulchellus*, the variety with yellow perianth and pale crown, is strongly Jonquil-scented; whereas the white or more common *triandrus* is scentless. This leads me to the inquiry whether *pulchellus* may not prove to be a hybrid of *N. triandrus* with *N. Jonquilla* or *N. juncifolius*, and whether I may not be wrong in supposing all *Narcissus* hybrids to be decidedly intermediate in all their features. If one parent, probably the male, sometimes gives colour only, or little modification of form to the hybrid, then *N. cyclamineus* may be the offspring of *N. triandrus* by a yellow form of *N. pseudo-Narcissus*. Moreover, Mr. Wolley Dod informs me that *N. cyclamineus* is not invariably one-flowered. I do not know, however, whether the rare occurrence of a two-flowered scape would tell us anything trustworthy about parentage, for many *Narcissi* which are truly one-flowered, e.g., Emperor, will occasionally produce two or more

flowers on a stem without fasciation. I can find no notice of the habitat of *N. triandrus pulchellus*, but it will be interesting to learn whether *N. Jonquilla* or *N. juncifolius* is found near it.

G. H. E.

LILIES AND THEIR CULTURE.

LILIUM AURATUM.—Must there not be something to be found out about the culture of this Lily, when we consider the enormous quantities of it that are every year imported from Japan, and that are not to be found in gardens in any quantities, except in pots; we cannot therefore avoid asking, Why is this? Other Japan Lilies are imported and seem to succeed, but *auratum* after a year's flowering seems to succumb, so that now, especially for pot culture, growers seem to treat it as an annual, and renew their stock of it as they do that of Hyacinths, never expecting any from it after the first year, and contented if they get a good bloom of it and then let it die; its cheapness also enables this to be done. Good bulbs can be bought in the auction mart for about 2d. each, and do I not recollect the time when Mr. Rucker carried home in triumph the first plant of it Mr. Standish flowered for fifteen guineas. One is at a loss to understand how it can ever pay the Japanese growers to send them over when they are such a drug; when we consider the expense of growing and packing, and freight—no inconsiderable matter—the auctioneers' commission, and other matters, it is a marvel why they export them at all. There is one drawback to the cultivation of this Lily in the open, and that is, that in case of wet or windy weather the pollen is blown or washed off in large quantities on to the petals and disfigures the flowers very much, while, when grown in pots, their overpowering perfume is far too heavy for the olfactory of most people. It is somewhat remarkable that there should be this difficulty about growing this Lily, as it is by the best authorities considered to be but a sub-species of the easily-grown *speciosum*. In its native habitat it is said to be found growing in light, rich soil amongst rocks and under shrubs, and the persons who have been the most successful with it are those who, like Mr. Wilson, Mr. McIntosh, or the Messrs. Walker, grow it amongst their Rhododendrons in the light, peaty soil of Surrey; yet other growers recommend a soil of which three parts are loam, but, after all, I believe that peat suits this, as it does nine out of ten Lilies, best. Many of the bulbs of this Lily instead of continuing solid, "break up," as it is called; the scales become separated, and small bulbs appear at their base. I believe such bulbs are of very little use; they will never again make flowering bulbs, and this is one of the reasons why the imported bulbs fail so. They may, perhaps, receive some injury, or, what is more likely, they resent being taken up and packed up, for I am sure a great many bulbs thus perish. My experience is that they do best when planted deep, provided the drainage is good and so that no water stagnates about the roots; but after all, I do not think that it is a satisfactory Lily to grow out of doors, except in some specially favoured localities.

L. MARTAGON.—While the commoner varieties of Martagon are grown everywhere, there are two which are sometimes considered difficult, and while not so widely known, are perhaps the most striking of the genus—the white and the very dark variety; the former of these is very pure in colour and exceedingly pretty. The finest clump of it I ever saw was in the garden of my friend the Rev. F. Tymons at Drumcondra, in the county of Dublin. A piece of that clump is now flowering in my own garden, and has been greatly admired. It does not seem to require any particular care, and in my rather light and rich garden soil seems to do very well. I have not been so successful with the dark-coloured *L. dalmaticum* or *Catanei*. It is sometimes called the black Lily, but, like many other flowers similarly named, it is really of a dark purple colour.

L. TESTACEUM.—This is one of the most satisfactory and fragrant Lilies that we have, and yet

there seems to be some doubt as to its origin. This I must leave to wiser heads. There seems to be no difficulty in its culture. It succeeds well in my light garden soil, and throws out some grand stems from 5 feet to 6 feet high, with half a dozen or more flowers on each stem of a very bright shade of yellow, somewhat tinged with red. Very pleasing and attractive.

L. CANDIDUM, the common white Lily or Madonna Lily, after being neglected or thought too common for anyone to trouble themselves about, has come into high favour of late years, and various questions have been asked as to the best way of growing it. The only point about which it seems to be particular is, that it likes to be let alone, for, as I have already said, in this neighbourhood it is to be found flourishing in all sorts of situations and soil, in bright sun and partial shade, in light soil and heavy soil; and, therefore, I must conclude there is no real difficulty about it in the southern parts of the kingdom, whatever there may be in the north. I think it is a great mistake to cut this flower for house decoration, for there are some people to whom it is most offensive, and most people think it too strong.

L. SZOVITZIANUM.—A very fine and distinct Lily, sometimes known as *colchicum*, and really a variety of *monadelphum* (so the wise men tell us). It is a very beautiful flower of a pale bright yellow colour, and when well established makes a very handsome clump.

L. FARDALINUM.—There seems to be a good deal of confusion about these North American Lilies, and undoubtedly a good deal of sameness, but most of them are well worthy of cultivation in our gardens, and are of easy culture. The finest clump of this Lily I have seen was in the garden of Mr. E. Harvey, at Aigburth, near Liverpool. It was in a bed with other plants, and had a grand and stately appearance. The same may be said of

L. SUPERBUM, a grand and noble-looking plant when cultivated in low and moist ground, in which it delights, being known as the Swamp Lily. It will not stand in ordinary borders such dry summers as we have had—the last two years have been too much for it in such situations—but where it has had plenty of moisture it has done well. I suppose one must regard

L. MICHAUXII as but another form of this. I received it a few years ago from Canon Ellacombe, and until last summer it did very well, but that was too dry for it, and I have this autumn removed it into what I hope will be a better place for it.

L. HUMBOLDTI is another fine form which, however, I have not been successful with, although friends assure me it is very robust. Most of these Lilies have a great similarity of colouring, although many differ in their markings, and hence, I suppose, the muddle of which some people complain in the catalogues. It is somewhat provoking to get a new variety, and find it to be almost, if not perfectly, the same as one already grown.

L. LANCEFOLIUM SPECTOSUM is, in my opinion, one of the most beautiful and satisfactory of our Lilies, whether for the house or open air. Its perfume is delicate, unlike the strong scent of *auratum*, and its graceful flowers are abundantly produced. It succeeds well in any light soil and is perfectly hardy, but I find that after a few years worms injure the bulbs, and it is best to take them up and replant them.

L. TIGRINUM.—What fine clumps of this one sees oftentimes in cottage gardens, and what a grand Lily it is! However, the old variety is eclipsed by splendens and *Fortunei*; the double Tiger is an effective flower, although lacking the grace of the single ones. As they come into flower somewhat late they are more useful.

L. BROWNII.—I cannot say that I have succeeded with this grand Lily, whose origin seems to be very doubtful, and a good deal of confusion has arisen as to its being the same as *japonicum*. It

seems rather difficult to determine, but Dr. Wallace says that after having grown the two side by side for a long time he is convinced they are distinct in every particular. In some gardens it seems to thrive luxuriantly, but neither in pots nor in the ground has it done well with me.

L. KRAMERI is another Lily I have failed with—I daresay through my own stupidity; but I have never happened to see it doing well where I have been. It is very beautiful, and succeeds, I believe, with Mr. Wilson and Mr. McIntosh; but that there is some difficulty about it I imagine from the fact that it is difficult to get English grown bulbs of it.

Such are some of the Lilies which I have tried, and while many of them have given me great pleasure, there are others which have been a vexation. Perhaps some of your readers can give me some clue as to the best way of cultivating those with which I have not succeeded.

DELTA.

ARCTOTIS ASPERA ARBORESCENS.

A PLANT of considerable beauty, but not often seen in gardens. As it is a native of South Africa, and therefore not hardy, cuttings must be made yearly, for which purpose July is the



Arctotis aspera arborescens.

best time for planting out the next season. It grows very fast, a single plant covering a space 4 feet in diameter before it is destroyed by frost. The flowers are large (between 3 inches and 4 inches in diameter); their colour a warm white, with dark centres. The stems are remarkably thick and furrowed; the leaves also are of some substance, with thick, fleshy midribs, so that the branches are heavy and apt to break down at the junction with the main stem. Both leaves and stem are of a pale grey-green colour. It is best suited for an isolated position on a sheltered, sunny bank, or in bold rockwork.

Cyclamen Coum and ibericum.—These are charming spring flowers, and well worth a place on the rockery where they can be sheltered from the sweeping east winds which usually prevail at this season, and which are very injurious to the flowers, as well as to the health of the plants. We find that they are much more floriferous and at home where they can be well sheltered than when exposed. A free, chalky soil, or one made up chiefly of broken pieces of lime and brick rubbish, suits them better than any other, and if allowed to sow their own seeds, hundreds of the tiny seedlings will be seen strewing the ground

the following year. If grown separately the seeds of each will come true, or nearly so, the variation being only within certain limits, but if grown side by side (and in this way the *Atkinsi* race was developed) they will hybridise freely, and the result will be numerous and varied coloured flowers, many of them far surpassing the types. The flowers of many of the varieties, especially the darker kinds, show considerable variation on the same plants at different periods. When first opened they may be bright purple, but towards the end they develop a pale, washy pink, very inferior to the first. We grow them in shade in a rough, gritty or lumpy soil, to which has been added about equal parts of stiff loam and leaf soil. The situation is well sheltered, and to this alone we attribute our early display of well-formed flowers. They are really handsome, the colours blend admirably with each other, and as we allow them to scatter their seeds and grow where they please, they form very effective groups. *Cyclamen repandum* and others will soon be flowering too, so that we expect a continuous display of these flowers for some time to come.—K.

Hardiness of *Ficus repens*.—I can confirm all "W. L." says about this (p. 163), and discovered it many years ago in a similar way to what he there describes. The plants clothed the inside of the wall of a plant stove, passed through several crevices, and also under the top ventilators, and so reached and largely clothed the outside, where they lived and thrived while the house remained. Since then I have often used it in the greenhouse and other cool houses, in which it has grown freely. This useful wall-cloth is less grown than it used to be, chiefly because its leaves are not popular, and its stem-root almost disqualifies it for table decoration. Still, it is used in some places for the latter purpose, and it forms a useful and a clean clothing for walls.—HORTON.

The Snowflake (*Lencojum vernum*), when grown in any quantity, is a charming flower for decorating the rockery or bulb border at the present season. It takes some time to get established—at least it has been so in our case—but when established it throws up its pretty, green-tipped flowers in the greatest profusion. Growing amongst the pure and large-flowered Snowdrops, such as *Galanthus Imperati* and *Elwesi*, it stands out prominently with its more robust habit and larger drooping bells. In the type the spots are green, but in the variety *carpathicum*, which until lately was comparatively scarce, the spots are rich golden yellow, and the scapes generally carry two flowers. This also occurs in robust plants of the common *vernum*, but is rather an exception. However that may be, they help wonderfully to attract attention to our spring gardens, and no grower should be without one or both of them. *L. hyemale* is also a pretty, though somewhat rare, bulb as yet, and as it is never likely to be grown successfully in the open, it is not of so much importance for outside work as the others. The flowers are white, produced long after the leaves have developed. *L. aestivum* and *pulchellum* are taller-growing, summer-flowering kinds, yielding large heads of many flowers, smaller than *vernum*, but with the green spots, and in the case of *aestivum* deliciously fragrant.—K.

SHORT NOTES.—FLOWER.

Daffodil Henry Irving. This is a variety of the sprays type with a broad yellow perianth and very large yellow trumpet. It appears to be a very early kind. We saw it recently in the gardens at Park Hill, Stratham, where it is greatly appreciated.—R. G.

Spring flowers.—During the past week we have had a mixture of fog, frost, and hot sunshine, and spring flowers do not seem at all happy under their influence—at least the few that have as yet ventured above ground. Snowdrops, Primroses, and Hepaticas look as if scalded, hardly a bloom fit to gather being left a result doubtless due to the action of bright gleams of sunshine on the frozen petals.—J. G. H.

Yuccas and Pampas Grass.—In our pleasure grounds there is a large and very fine bed of *Yucca gloriosa*, which at this season, when Nature seems, as it were, fast asleep, is very effective, the plants being furnished with deep green foliage close down to the ground. Fine, however, as the *Yuccas* are, an idea struck me that the appearance of the bed might be improved by intermixing them with *Pampas Grass*. The silver-like plumes of the *Pampas*

in autumn and winter would light up the scantier foliage of the Yuccas and add a charm to the bed.—R. GILBERT, *Burghley.*

FRUIT GARDEN.

W. COLEMAN.

RENOVATION OF LATE VINE BORDERS.

THE lifting and relaying of Vine roots, at one time looked upon as sacrilege, having been reduced to a system, there is hardly a garden of any note in which this important work is not more or less carried on from July to November, and, provided the operation is expeditiously performed, the full canopy of leaves the Vines are carrying not only favours their taking to the new soil before they fall, but enables them to carry fair crops of Grapes the following season. Early, mid-season, and autumn Vines, especially where they have the run of internal and external borders, come under this treatment, and the external borders of Lady Downes and Muscats may also be operated upon as soon as the Grapes are ripe, but few care to interfere with the interior until after they are cut. As these crops are allowed to hang till December or the early part of January, when the Vines are leafless and dormant, the cautious cultivator very wisely makes up his mind to wait until the sap is again on the move. It sometimes happens—I say this advisedly—that the great pressure of other work early in the spring prompts one to put off the operation of lifting until another season, and hope often against hope for better luck next time. He may blame himself for having given too much or too little water, or for the neglect of trifling details, but no matter how carefully these errors may be corrected, once the roots have gone wrong it rarely happens that anything short of lifting and relaying in sweet compost sets matters right. This, at least, is my experience, and knowing how quickly newly renovated Vines respond, and how pleasant it is to see them daily growing stronger, I cannot forbear advising all who are inclined to waver to take the bull by the horns, and I venture to say they will never regret having done so. Late Vines as a rule are still comparatively dormant, but they will soon be pushing, and so soon as the buds begin to swell the work of lifting may be taken in hand. Meantime, fresh clean drainage and new compost must be prepared ready for wheeling in, and, provided the latter can be allowed time to ferment, so much the better, as the condition of the newly-laid roots will then be precisely similar to that of pot Vines, which all agree should not be shaken out and repotted until after they have started. If new turf is to be cut for forming the border, it should be done during this exceptionally dry weather, for not only is it in the best possible condition for breaking up, but, provided it is thrown into a high ridge and protected from snow and rain, fermentation is sure to follow. Correctives generally consist of old lime rubble, road-scrappings, burnt refuse, and bones. The first should be broken down to the size of Walnuts, and used in the proportions of one to six. The second should be old, not green, and where the burnt refuse can be obtained direct from the fire, it will destroy wireworm, and be found a valuable aid in creating fermentation. Bones being rather expensive, this excellent stimulant is generally used in moderation, but quality being preferable to quantity, a well-made narrow border, to which a good lining of fermenting leaves can be added, always answers better than larger masses of compost without it. Assuming, then, that the internal border area is over 6 feet in width, and from 2 feet to 3 feet in depth, not more than 6 feet should be occupied

by fresh compost the first year, but the whole width should be effectually rubble-drained before a single sod is taken into the house. Upon this, the border, whatever width may have been decided upon, must be set out and covered with turf Grass-side downwards. Similar sods will be needed for building up the retaining-wall as the work of forming the border proceeds, and when high enough for relaying, all strong, fibreless roots may be laid in a diagonal direction, or cut back to a length shorter than the width of the border. When all are laid and covered, a moderate supply of water at a temperature of 90° will carry the soil home much better than treading, and assist fermentation. A light mulch of fresh, but short, stable manure will then be needful; otherwise, the surface will become dry, and the new roots will strike downwards, instead of upwards, in search of moisture. Now, this drawing them upwards being very important, and sweet, fermenting leaves plentiful, no harm will be done by placing a foot or so all over the surface, either on the top of, or in lieu of the mulch of manure. The vacant portion of the border area eventually to be filled up with new compost as fresh roots require it will then have to be dealt with. A long, narrow trench in ainery being inconvenient and the reverse of ornamental, it must either be planked over or filled up. I have said a lining of warm leaves will be found a great help to the roots—here, then, is the very place for it. Well worked stable manure will do; a mixture of manure and leaves will be better; but the best of all materials is a good body of Oak leaves, as the heat from these is steady; it lasts longer, and the gentle warmth and moisture rising from the surface will break and feed the buds where fleeting drenches through the syringe fail.

The American Blackberries are quite a failure with me. They cannot be induced to make any growth either with or without manure in the soil; I have tried them both ways. The only sort that makes any growth worth notice is the Parsley-leaved kind, but this cannot be compared with our native Bramble.—J. C. C.

Fig Pingo de Mal.—In the Southfields Nursery of Messrs. Veitch we lately had an opportunity of seeing a very fine collection of Figs growing for the purpose of comparison. The varieties there grown include Brown Turkey, White Marseilles, Negro Largo, Black Ischia, Bourjassotte Grise, &c. Among them the above-named variety, which was started at the same time and was undergoing the same treatment, was far ahead as regards earliness, being at least ten days earlier than any other. It is a very free bearer, with white flesh like the White Marseilles.

Cold storage for fruit is no longer an experiment, according to a committee appointed by the Pennsylvania Horticultural Society to examine into the subject. They visited structures costing from £60 to £2000. Dr. Funk's new building seems to be perfect in its working and simple in construction. It costs £1400. The walls are of stone, 2 feet thick; next to this on the inner side is an air space of 7 inches, and inside of that a charcoal lining of 4 inches. The storage room on the ground floor is 8 feet high and is divided into three apartments, all preserved at a uniform temperature of from 35° to 36° the year round. It has a storage capacity of 3000 barrels. The upper storey or ice chamber is 12 feet high, and holds 600 tons of ice. Flooding is omitted here, and the drip is provided for by means of galvanised gutters arranged to carry off the water without preventing the cold air from descending into the fruit room. The entire structure is 40 feet by 55 feet and 20 feet high. Barrels of cider placed in this house in the autumn are to day in perfect condition, the contents being as sweet as if just from the press. Duchesse Pears are keeping admirably, and to all appearance may be preserved until the next crop is placed in the market. A cheaper house, costing about £200, is recommended for marketmen and

small producers. It is 30 feet square and 25 feet high. The walls are of brick, 13 inches in thickness, and only extend as high as the first storey, some 9 feet. The ice apartment above is some 16 feet high, with air and charcoal chambers, as described above. The lower room is plastered only. This has a capacity of 900 barrels, and holds 300 tons of ice. Although there is no perceptible means of ventilating any of these fruit apartments, they are at all times dry and pleasant. As in ordinary ice houses, the contents must be well protected from the air by a thorough coat of sawdust and have ample ventilators at the roof. Success depends greatly on securing large masses of ice packed solid.

Cherries best on poorest soil.—Each succeeding year more fully convinces me that the greatest enemy to our cultivated varieties of the Cherry is a rich soil, not necessarily because a strong growth causes a speedy dissolution, but for the reason that disease is the inevitable consequence. It might not have been so in former times, but we have constantly new disorders in the vegetable world; so, while we do not know why a plethoric condition of the Cherry tree is the forerunner of some form of disease, it unfortunately follows, and the slow-growing, thoroughly-matured wood prospers only after its vigorous companions have passed away. What are known as the sweetest Cherries, mainly the Hearts and Bigarreus, are more susceptible of disease in some form than the Morellos, and as a safeguard they should be planted on rather thin, light soil, with little fertilising matter applied in after years. Mineral food is decidedly preferable, especially some form of potash, but avoid at all times rich stable manure. As stirring the soil is an incentive to growth, it is best to omit this as much as possible in the vicinity of Cherries; and as a tough sod retards growth, this should be encouraged close around the trees.—J. HOOPES, in *New York Tribune.*

Shading Muscats.—I have under my charge here two vineries used for growing Muscats, the foliage of which has for some years past got burnt. If there is one thing more than another to which I have an objection it is a scalded leaf in ainery. I have had the house re-glazed, and although there is some improvement, still a burnt leaf is often visible. Not liking the idea of being beaten, I, last season, shaded the lower lights of one house, but at the time I was somewhat in fear, if I shaded too thickly, I should lose the colour; but I am happy to say the bunches under the shade both swelled well and coloured perfectly. In the matter of shading I was somewhat perplexed as to what kind of shading to use. Summer cloud has been highly recommended, but I thought it too dark for my purpose; then the everlasting putting on and taking off scrim canvas could not be thought of. Mentioning the matter to my handy man, who, I am happy to say, never sees any difficulties, and telling him I wanted a nice light shade prepared, he answered instantly, "I can prepare you the very thing you want." This preparation is cheap, and once put on it will last all the summer, and is made as follows: To one gallon of skimmed milk add three-quarters of a pound of whiting, well mix it together, adding a quarter of a pint of linseed oil. This makes a very light, but efficient shade. There is some difficulty in cleaning the glass in the autumn, but that may be overcome by taking an ordinary square of glass and scraping off the mixture.—L. G.

Melons, old and new.—No one can doubt that we are overdone with new kinds of Melons of very doubtful merit, which are frequently recommended, to the injury of old and better flavoured sorts. After having met with many disappointments in the so-called new kinds, I have made up my mind to ignore their existence altogether if I can only meet with the sorts that were extensively grown thirty years ago. These were the Beechwood (scarlet flesh) and the Egyptian (green flesh). If I could meet with these now I should not grow any other, and I am sure that all concerned would be benefited. I should not only get sorts that have sufficient strength of constitution to retain their foliage in a green, healthy condition until the fruits are ripe, but I should have size and flavour equal to that of the most popular sorts now grown. The greatest evil attending the growth of the newer sorts is that they

have an awkward way of losing most of their largest leaves a short time before the fruit gets ripe, and as a consequence the flavour is inferior. It appears to me that the new sorts are more tender than the old, and the only satisfactory way of growing them is to give them a richer soil than is usually provided for Melons. I find they retain their leaves better when one-fourth part of manure is added to the loam, but this is not wholly satisfactory.—J. C. C.

PROTECTING THE BLOSSOMS OF FRUIT TREES.

FRUIT trees of all kinds are looking very promising, the blossom buds being very numerous and strong. The end of last summer was dry and warm, and the wood ripened well. We have young shoots of Apricots from 15 inches to 18 inches long well set with blossom buds the entire length, which is a sure sign the ripening period was a favourable one. The blossoming period this year is very late, and this is generally considered a point in favour of safety. Taking the average of seasons, according to my notes, here for the last eighteen years, the Apricot blossoms begin to expand about the 12th or 13th of March, but this year they will be later than the average. There are generally local conditions and circumstances which should be taken into consideration in selecting and apportioning the covering for fruit tree blossoms. The mere fact of a wall being well situated as regards shelter from cold winds will make several degrees' difference in the temperature. Again, a dry wall in a sound condition as regards construction and coping is much warmer than if the damp is permitted to penetrate. All garden walls, I think, should be hollow. The wall of a building, sheltered by protecting eaves from which the water is conveyed by sound gutters, is better adapted for choice fruits than a garden wall, even if well coped and dry. Something depends, too, as regards the amount of shelter to be given upon the way the trees are pruned. If there are long spurs projecting from the wall, the blossoms will be exposed to more danger than if the practice of laying in plenty of young wood has been followed for some time.

We cannot treat the Apricot like the Peach, as it would involve too much knife work, but the spurs should be kept close at home, and as much young wood should be laid in as possible without crowding, and the latter is most important if the wood is to ripen and the buds be fertile. It may be thought this has not much to do with the protection of fruit-tree blossoms, but it has a good deal to do with it if the covering is to be just equal to the object desired—neither too heavy or too light. Some years ago we had a number of Britain's wall nets, but the wind from the German Ocean, which at times rushes across the fens with considerable force, there being nothing to check its career, soon blew it into rags, and now we use, as a rule, no other coverings but Yew branches and fishing nets, which are cheaper, involve less trouble, and are quite equal in results to anything we have tried previously. The Yew sprays are fresh cut from the bushes about a foot long; the thick ends are pushed in under the branches of the tree, and the feathery spray hangs down over the blossoms, not only affording shelter, but keeping them dry. They are not placed in so thickly as to darken unduly, as I am convinced too much covering is hurtful to the trees both now and hereafter. When a sufficient number of branches are placed on the trees a fishing net, as wide as the wall is high or nearly so, is drawn over and secured; if there was no net, the wind would scatter the branches all over the garden. There is also in connection with this kind of covering another advantage, as by the time the fruits are set and the foliage requires more light and air the leaves are falling from the Yew branches, so that day by day there is an increase of exposure, and where this increase is too tardy or too long delayed it is a very easy matter to get in behind the nets and remove, as occasion requires, a few of the sprays to let in more light and air as the trees need it. When

heavy coverings are used their daily removal when the weather is fine is a necessity, and the soil about the trees often gets trodden into a quagmire, and scarcely recovers its tone during the season. E. HORDAY.

Market Apples of the future.—These should be above middle size, good in colour, and free bearers. They should either be early autumn varieties or late spring ones. To cultivate Apples for a mid-season supply is a delusion, as at that time the Americans beat us—not as regards quality, but in good looks and good prices. For an autumn supply of dessert Apples I should recommend King of the Pippins, Cox's Pomona, and Irish Peach. For kitchen use, Schoolmaster, Grenadier, and Lord Suffield. For a late spring supply of dessert Apples, I would plant May Queen, Sturmer Pippin, and Margil. For a spring supply of kitchen Apples, I do not think anything can equal the Wellington, Barnack Beauty, and Impératrice Elizabeth. Be it clearly understood, however, that I should not recommend these twelve exclusively for a nobleman's garden, because we have some equally good, if not better, as, for instance, Wycombe Pippin, Kilston Pippin, and Cox's Orange Pippin, but being shy bearers they are unprofitable to the Apple grower.—R. GILBERT, *Borghley*.

SEASONABLE WORK AMONG FRUITS.

STRAWBERRIES.

THE weather throughout the past month having been exceptionally fine, early plants have made rapid progress, and the first batches will be fit for removal to the hottest houses, where they will remain until the fruit is ripe. When this move forward is made the plants should be well syringed to free them from spider, and regularly fed with liquid of a generous nature, but not too strong. Many growers use saucers, but a man who waters judiciously does not require them, and certainly the best flavoured fruit is obtained from plants whose crock roots are never choked by stagnant liquid. If free kinds have set abundantly, the fruit should be well thinned, a dozen good average-sized Strawberries being quite sufficient for the crop. The best time, however, to thin is before the flowers open, as the removal of all weak side buds throws strength into those left, and, provided other conditions are right, there exists but little danger of their setting. Some forcers allow the fruit to hang over the sides of the pots to ripen, others tie every truss to small sticks, but small forked pieces a few inches in length stuck into the balls answer as well as anything. Where large batches of plants are started together the first selection for the fruiting house favours a general re-arrangement, and, as a matter of no small import, a complete change of position. The most forward can then be conveniently placed for fertilisation, whilst those taken in to fill up the rear can be regularly syringed until they come into flower.

Succession.—Large or small batches, according to the stock, of the mid-season varieties should be taken into a moist temperate pit or house about once a fortnight, well watered and syringed, and fumigated occasionally to secure immunity from fly when they come into flower. Pot Strawberries have many enemies which lurk through the winter and spring into new life when introduced to the forcing pits. Spider, fly, and mildew are sometimes troublesome. The first and last, in hot, dry gardens, often cling to the old leaves throughout the winter, and start up in full vigour just when they are least wanted. Sulphur in some form is the best remedy, but prevention being better than cure, the plants, when these pests prevail, should be immersed in strong soap water, to which a few handfuls of sulphur has been added, as they are taken from their winter quarters.

Late plants intended for fruiting in cold pits and keeping up a supply through May should have full exposure through the early part of bright, fine days. If plunged to the rims in leaves they will not require daily watering, but on no account

must they be allowed to become dry; therefore during the time the lights are off they should be carefully supplied and closed with sun heat to help the crowns forward. Plants of some kinds, notably President, in cold pits are very subject to mildew, and as this spreads rapidly, dry sulphur from the outset should be freely worked amongst them.

From the forcing houses to stock plants on the open quarters is but a step, and as future success entirely depends upon an early start with runners, these should now be looked to. Some depend upon early forced plants for their first runners, but independently of the presence of spider, their constitutions are weakened by hard forcing, and the best they can give lack vigour. To maiden plants of the past year then we must look, and as these may have been lifted by frost and affected by drought, they should be well firmed and mulched, and liberally supplied with water. If we watch the shrewd market gardener we see him forcing early growth with an abundance of stimulating food, and as this is just what the early Strawberry forcer wants, he cannot do better than follow his example. Plants from which runners are to be taken should not be allowed to produce flowers, as the production of good fruit and early stock are incompatible. Therefore the better to husband their vigour and prevent degeneration every scape should be removed as soon as it is visible.

PEACHES.

To the experienced cultivator the usual routine of disbudding, heeling down, and thinning of fruit will fall as naturally as night follows day. To the inexperienced some of these operations may appear extremely difficult and mistakes may be made, but provided they proceed with caution and allow this work to extend over two or three weeks, they will find a place for every shoot, which must have plenty of room for the full development of its foliage. The most common mistake in disbudding and tying down is that of leaving too much wood, but as this happens to fall on the right side it can always be remedied by the subsequent removal of as many intermediate growths as will give a space of 6 inches to 9 inches to each shoot. A good shoot close to the base and another at the point are imperative, otherwise the finest tree in a year or two will be little better than a skeleton, and without an even spread of foliage the crop the first season will not properly swell to maturity.

Thinning the fruit, in like manner, is a piecemeal operation, and must be governed by the age and strength of the tree. Hale and healthy trees that have filled their allotted space set very freely and mature fine highly coloured fruit; but they must not be overloaded, otherwise they will balance the account by refusing to lay on the last ounce of pulp, and by ripening up the crop prematurely. When a tree is overloaded it allows the fruit to drop, or part, when touched by the hand; when fairly balanced, full size is attained and the Peaches will hang for some days after they are dead ripe. Allowing them to remain until they are in this condition is not, however, good policy, as piquancy of flavour at this stage gives place to flatness, but this staying power is the best of all tests of judicious thinning. A good Peach tree will finish a large fruit for every square foot of trellis covered with foliage; possibly under high pressure it may ripen a few more; but the weight of pulp in the aggregate will not be equal to that of the smaller number, simply because a greater number of stones and kernels have to be formed and perfected. We sometimes hear of Peach trees carrying double this number of fruit; but, in the first place, this overcropping is suicidal; in the second, absurd reports are received by many as facts, and lead to unpleasantness between employers and their gardeners.

Heeling down—When the trees have been well disbudded, and the fruit reduced to within 40 per cent. of the crop, the young shoots should be neatly tied in, almost close to the wood from which they have started. This process will give

them a set in the right direction, and as Peaches make rapid progress when a little freedom is allowed, they may then be left alone until the shoots are 6 inches to 9 inches in length. The strongest near the extremities, also leaders, must then be tied down, but weak growths near the base will best hold their own by growing upwards for a week or two longer. As tying is proceeded with, an eye should always be kept on strong growths, which, unless they are leaders, must from time to time be pinched to strengthen weak parts and maintain the even balance of the trees.

Water in plenty and good syringing must not be overlooked, and the fumigator may be needed occasionally, but unless those pests, pot Strawberries, have been in the house, good culture should now keep the trees free from aphids. The water given to the roots should be warm, and that used for syringing free from lime, otherwise the woolly coats of the Peaches will soon be disfigured. One of our best plant growers assures us that cold water answers quite as well as warm. I am not prepared to contradict him, but I must confess a strong leaning to the tepid bath not only in forcing houses, but wherever rapid progress is of importance.

Mid-season houses. The trees in these have had an exceptionally good time for setting their fruit. We generally run over them with the brush, but this season fine, sunny days have brought the hive bees to our aid, and every flower appears safe. So much for our fickle seasons; last year at this time we were half buried in snow, and were obliged to sweep the roof of the same house to let in daylight. The fruit nevertheless set well, although the temperature sometimes nearly touched 32°. Many people dread allowing their house Peaches to fall below 45° when in flower, but this fact proves an assertion I have often made, that any temperature short of actual freezing is not unfavourable to the setting of the fruit, always provided the trees and atmosphere of the house are kept proportionately dry. I do not, of course, advocate this close sailing, but the remark just now comes *apropos*, as late houses this season are unusually forward, and those who have not yet invested in hot water, whilst quaking under unusually sharp frosts—12° on the 1st inst.—may cull a grain of comfort from the information. I would not, however, have them go too far, as March frosts equally severe may follow cold, wet days, when the result will be less satisfactory.

Where fire-heat can be applied in cases of emergency, these late trees will now derive great benefit from daily syringing, but, having full command of the situation, early closing with strong sun-heat will not be necessary. Water, too, through the hose must be freely administered not only to internal, but to external borders also. Last year, after heavy falls of rain and snow, I neglected the hosing of an external border before it was mulched in March. The flowers set well, but all the fruit did not swell away kindly, and although I had a good crop, the check was afterwards traced to want of water. This season we have not had a day's rain since Christmas; consequently I am now giving a second supply of water. This garden lies low and damp on a cold bed of limestone marl. How external borders in high and dry gardens may have been affected I leave their owners or managers to inquire. If water is plentiful, a few inches will do them no harm, as drought at this critical period is quite as fatal as frost. If the trees are swelling a profusion of flower-buds, those on the upper sides of the shoots can be greatly strengthened by the removal of the lower half. This operation can be quickly and effectually performed by drawing the finger down the undersides of the flowering wood. As late Peaches always set freely, assisted fertilisation is of little consequence; still when the cultivator wishes to make success certain, an occasional run over with the brush will set his mind at rest. Smoking, on the other hand, is very important, and should be performed two or three times during the ten days preceding the opening of the first flower.

CUCUMBERS.

As some of the oldest winter plants will not only be growing stale, but their room in many places will be required for Melons, spring-sown plants should be worked on as rapidly as may be consistent with the maintenance of a sound constitution. Pot culture is generally considered the nearest approach to express speed, as an abundance of bottom-heat can be given to the roots, and the stimulating gases constantly rising from the decaying leaves exactly suit the foliage. Heat and moisture being the main factors, a range of 65° to 70° by night and 75° to 80° through the day will ensure rapid growth of vine and fruit, especially if this bright sunny weather favours running up to 90° after closing with moisture. Shading, if possible, should not be commenced, as plants so treated give a great deal of extra trouble throughout the season, and, being rendered extremely tender through want of light, they are always susceptible to the ravages of insects and mildew. As these plants are expected to continue in bearing throughout the summer, close or crowded planting should be carefully avoided, and, the better to secure a good foundation, they should be manipulated and tied in at least twice a week. Light cropping at all times, but especially when the plants are young, cannot be too rigidly enforced, and in order to husband their strength every fruit should be cut before it attains its full size. A Cucumber 12 inches to 14 inches in length is a very convenient size both for private and market use. For special purposes they may be grown to a larger size; but for quality and profit, fresh, quickly-grown fruit, with the flower attached, cannot be surpassed. Where winter plants are grown in several small compartments, the month of March is a good time to commence cutting over those which have been longest in bearing. By cutting over, it must be understood that all the fruit, large and small, long straggling vines and a few of the worst leaves must be removed. Cleansing the house and dressing the plants with insecticides will then follow; but the work will not be complete until exhausted mulching and sour compost have been replaced with fresh, warm, turfy loam. A bottom heat of 80° to 85°, from fire and fermenting material combined, will immediately restore root-action, and fresh fruitful growths in due course will refurbish the trellis. Once a fresh start is secured, ordinary treatment will keep these renovated plants not only in bearing, but extremely fruitful for some months to come.

Cucumbers in frames.—When the beds have lost their fierce heat and the young plants are ready for turning out, the hills or ridges of light, rich, turfy loam should be formed on a good base of large sods turned Grass-side downwards. These sods act beneficially in two ways: in the first instance they keep down strong heat and injurious steam; in the second they keep the compost sweet, and prevent the strong roots from striking into the bed of decaying manure when the heat is declining. Rank, unmanageable growth, of course, follows, but the Vines are unfruitful, and a spell of cold, sunless weather or too much water not unfrequently bring on an attack of canker. A gross habit of growth in frame Cucumbers or Melons being strongly objectionable, too much attention cannot be devoted to these intercepting sods, and mixing animal manure with the compost should never be practised. When the hills are thoroughly warm and the heat stands at 80° they will be in suitable condition for the reception of the plants, but on no account should they be turned out until the bottom-heat is steady. If the roots have commenced coiling round the balls, they should be very carefully loosened with a finely pointed stick before the warm compost is placed around them. This matter, trifling in itself, is very important, as I have seen failure follow planting where this detail has been neglected. A little warm water will settle the soil about the roots, but the balls being thoroughly moist at the time of turning out, this element for a few days must be given

sparingly. Slight shade if the plants flag may be necessary, and the invisible enemy, rank steam, must be allowed to escape by giving a chink of air very early. Linings at this early and uncertain season should be placed round the frame at the outset, and well-worked manure and leaves should always be on hand for renovating when necessary. The next and last item for the present is covering, for without this checks and chills will heavily handicap the best frame cultivator; nay, more, with only a thin sheet of glass above the tender foliage heat will escape much faster than the best fermenting materials can possibly generate it. Bass mats hitherto have been extensively used, and there exists a feeling of comfort and security from outward pressure when the lights are snugly covered with a double thickness of dry mats. Against wet, unfortunately, they are not proof, but then there are other materials which may be used for throwing off rain and snow if gardeners who have not been half spoiled by hot-water pipes would take the trouble to provide them. First of all we have the substantial reed or straw hurdles, wooden shutters, corrugated sheets, the market gardener's rough-and-ready, but none the less effectual, covering of long litter, and, last of all, oiled canvas sheets, which can be obtained of any length and width with short cords attached for securing them in windy weather. These I can strongly recommend, as they are clean, neat, and cheaper than mats in the long run, but being naturally cold a dry mat should be placed next the glass to form a warm non-conducting medium in bad weather.

W. C.

GARDEN FLORA.

PLATE 587.

THE ALGARVE SUNROSE.

(HELIANTHEMUM ALGARVENSE.*)

WITHIN the last two years we have given in THE GARDEN no fewer than four coloured plates of Sun and Rock Roses, but they are so numerous, so beautiful, and such important garden plants, that they well deserve to be better known in order to bring them into more general cultivation. The Sun Roses we have previously figured are *Cistus florentinus*, *C. formosus*, otherwise known as *Helianthemum formosum*, and *C. ladaniferus* var. *maculatus*. These are all delightful shrubs, yet are not to be found in one out of a hundred gardens, even in the southern counties, where their hardiness does not cause much anxiety. Fifty years ago both *Cistus* and *Helianthemum* were extremely popular, and the kinds grown could have been counted by the hundred, if the forms of the common *Helianthemum vulgare* were included. So important were they considered, that the botanist Sweet published a book sixty years ago, which was entirely devoted to illustrations and descriptions of Rock or Sun Roses. The book is called "*Cistinea*,"† and may be bought second-hand, though somewhat rare. There is, and always has been, great confusion in gardens as regards the nomenclature of *Cistus* and *Helianthemum*, and one rarely sees a species under the same name in two collections—the *Cistus* and *Helianthemum* being so much alike in flower, and often in habit, that the confusion is pardonable, especially when the confusion is commenced in the case of several species in such authoritative works as the *Botanical Magazine*. For example, the plant we herewith figure as *Helianthemum algarvense* appeared in the *Botanical Magazine* (plate 627) as *Cistus algarvensis*, and under this name it is grown and

* Drawn by Miss Lowe, Woodcote, Wimbledon, and printed for THE GARDEN by G. SEEVERS.

† *Cistinea*: the Natural Order of *Cistus* or Rock Roses. Illustrated by coloured figures and descriptions of all the distinct species and most prominent varieties that could be at present procured in the gardens of Great Britain. By R. Sweet. 1830.



HELIMPHYS ALBA (L.) DC.

sold in nurseries generally. It is a true *Helianthemum*, but it is known by several aliases. *H. algarvense* is the name followed by some botanists; others call it *H. ocymoides*, or the Basil-leaved Rock Rose. It matters little which is correct, so long as we have such a beautiful plant in plenty, and up till now it is one of the few of that long list of sorts grown, as we have said, fifty or sixty years ago.

Accompanying the plate of *Helianthemum formosum* given in THE GARDEN (Vol. XXVI, p. 420), an admirable descriptive account appears of the chief species of *Helianthemum*, written by Mr. G. Nicholson, of Kew, who also gave a similar account of the species of *Cistus* in Vol. XXVII., p. 570, accompanying the plate of *Cistus florentinus*. In each account Mr. Nicholson reviews the genus, describes the species, and quotes a list of their chief synonyms. There is, therefore, no need for us to go into the subject here, as anyone desirous of getting information can refer to those volumes.

The Algarve Rock Rose is one of those beautiful shrubs growing wild in the south-western parts of Europe, chiefly in Portugal, where it is most plentiful in the Algarves; hence the name, Algarve Rock Rose. It grows from a foot to a yard in height, and varies a good deal in size of foliage and the intensity of the blotches on the petals. The flowers remind one strongly of those of that pretty annual, *Calliopsis bicolor*, but while this is a late summer plant, the Rock Rose flowers in early summer. As in the case of other Portuguese species, it is not an absolutely hardy plant, and in most places requires a little protection during winter. But such a charming plant is worth any attention. It should always be planted high and dry, never on the flat, and in light soil well drained, as these conditions always favour its hardiness. It need hardly be said that every Sun Rose and Rock Rose should be planted where they can get the full sun. They are children of the sun and cannot exist without it; it is their life. Miss Jekyll is very fortunate with Sun and Rock Roses at Munstead. She plants them on a high and dry bank, scattered here and there with big boulders, and there the plants spread and grow in their own way. And this particular bank is a glorious sight in flower-time, for though each flower does not last more than a day, the crowds that every bush produces in quick succession make the flowering season extend a long time. Sun and Rock Roses should always be planted in open and warm places, and always in groups by themselves so that they may be easily protected during winter should occasion require. Some recommend planting them on the "margin of shrubberies," a common phrase, but very indefinite, and of all places it is the worst for these shrubs for several reasons. They are apt to become overrun by stronger growing shrubs, or are shaded by them, and, worse than all, strong-growing shrubs if near soon impoverish the soil of the best-made Sun Rose border. A raised knoll—rocky, if you like—is the place for *Cistus* and *Helianthemum*, and with the variety of sizes, heights, and habits to be found even among those that are still in cultivation, one can make most picturesque groups, and so arrange them that their glowing yellows, pure whites, rich crimsons, and pinks may harmonise in a beautiful way. One often sees Rock Roses planted on a heap of stones or brick rubbish, which is a mistake, for although they like to thrust their roots beneath stones to get moisture in summer, they want good soil, as other shrubs do. We are now planting a group of *Cistus* and Rock Roses in a Surrey garden, and we have so arranged them that the tender *Cistus* make the main group by themselves and can be readily

protected in winter, while outlying masses or groups consist of *Helianthemum*, about whose hardiness we have no doubt. W. G.

STOVE AND GREENHOUSE.

T. BAINES.

EARLY FLOWERING PELARGONIUMS.

THE large-flowered varieties of *Pelargonium* being as a rule banished from greenhouses in private gardens is the reverse of a gain. It would be difficult to point to any section of plants that afford such a wealth of rich and varied colours as we meet with in the almost endless varieties that have sprung from the pretty, but insignificant Cape species, to which the present race of these plants owes its parentage. More recently the zonals were taken in hand, and with them also much was done in raising varieties with larger flowers than the older sorts possessed, and amongst the varieties obtained by the English, as well as the Continental raisers there are many with colours altogether new and distinct from the older race of zonals. The new varieties, in common with the old sorts, are proverbial for their continuous habit of blooming, continuing to produce flowers more or less so long as the plants are kept in a growing temperature, even during winter. This natural disposition in the zonals to keep on giving a succession of flowers, combined with the little skill required in their cultivation, has had much to do with the extent to which in recent times they have been grown, an extent to which, whilst admitting all that can be claimed for them, has been in excess of their merits, as at best there is an absence of refinement in the colours of their flowers and a sameness in their general appearance that places them in an inferior position to the large-flowered division, which they have now in a great measure superseded. For a long time there was one feature common to all the large-flowered varieties that made their appearance, that is they were late spring or summer flowerers, their habit of growth being such that if subjected to the amount of warmth which the zonals would bear they made an undue amount of top growth, the shoots and leaves becoming weak and drawn, the plants showing little disposition to bloom. But more recently a distinct section of large-flowered varieties have been raised that will stand as much heat as the zonals, and that will come into flower eight or ten weeks earlier than the generality of the old sorts. The following are the best of these early kinds, with a brief description of the character of their flowers:—

- VIRGINALE.—Pure white ground, with a faint dash of crimson on the base of the top petals. This is the earliest bloomer of the varieties under notice, beginning to flower in February.
- SMITH'S SEEDLING.—French white, with carmine spot on each petal.
- WILLIAM SMITH.—Flesh ground-colour, with small chocolate spots.
- MRS. W. DAVIS.—Pale pink, with maroon spot on top petals, crimson spot on lower petals.
- CHAMELEON.—Deep scarlet, with small dark spot on each petal.
- ETNA.—Intense, vivid scarlet, centre violet, maroon feather on top petals.
- IMPROVEMENT.—Crimson, dark-feathered spot on the petals. This variety produces an immense head of bloom.
- MRS. LEWIS LLOYD.—Deep velvety crimson, violet centre, deep feathery markings on top petals.
- CHIMENE.—Bright crimson-red, with deep-coloured blotch on each petal.
- MONS. ROTILLARD.—Deep crimson, violet centre, petals edged with white, dark chocolate blotch.
- KINGSTON BEAUTY.—Pure white ground, purple spot on top petals.
- EMELIE EVERARD.—Vivid scarlet.
- DEFIANCE.—Scarlet, violet centre.
- SCARLET GEM.—The brightest scarlet.

The first named three or four sorts are the

earliest bloomers, *virginale* being, as already said, the earliest of all; the flowers of this variety are mostly sold in a cut state. Plants of the other kinds generally appear in the market about the beginning of March. All the varieties mentioned, except one or two that have come from the Continent, have been raised by the market growers, and are the pick from untold numbers of seedlings, as no variety is of the slightest use to them unless the colours are pure and delicate, or bright and vivid, combined with a profuse flowering habit and sturdy compact growth in the plants, such as will enable them to bear being kept considerably warmer all through the winter than the ordinary large-flowered sorts. It is scarcely necessary to say that when pushed on into bloom thus early the plants must be grown in light, well-constructed houses, and stood well up to the glass, enough heat being kept up to allow of more air being given than is generally considered sufficient for *Pelargoniums* in the winter season. This extra amount of air suits them when, as already said, it is accompanied by a corresponding amount of warmth, as, in common with all the *Pelargonium* family, they like a somewhat drier atmosphere than is necessary for most plants. For the various purposes for which cut flowers are now required, as well as where the plants are wanted for decorative use, these early blooming, large-flowered varieties of *Pelargonium* distance the zonals, except, perhaps, in the estimation of those who look upon a bed or a houseful of scarlet or crimson as perfection in floral colour.

USEFUL GREENHOUSE PLANTS.

AMARYLLISES.—Some growers re-pot their *Amaryllis* bulbs in autumn; others, late in spring. We re-pot ours in the first or second week in January. One large grower with whom I am acquainted thinks it best not to re-pot them oftener than once in two years; and in favour of all these systems of treatment there may be something to say. A good deal depends upon subsequent management, and also as to the time when they are expected to be in flower. Several growers, for instance, have told me that they succeeded best when they did not re-pot their bulbs, the reason alleged being that, after potting, the roots from the base decay, and that will happen if they get too much water before they have well started into growth; but if not watered for a month or six weeks after being re-potted, they will be all right. We grow nearly a thousand bulbs of all sizes, and although all of them were potted by the 10th of January, not one of them was watered until the middle of February; by that time they had grown considerably, and numbers of them were pushing up flower-spikes. We also maintain a moderately dry atmosphere at first; otherwise some of the bulbs decay at the crown. When in full growth, all danger of decay both above and below ground is over, and being plunged in bottom heat but little water is required. I always raise seedlings of these, and also of other flowers which we cultivate, and in a very few years we have had a small measure of success. The seedlings raised last August are now growing freely, three plants being in a 4-inch or 5-inch pot. In these they will produce good, large bulbs before the end of the season. Plants a year older raised from seeds are now growing singly in a 4-inch or 5-inch pot, and a very small proportion of these will flower this season. *Amaryllises* are easily hybridised; the anthers are removed with the finger and thumb before the pollen is shed—that is, when the flowers are partly open. In thirty-six hours subsequently the foreign pollen may be applied to the stigma. The seed-pod will take about three months to ripen.

CINERARIAS.—These have passed through the winter extremely well, although it was necessary to use a good deal of artificial heat, which *Cinerarias* dislike. It is interesting work tying and training the plants that are to flower in the shape

of large specimens in April. The object of tying out the flowering growths is to secure a regular head of bloom, which will show the individual blossoms off to the best advantage. A very little practice will enable the cultivator so to do this work that the plants when in flower will not exhibit in any way the ill effects which usually arise from bad training. Plants to flower in April should be staked at once, or they will not have time to grow into natural form by the time the head of bloom is fully developed. We had a serious attack of mildew this year, but its advance was checked by prompt application of flowers of sulphur. Thrips and greenfly should be destroyed by means of tobacco smoke; it is best to fumigate every month as a preventive. The plants will be dwarfer in habit and the flowers more brilliant in colour if placed close to the roof-glass. A plentiful flow of fresh air should pass through the ventilators, without causing a draught, which would certainly be injurious.

CALCEOLARIAS.—These flower later than Cinerarias, but the treatment which they require is much the same; if anything the leaves are more easily injured by greenfly than those of Cinerarias. When once this troublesome pest gains a foothold the rapidity with which it spreads is marvellous. Calceolarias may be had in excellent bloom during May; therefore any plants not yet in their flowering pots should be repotted at once. They grow rapidly during March and April, and if handsome specimens are expected they must have daily attention. They require considerable supplies of water when the pots are well filled with roots, but for a few weeks after repotting attention is necessary in order to prevent the fresh potting material from being over-charged with water before the roots have thoroughly permeated it. Some growers syringe the leaves of their Calceolarias, but I have never done so, believing that they do better without it. It is necessary to move each plant occasionally in order to examine it underneath, as dead or decaying leaves must be removed. After a week or so of dull, cold weather, the sun may shine out brightly, and the sudden change will check the plants, unless some thin shading is thrown over the glass during the hottest part of the day.

WINTER-FLOWERING CARNATIONS.—Mr. Gilbert's experience is that of many others. Only a few varieties flower well at mid-winter, but nearly all that are termed perpetual flowering will do remarkably well after the middle of February, and they are valuable during March, April, and May. Mr. Gilbert ought not to condemn the varieties which he names because they refuse to be coaxed into flowering at Christmas. His culture was also faulty in some respects. The plants ought to have been placed outside long before August, and close to a south wall is perhaps not the best place for them. Their propagation and cultural details may be summed up in a few words. The earliest cuttings should be put in about the middle of January, and the latest at the end of March. Every cutting will form roots if the small side growths are merely slipped off and inserted in fine sandy soil, using 4-inch or 5-inch pots. Plunge the pots in bottom-heat in a forcing house. We propagate two varieties in one pot, as we do not require a large number of plants. When the pots are plunged, lay squares of glass resting upon the labels over them. This is sufficient to retain moisture about them, and none of them will damp off, as they might do if kept too close under a handlight. When they are rooted pot off at once, placing the plants on a shelf near the glass. They are gradually inured to a cooler house, and may be placed in frames about the end of April. Draw the lights quite off in fine weather, and about the end of June place them out of doors in an open position. The Carnation likes plenty of air, and if stifled under a south wall, red spider and other pests may be troublesome. The earliest propagated plants will grow into large specimens, requiring 7-inch and 8-inch pots to flower in, and those varieties that will not succeed at mid-winter will do so between February and midsummer.

Some of them will also produce flowers in October and November. J. DOUGLAS.

SPRING TREATMENT OF FUCHSIAS.

Few plants are more generally cultivated than Fuchsias. They find a place in every large or small greenhouse or conservatory, and as window plants they are more commonly grown than anything else. The best treatment Fuchsias can have in winter is to keep them perfectly dry at the roots, and in a temperature low enough not to excite growth. They may be placed under these conditions from November until March, but about this time they should be taken in hand, and their culture commenced for another season's display. Many of the shoots formed last year will be straggling, and if these were left on they would not improve the appearance of the plant, and the whole of the side twigs and shoots should be cut well into the old wood, as the short spur system of pruning suits them admirably. There is little danger of cutting them too much. When pruned at this season they need present little or nothing but a bare main stem covered with side spurs, and may then be placed in a moist atmosphere where the temperature ranges from 60° to 70°, and if well watered at the root from the first and frequently syringed they will break into growth very freely. Repot when growth begins, the best time being when the young shoots are from 2 inches to 3 inches in length. In potting, turn the plants out of the pots they occupied last year, and shake all the old loose soil from the roots. This will enable the operator to pot the plants in smaller pots than those they have just been taken out of, and this is the proper thing to do, as by potting in smaller sizes now, they can be placed in larger pots when they have advanced in growth, and this is always beneficial. After potting the first time, the plants may be returned to the quarters in which they were started, taking care to syringe freely until the roots have taken possession of the new soil; and if compact, bushy plants are desired, the young shoots should be pinched at the points from the time they are 3 inches or 4 inches long. They delight in a rich mixture at the root, and this may consist of two parts loam, one of manure, and one of sand.

PILLAR FUCHSIAS, which may be growing in beds and borders, should also be pruned in well at this season. A rich surface-dressing should be applied if the soil is poor, and abundance of water should be given at the roots. Syringing is also advantageous, but manure-water need not be given them until they are considerably advanced in growth. Where the plants were infested with insects last autumn syringe them frequently with some insecticide, as many of the insects or their progeny are sure to be lurking about the bark now. CAMERIAN.

An American note on Amaryllids.—I am a subscriber to a number of German, American, French, and English gardening periodicals, but none is so highly welcomed and read with such delight by me as THE GARDEN. Every flower and plant-lover finds in its pages something, indeed very much, of great interest. The coloured plates, too, are excellent. I cannot do without THE GARDEN. I am an enthusiastic lover of Amaryllids, and I think there are many more who like them among your readers. Can you give us now and then a few coloured plates of fine English hybrids? Many have no idea of such celebrated kinds as Empress of India, Mrs. Burbidge, Eucharis, Ornata, Masterpiece, &c. Years have passed since the last plate of Amaryllis (Mrs. Garfield) appeared. I wish an English botanist could give us a new and revised edition of Dean Herbert's "Amaryllidaceae," or, what is still better, an entirely new and good book on this beautiful class of plants. There is so much confusion now among plant-lovers about Crinum, Pancratium, Hymenocallis, &c., that a work of this kind is a great desideratum. The books on bulbs written by Raul, Fish, and Ruempler are of very little value to Amaryllis lovers. No language can boast of such a work on Orchids as "The Orchid Album;" why cannot we get an Amaryllis album? Can any lover of the family answer in THE GARDEN the following questions: Is there in existence a book with coloured plates on Amaryllids? Can you give in THE GARDEN correct lists of Crinum, Pancratium,

Hymenocallis, or can good monographs of these genera be obtained? Do Hippeastrum and Crinum cross with each other? I have a few Amaryllids (A. Olga and A. grandis) which have leaves like Crinum, but the flowers are more Hippeastrum-like. Although it is said in some catalogues that these kinds were raised by crossing Crinum with Hippeastrum, I do not believe it, as both genera are so entirely different. —H. NEUBLING, *Ficistatt, Lawrence Co., Mo., U.S.A.*

PERSIAN CYCLAMEN CULTURE.

To see a batch of Persian Cyclamens in their true beauty is a sight not to be soon forgotten. When well grown it is difficult to find a more useful plant than this for greenhouse, room, and window decoration. They are also useful for supplying cut flowers for vases or bouquets, for, when placed in water, they retain their beauty for a long time. There are various species of *C. persicum* producing flowers varying from deep red to a pure white.

Cyclamens should be raised from seeds, which, if carefully attended to as regards potting, will flower within a year from the time of sowing, but when neglected, two or three years are required before they flower. The seed should be sown in a well-drained pan, filled to within half an inch of the rim with good loam, leaf-mould, and plenty of sand. Give the surface a gentle press, so as to level it; then sow the seed evenly, and cover with fine soil, water gently, and place in a temperature of 65° to 70°; keep the soil moist, and as soon as the seedlings appear, raise the pan as near the glass as possible, and shade from the sun during the middle of the day. When the plants have one leaf, lift carefully, and pot singly into 3-inch pots; the same soil as used for sowing the seeds will do. When potted place in a warm frame, and near the glass, to prevent the plants from being drawn. Give a moderate amount of air through the day, but close early in the afternoon and give the plants a gentle sprinkling overhead. When the pots are full of roots they will require shifting into 5-inch pots; the soil for this potting should be a little rougher than what was used for the previous pottings; the same compost will do, but some well decomposed manure may be added. When potted, return the plants to the frame until the end of September, when they should be placed on shelves in a warm greenhouse, where they may remain until February, when some of them will be showing flower. All plants that are throwing up blooms should be removed to a cool house, where, if placed in an airy position and attention paid them as regards watering, they will continue in flower for many weeks. When the flowering is over, remove the plants to a cold frame and give water until the leaves begin to decay; then gradually withhold it, allowing the plants to rest until August. Then the established plants should be shaken out and repotted into the same sized pot; place in a cool frame and keep moist and close for a few days until commencing to grow, when air should be admitted freely. By the middle of September they will be growing freely, when some of the largest may be shifted into 7-inch pots and placed on shelves near the glass in the greenhouse. If seedlings are grown as well as old plants, the Cyclamen may be had in flower from November to May. The seed should be sown in March, but if home saved it is advisable to sow in August, or as soon as it is ripe.

OLITOR.

Notes from Laxenburg.—On a recent visit to the Imperial Gardens at Schonbrunn, I noticed in one of the cool houses several forced shrubs of *Prunus Mume*, which were a beautiful sheet of white. *Acacia vestita* climbing along the roof is very telling; used in this way its drooping flowers are best shown. Of New Holland plants noteworthy were *Hovea pungens*, with beautiful dark blue flowers; the rather rare *Banksia Caleyi*, and *Hakea Victoriae*—the latter has peculiarly formed, leathery leaves, with a silvery hue. A batch of young plants of *Telopea speciosissima* was in good health. As undergrowth near Tree Ferns, *Blechnum gracile* is well suited; young fronds

of this temperate-house Fern have a very attractive light rose colour. The old specimen of *Todea barbara* cultivated here reminds one greatly of the still larger specimen in the temperate house at Kew. In the Palm house are, amongst the general collection of Palms, Cycads, and Tree Ferns, conspicuous specimens of *Brownea Ariza*, *Curatella imperialis*, and *Astrapea Wallichii*.—LOUIS KROPATSCHEK.

Impatiens Jerdoniæ.—Although seldom met with in cultivation, this Balsam is one of the prettiest. An airy position in an intermediate house suits it admirably. It requires but very little root room, and seems to thrive best in a well-drained pan. It is a surface-rooter, very dwarf in habit, and the leaves are thickly set. As soon as the plants have finished flowering, water should be gradually withheld, when they will soon lose their leaves, and no more should be given them until they show signs of pushing in the spring. During their resting period care should be taken not to let the thick fleshy stems become too flabby, which may be remedied by giving them a little water.—F. S.

Growing Arum Lilies.—Several letters have appeared in THE GARDEN lately about Callas and their treatment. "J. G. H." says, in a recent issue (p. 163), that he had seen some plants grown in the same pots for three years and only top-dressed annually. I saw several hundreds in a house a few weeks before in 5-inch pots; they were only grown for Covent Garden. Many had two blooms, which would be expanded by Christmas. They had been treated thus: In May water was withheld for a week or so, but not to dry them up. They were then cut down and laid on their sides in a cool shady place out-doors. If they got very dry they were stood up and given a little water and laid down again. At the end of August they were stood up, a top-dressing of loam and manure given and watered. The cutting down seems out of the question for Callas, but they were looking well and flowering as stated.—C. JEFFRIES.

Winter-flowering Carnations.—In reference to Mr. Gilbert's experience with the above (p. 183), I think I may safely venture to say that, although he states that it is from practical experience that he writes, he has made some errors. I am not acquainted with all the varieties which are included in the dozen that he grew, but there are one or two which he failed to flower that I consider are among the best of the class for winter work, especially *Lucifer*. This bright scarlet variety has been flowering freely with us throughout the winter. Mr. Gilbert says his plants were duly stopped during May and June. This is sufficient to account for some of the varieties not flowering, for, although many of the sorts may be stopped in June, and will throw up fresh flowering stems in time to flower at mid-winter, it is not the case with all the sorts; in fact, I think there is little advantage in stopping any that are propagated so late as the end of March. If the plants are potted off as soon as sufficiently rooted, and exposed to plenty of fresh air before they get drawn, they will branch out naturally; and although the flower-stems may appear to run up too quickly, they will not be in flower much before the seasonable time, or if they do flower a little earlier than they are required, the succession flowers will come on better than if the plants had been stopped. I quite agree with Mr. Gilbert that Miss Jolliffe is the most useful of all the winter-flowering Carnations.—E.

SHORT NOTES.—STOVE AND GREENHOUSE.

Asparagus plumosus nanus.—Although this plant has been some time before the public, it is only lately that it has attained any great popularity. It is certainly very handsome. When well grown it appears to enjoy a moist stove temperature and rather dense shade. A fine specimen I saw lately had a quantity of seed-pods on it, but whether it will mature perfect seed or not I cannot say.—J. G. H.

Thrinax radiata.—Under this name Mr. Penfold has at Beddington House a most exquisite and graceful fan-leaved Palm, which we cannot believe bears its proper name, for *T. radiata* is but a synonym of *T. elegans*, and we are quite convinced that Mr. Penfold's Thrinax is not the plant which is usually found in English gardens under the name of *radiata*. The ample finely divided fan-shaped leaves which the plant in question produces, and its long, slender,

unarmed footstalks, quite destitute of the yellow band so characteristic of *T. elegans*, all point to its being something new.—G.

SEASONABLE WORK IN PLANT HOUSES.

CAMELLIAS.—Plants that are grown in pots and tubs should, as they go out of flower, be moved to a house where an intermediate temperature is kept up, with a moderately close atmosphere, syringing freely overhead once or twice a day. These plants are not unusually located in vinerias that happen to be at work whilst making their growth, but where they can have a house to themselves it is much better, as, though the young foliage is benefited by a little shade when the weather is bright, unless theinery happens to be so constructed as to admit more than an ordinary amount of light, and the vines thinner on the roof than usual, the Camellias do not get as much light as is necessary to promote robust, healthy growth. There are few hard-wooded plants the growth of which is more influenced by manurial stimulants than Camellias, but whatever is used, either in the form of manure-water or surface-dressings of concentrated manure, its application should be confined to the time when the plants are about to push their shoots and onwards whilst the growth is being formed. When Camellias are healthy, their roots begin to move freely a short time before the top-growth commences, and I have proved by experience that manurial assistance given to them at this time is much more effectual than when its application is withheld until top-growth has begun. Manure-water made from horse-droppings, with some soot stirred up in it, allowing all the solid matter to settle, answers for these plants in every way. If at all affected with scale, especially the white species of this troublesome insect, the plants should be gone over before the young growth moves, by which much labour later on will be saved.

BILLBERGIIAS.—The handsome flowers and distinct appearance of these plants are such as to commend them to all cultivators who have a warm stove. The little room they occupy is not the least of their merits. Most of the species are epiphytal in their native countries—a fact that is not always kept in mind, and to this is attributable the indifferent success that sometimes attends their cultivation, as, in common with other plants of a like nature if potted in close adhesive soil, their roots do not take kindly to it. They succeed in loam, but it should be of an open, turfy nature, with enough sand in it to keep the whole porous. They are increased by suckers, which are produced from the base of the crowns that have flowered. It is well to allow the suckers time to get strong before removing them from the old plants, otherwise it takes long to get them up in size. Suckers that were produced by plants that bloomed in the early part of last summer should now be large enough for removal; they are best slipped off from the stools: in some cases they will have more or less roots to them, in which case they will grow away at once. But, whether in this condition or devoid of roots, place them singly in pots just large enough to hold them. If they can be accommodated with a brisk growing heat they will soon get established. Later on, when the roots have got well hold of the soil, give pots a size or two larger. In the matters of air, moisture, and warmth, ordinary stove treatment is all they require, giving a little shade in bright weather.

ECHMEAS.—These pretty plants are nearly allied to the Billbergias, and succeed under much the same kind of treatment. The small-growing *E. miniata* and its variety *E. discolor* are amongst the most useful small decorative stove plants. The coral-red spikes that bear the flowers retain their bright colour and freshness for many weeks after the flowers have faded, so far that close inspection is required to ascertain whether the plants have bloomed, or are coming into flower. For standing about in a warm conservatory during the summer months they are very effective. Echmeas are increased by suckers like the Billbergias, and they should be taken off and

potted singly in the way advised for Billbergias. Fibrous peat with some crocks, or charcoal, and a little sand, answers for them, treating in other respects as advised for the Billbergias. Though these, like the last-named plants, cannot be increased at the rate which things that produce cuttings in quantity can, still a stock may soon be got up, as the old stools, if well cared for, will throw up additional suckers after the first lot have been taken off.

GARDENIAS.—Amongst the various kinds of these plants known to cultivators *G. florida* intermediate and *G. radicans* are the most generally useful; the latter, although its flowers are much smaller than those of the former, is a desirable sort on account of the little room it occupies and the profusion of flowers it bears. Old plants of any of the kinds that have got leggy may be cut close in now; in a warm stove they will break fresh growth at once, when they may be turned out of the pots and have a portion of the old soil shaken away, replacing it with new and giving pots proportionate to the size of the plants. Gardenias can be kept going in a moderately free condition with less root room than many plants that are of a similarly vigorous nature, but to obtain the maximum quantity of flowers they must have pots proportionate to their size. *G. radicans* being, as already said, a much smaller and slower grower, it does not require nearly such large pots. *G. citriodora* is quite distinct in habit of growth and also in the character of its flowers, which resemble Orange-blossom in appearance more than they do the kinds first named. Where fragrant flowers are much in demand for cutting, this species should find a place; so naturally free in blooming is it, that little plants in 5-inch or 6-inch pots produce flowers on every bit of growth they make. Plants that were struck from cuttings early last spring will now require a little more pot room; peat where it can be had of good quality is best for this, as also for the other sorts. Cuttings of the different kinds named should be put in to strike—they are amongst the easiest of stove subjects to propagate. The cuttings need not be confined to small bits of the shoots, as good-sized branches will root in a short time if they are kept moist, close, warm, and shaded.

PALMS.—These plants, especially the species that require a stove or an intermediate temperature, are often allowed more root-room than it is either necessary or expedient to give them, inasmuch that for ordinary decorative purposes, after the plants have attained a useful size, the object generally is to treat them so as to prevent their out-growing the space that can be allowed them, and when they have larger pots than are requisite to keep them in a healthy condition, many of the species soon attain an unmanageable size. Still, though it is advisable to thus limit the root-space so far as can be done without injuring the plants, it is scarcely necessary to say that it is possible to go too far in this direction, in which case the leaves assume a yellow, starved appearance. Much may be done to give the foliage its wonted colour by the use of manure water regularly applied during the growing season. When it becomes necessary to re-pot, early in the spring is the best time to carry out the work. Palms will grow in almost any sort of soil, but rich, yellow loam is the best, adding a little sand; in potting, make the material quite solid in the pots, being particular that the drainage is efficient, so that the large amount of water which the plants require can pass away freely.

GIVING AIR IN COLD WEATHER.—There is no time of the year when it is so necessary to use caution in giving air to plant-houses as during this and the following month, when the weather is so changeable. In stoves where the young foliage is, as a matter of course, tender, the effect of a rush of cold air coming in contact with it is highly injurious. Except when the air is quite still, even when the sun is powerful, it is better to only open the roof ventilators, and these only to a moderate extent, for, as often happens on bright, cloudless days, the wind is keen. When such is the case

it is better to let the temperature run up considerably than admit air in large volumes. Greenhouse plants are less tender than the occupants of the stove, but the principle holds good with them, as they should never be subjected to cold draughts. When side air is given in cold spring weather, it should always be admitted at the opposite side to that at which the wind is blowing. T. B.

TREES AND SHRUBS.

W. GOLDRING.

THE NORWAY SPRUCE.

THERE ARE various opinions as to the position of the Norway Spruce (*Abies excelsa*) among ornamental trees. Some have assigned it a high place, while others have condemned it. We have here to consider its merits as a garden or park tree, leaving out of the question its value as a timber tree, which has often been discussed in *Woods and Forests*. As a garden tree the Norway Spruce is undeniably neglected, not because it is less ornamental than newer or less common Spruces, but because it is customarily planted as a forest tree; there is, however, no comparison between a plantation Spruce and a garden Spruce well cultivated, *i.e.*, planted in the best of soils and sheltered from cutting winds. The Spruce will not stand much exposure, though it should be allowed plenty of room in which to develop itself on all sides. Thus circumstanced one can have a beautiful tree symmetrical in outline, but still beautiful, owing to the graceful way in which the branches arrange themselves in regular tiers with the slender twigs drooping in a handsome manner. I was lately so impressed with the elegance and grandeur of some well cultivated Spruces, that I am determined to plant some in similar positions whenever I have an opportunity. The Spruces to which I allude form a group of about half a dozen planted in an irregular way, with ample space allowed for each. They were of various heights, the tallest being about 40 feet high, the shortest about 15 feet high. All were in the best of health, their lower branches sweeping the lawn, and each had a trunk as straight as a mast, terminated by a stout, erect leader. The position of this particular group was between two hills, and therefore sheltered; the soil was almost continually moist, but being of a light, sandy character the water did not become stagnated. On the same estate I saw other fine Spruces, not in a moist spot, but where a bed of clay cropped out; these were accompanied by some grand Oaks, a charming combination, the green of the Spruces contrasting strikingly in summer with the heavier green of the Oaks; while in winter the bare look of the Oaks was thereby diminished. All who see the group of Spruces which I have attempted to describe are charmed with them, especially when furnished with a profuse crop of pendulous russet cones. A Norway Spruce is generally most beautiful when between 20 feet and 40 feet high. In its very young or "Christmas-tree" state it is not very handsome, nor is it when 80 feet or 100 feet high, for then it is commonly bare of branches below, thus interrupting the symmetry of outline, and giving the tree a ragged appearance. One can always tell a Spruce in a plantation a mile distant, as its spire of branches shoots up above all its companions; and at no age can it be called a picturesque tree. The Spruce is a rapid grower in the most favourable soils and positions, especially after it has grown out of its juvenile stage—that is, before the plants are under 3 feet in height. After the seedlings have reached this height, they shoot up at the rate of 2 feet and even 3 feet a year. It does not attain to the great height one sees in

Norway and other parts of Europe, where it reaches as much as 150 feet high, with trunks as straight as a mast. The accompanying illustration represents a finely grown Spruce with the characteristic conical growth. The tree at the time the drawing was made was growing at Studley, in Yorkshire, and was 132 feet in height, with a diameter of trunk of 6½ feet, and the spread of branches was 39 feet.

In order to obtain fine Norway Spruces for ornamental effect care should be taken in selecting the young plants in the nursery, as it is useless to plant any that have not been properly treated in a young state. The selected trees should be of vigorous growth with every whorl



Norway Spruce (*Abies excelsa*).

of branches perfect, for if any of these are crippled when young the symmetry of the plant is spoilt. The best of all are, of course, Nature-sown seedlings, but these are not often to be found in the exact spots where an ornamental effect is desired, but if one could afford to wait a few years, one might sow seed in the places where a group of Spruces would be appropriate, and leave the seedlings to grow up undisturbed. It is not difficult to obtain Spruces that have been well cared for in the nursing stage, and, moreover, at a very cheap rate. One can understand that to advocate the planting of the common Spruce for ornament will not be regarded favourably by nurserymen, who pay so much attention to exotic Conifers of doubtful

hardiness and merit, but this plea on behalf of the Spruce need not interfere in any way with the popularity of other kinds of Conifers. There is no necessity to go into a detailed description of such a familiar tree as the Spruce, but how it differs from its near allies, such as *A. alba nigra* and others, will be explained when we shall refer to those Firs. There is a host of varieties of *A. excelsa* all differing from the typical form, and some so widely that one would almost regard them as distinct species. Some of these varieties are of considerable ornamental value, particularly the dwarf varieties, such as *clan-brasiliana* and *pigmaea*, and to these we shall allude at some other time.

Spiræa Bumalda.—This little shrub is looked upon as one of the best new things that have been introduced lately, and we hear of enormous quantities being sold at the large tree nurseries, notwithstanding the fact that it is scarcely known in a general way. In fact, everybody who sees it in flower wants it, and at the exhibitions last year and the year before it was noticed a good deal. It is a very dwarf plant, not more than 1 foot or so high, and always of compact growth. It may be best described as a dwarf form of the well-known *S. callosa*, as it has similar dense flower clusters of a rich carmine pink colour. It is a capital shrub for the rock garden as well as the shrubbery. It must not be planted where, from its small size, it would be apt to be overgrown by larger growing things.

Prunus Pissardi forced.—A good deal has been written and said about the beauty of this Plum as regards its foliage, but little has been seen or heard of its flowers, but it is probable that now it has proved so amenable to early forcing it will become as popular for the greenhouse in early spring as it is in the open air in summer. On Tuesday last a group of plants of it was shown by Messrs. Paul, of Cheshunt, which was the admiration of everyone, and not a few were surprised to see such a lovely new shrub. The flowers are produced in great profusion; they are about half an inch across, and shaped as other Cherry blossoms. They are of a delicate blush-white, while the unfolding leaves are of a ruddy tinge, but not so deep as they will become later on. The group had an extremely pretty effect, and one can imagine how charming this *Prunus* would be intermixed in a tasteful way with other plants. The plant was certificated some time ago, when it was exhibited for the sake of its fine foliage; consequently the floral committee could not award a certificate to the plant in bloom, as they undoubtedly would have done. On seeing the tree in bloom one could at once see how nearly the flowers resemble those of *Prunus cerasifera*, of which old and well-known species it is a variety. Moreover, it does not come true from seeds, as green-leaved seedlings have been produced.

Bambusa Metake.—There was a time, and that not very long ago, when it was a difficult and expensive matter to obtain a Japanese Bamboo at a nursery. It is different now that the great importance of the plant has been fully recognised, and since it has been found to be thoroughly hardy, easily grown, and rapid in growth. I was astonished, the other day, in seeing it grown by the acre in the Knap Hill Nursery, and perhaps nowhere beyond Japan can such a sight as this be seen. The thicket of wand-like stems, some rising 6 feet or more high, rattle in the wind like a plantation of Maize or ripe corn, and the pale green of the foliage is unlike anything else in a similar way. It is the only Bamboo grown on a large scale at Knap Hill, for the others are tender, and nothing that is not of undoubted hardiness receives much attention in this nursery. With the merits of this Bamboo everybody by this time must be well acquainted. It may be too much to say that there is no pretty garden without a Bamboo, but it may be fairly said that nothing helps so much to make a garden pretty as vigorous plants of *Bambusa Metake*.

A paper by Mr. John Wragg, "Best Conifers of the West," brought out renewed commendation of the white and silver Spruce, the white and red

Pines, and Platte red Cedar. The silvery expression of the Cedars, Spruces, and Firs of Colorado brought out the point that a silvery expression of plants was common in dry inter-continental regions with herbaceous and ligneous plants. In far Eastern Europe and Central Asia, the Poplars, Willows, Pears, wild Olive, and most other trees were silvery in expression, and a thick pubescence was found on the leaves and buds of Apple trees, and a rich bloom on the fruit.—*State Register's Report of Horticultural Meeting.*

Daphne Blagayana—This low-growing Daphne is essentially a rockwork plant, and in a sheltered nook thereof is now in flower. It is of rather loose, rambling habit, is furnished with neat deep green leaves, and bears clusters of pure white blossoms which are agreeably scented. A distinct feature is imparted by a collar like row of leaves that surround each head of bloom, in a manner, as far as I know, peculiar to this species. It is a plant that is not vigorous enough for association with many of our shrubs, but in such a spot as above indicated is most pleasing.—H. P.

Osmanthus ilicifolius.—This is a capital evergreen shrub for planting in town gardens. Its glossy dark green leaves are less affected by fog and soot than those of most plants, and it thrives well in every town garden in which I have seen it tried. It is especially suitable for massing in small beds, as its natural habit is spreading, and it can be kept within bounds by pinching or pruning at almost any time. The bronze tint in the young shoots and foliage gives a nice contrast to the dark green of the older leaves. If some peat can be worked into the soil when planting, it will assist growth, but it is not absolutely necessary, for the plants do well in any fairly light soil.—C. T.

Lonicera fragrantissima. The bright weather we have experienced during the last week has effected a great change in this Honeysuckle, for it is now completely wreathed with its deliciously fragrant blossoms, and when the sun is shining the odour is perceptible at some distance. It is strange that this and *Chimonanthus fragrans*, two of the most sweet-scented of wall shrubs, should unfold their blooms during the dull winter season, at which time they are about the only flowering representatives of all our wealth of shrubs. Both are far more suited for planting against a wall than in the open ground, but if grown in pots they will flower well under glass, especially the Honeysuckle, and are additionally welcome by reason of their agreeable odour. Another *Lonicera*, viz., *Lonicera Standishi*, is often confounded with *Lonicera fragrantissima*, but differs in many respects from that kind, for while *Lonicera fragrantissima* is strictly a climber, the other is quite a bush. In *Lonicera Standishi*, too, the leaves are hairy, which is not the case with the other. In both, however, the flowers are pure white and possess the same agreeable perfume.—H. P.

Butcher's Broom (p. 193)—Mr. Wilks asks "W. G." whether he has ever seen this fruiting freely in England. He will, no doubt, answer for himself, but if he has not seen it I can tell him where, at some time, he will most likely be able to do so. With us the plant grows pretty much as Mr. Wilks describes it—"morose, forbidding-looking, huddled, and drawn together," and I was, on this account, all the more astonished, one day, to see it in the Beech woods on the chalk downs of this country "bright, cheerful, spreading, and covered with exquisite big berries." It was in broad masses under the Beech trees, evidently quite happy, and certainly a most pleasing object. So I always believed since then that it was fond of chalk or lime, as well as warmth. The berries, when produced freely, are very striking, from their size, colour, and peculiar position.—C. R. S. D., *Sussex*.

—Butcher's Broom fruits here freely, and the large red berries have had a charming appearance this winter peeping through the snow. It is valuable for cutting, as the berries last a long time before they begin to shrivel. I have two varieties; the one that

bears fruit grows close and stiff and the foliage is dark green, the other, which I call the male, is of rather taller growth, and the foliage is of rather a lighter green. In planting I always put a so-called male plant about 50 yards or 60 yards off the fruiting kind. I have seen grand clumps of the fruiting kind in woods and ornamental grounds without ever seeing a single berry on them, from which I have always concluded that there could not have been a male variety in the locality. If not, why does not Mr. Wilks' plants fruit, as the climate around Croydon is much warmer than that here in East Norfolk where we suffer much from cold winds in spring and autumn? I wonder Butcher's Broom is not grown more than it is, as it will accommodate itself to any situation under the shade or in the open, also to any soil. I have some plants growing in pure sand and some in stiff clay, but when once planted I say let it run in where it is, as it does not take kindly to being shifted too often. It has one fault, and that is that nearly every year a shoot or two will die off from some cause which makes it look shabby until they are cut out.—J. E. SENDALL, *Grundall, Norwich*.

KITCHEN GARDEN.

W. WILDSMITH.

KITCHEN GARDEN EDGINGS.

THE rigid economiser of land and labour will perhaps whisper, why have edgings at all? The crops will be just as good without them, a conclusion that I venture to question, on the ground that persons who are careless in regard to appearances, or what in this instance may be called the frame of the picture, are not in a general way the best of cultivators, for carelessness in regard to trifles soon begets carelessness in larger matters. There are, of course, exceptions, but in regard to private gardens, so far as my own observations extend, I have invariably found the highest cultivation in association with well kept walks and edgings; but even supposing that was not the fact, a man with any pretension to orderliness must always feel vexed in spirit so long as a kitchen garden is without edgings. It may be that my own notions are too refined, tending as they undoubtedly do in the direction of favouring the maintenance of good edgings, walks, &c., even at the risk of some slight neglect of the vegetable crops, for the probability is that such defect would be hidden by the excellence of the marginal enclosures. In regard to kinds of edgings, there is no question that the various descriptions of tile and stone edgings are the best from a utilitarian point of view, as after they are once fixed no further labour in reference to them is needed; such edgings afford no harbour for slugs and grubs, and they always look neat, but for all that I cannot recommend such edgings, as in my opinion a live edging is much to be preferred to one of either tile or stone, and in spite of the harbour which such edgings afford for slugs and the clipping required, I pronounce Box to be my especial favourite for kitchen gardens. The labour of keeping it is not nearly so formidable as some make out; it virtually only requires to be trimmed or clipped once a year—any time in June—and with care not to wheel or trample it down, the repairs which such edgings require in a large garden during winter do not take up more than a couple of days. Common Thrift makes an excellent edging, but it harbours slugs even more than Box, and since tiles have come into vogue its use on that account has declined. The labour needed to keep it in order is but little, and as that little can be performed during winter when work is least pressing, any objection to it under this head is not worth considering. The labour here alluded to is the lifting, dividing, and re-planting every third year, as in that time some of the plants outrun others in growth and create inequalities.

The common and variegated Thymes are both suitable edging plants for kitchen gardens, but, in order to keep them thick and of neat appearance, they must be clipped twice during the summer, *i.e.*, in the middle of May and the middle of July; but the clipping does not take up nearly the time that Box clipping does, and a gap can more readily be made good; yet another advantage is, that Thyme will flourish in soils in which Box will not thrive. The small variegated *Eutonymus radicans* I have seen used on a small scale, and right well it looked—so well, in fact, that I have a strong desire for an opportunity to plant such an edging, though, by the way, it was cuttings, not plants, with which the edging was first formed, and which, as soon as struck and had made 4 inches of new growth, had their points taken out to induce the formation of side or lateral growths; afterwards the plants were treated in every way the same as Box. The fine, wiry Grass called *Festuca glauca* I have tried as an edging on a small scale, and right well it did in damp and shaded positions; but on dry ground and exposed to the sun it was a failure, being like so much dried-up Grass that was only fit for the fire. I would only recommend it as an edging for heavy soils where it might be expected to look tidy all the year round. Were it not for the labour of clipping it during the busy summer season, the Japanese Honeysuckle (*Lonicera reticulata aurea*) would be worthy of notice, but the labour needed to keep it properly excluded it from use in this connection; but it is the perfection of an edging plant for flower beds, and has no rival as a trailer for drooping over the edges of vases. This exhausts my list of the various permanent edgings for the kitchen garden. There are several others of a more transitory nature, allusion to which I defer to another time.

BRUSSELS SPROUTS.

THERE is no other winter green so hardy and, at the same time, so valuable and so much appreciated as the Brussels Sprout. The late severe weather has again proved, if further proof were required, how useful this Sprout is, and how very desirable it is to have a good breadth of it planted to come in after Christmas, for though Brussels Sprouts are very useful in autumn and early winter, they are simply indispensable now, when so many greens less hardy in constitution have been killed by the frost. The first sowing should be made now in a box under glass where there is a little warmth. The produce of this sowing will be pricked off when large enough and planted out finally in May in rows 2½ feet apart, and they will come into use in autumn, and will keep, if not wanted then, until a demand arises for them. But usually a dish of close, firm, moderate-sized Sprouts are appreciated as soon as the supply of Green Peas fails.

THE MAIN CROP should be sown thinly in the open ground about the third week in March in drills 9 inches apart, covering the seeds from a quarter to half an inch deep. Seed-eating birds are very fond of the seeds, and they should either be protected with nets or be dressed with red lead. The last named plan is a sure remedy against birds and mice. Place the seeds in a saucer, damp them by sprinkling a little water over them, shake the lead, which is a red powder, over them, and stir the seeds about with a stick until all have taken on a thin coat of lead. The seeds are then sown thinly in the drills, covered with soil with the feet and the bed raked smooth. It must not be forgotten that red lead is a poison; wash the hands carefully immediately after sowing the seeds. The plants from this sowing should be planted in the open quarter in rows 2½ feet apart and 2 feet apart in the rows. There is nothing gained by planting closer together, as the leaves must have space to develop in order to insure a full crop of close, firm Sprouts. Plant out a good

breadth, as I never remember hearing anyone say they had too many Brussels Sprouts.

A LATE SOWING may be made for spring use about the middle of April, and the plants from this sowing may be set out in July in rows 2 feet apart and 1½ feet asunder in the rows. In the case of a severe winter coming, this crop will be found very valuable. Keep the hoe going between the plants until they are a foot or so high, then earth them up as a shelter and support to the stems. When the stem leaves change colour, remove them, but do not cut out the leaders till they can be made available for use as Cabbages after Christmas.

VARIETIES.—It is very important that a well selected strain only should be grown, as there are many spurious and inferior strains in the market. All the great seed firms have selections of their own, and one may safely trust that belonging to any of them. The Aigburth is a very good stock. It is a good plan when a good stock has been secured to save seeds. A dozen plants will produce seeds enough to last five or six years.

E. HORDAY.

VEGETABLE MARROWS, AND HOW TO GROW THEM.

MANY vegetables which are highly prized in the early spring and summer months become a drug in the market before the season is over, and amongst these must be classed Vegetable Marrows, as in August and September they do not fetch the price of Turnips. But for all that, they are not, in my opinion, used so much as they should be, or as they would be, if the public supply was confined to the best varieties. Size is the great object with ordinary market dealers; quality is the only point which will increase their use and give constant satisfaction. There is nothing one tires of sooner than large coarse Marrows, but the small delicate-flavoured ones are excellent at all times, and a desire for them exists always. But it is not only in markets that the large ones find favour, as they are often grown in gardens where choice vegetables are most desired, and the consequence is that the Marrows are rejected, and most of them ripen on the plant, and are never used. It may be asserted that there are plenty of other good vegetables ready at the time the Marrows are plentiful, and this is so, but I never knew a time when a change of vegetables was not acceptable; the variety could not be too extensive, and if the Marrows were good they would be used frequently every week, in spite of the abundance of Peas and Kidney Beans. There is, too, a grand opening for Marrows in the early part of the season, and if they were grown to fruit during May and June, they would then be found invaluable. Marrows, as a rule, are not grown to fruit before July, but there is no reason whatever why they should not be secured in the first week in May. It might be a difficult matter to get the large fruiting varieties to produce their semi-pumpkin-like fruits by that time, but the small sorts are more fruitful early in the season and at all times, and my remarks only apply to this class. By sowing seed now, growing the plants on in a temperature of 65° until they are 1 foot or 18 inches in height, and then planting them out on a slight hotbed and under a rough frame and glass-light, they will fruit at a very early stage of their growth. The seed should be sown singly in small pots, and as the plants grow they may be potted into larger ones, but do not use very rich soil at any time, as this only produces a soft, luxuriant growth; whereas it is a hardy, short-jointed shoot that always fruits most freely and soonest. Many growers ruin their Marrows for early fruiting by growing them in too rich soil, as thus they become smothered with large leaves and produce only male flowers, and do not fruit freely until they have exhausted the bulk of their rich rooting material. We have had them fruit in a 6-inch pot, and not 6 inches from the rim, and this indicated clearly enough that to fruit them early luxuriant growth is not wanted. They grow very freely in a high temperature, but a moderate heat is best for them, and to ensure them being dwarf they

should always be kept near the glass. They are as easily fruited by May as a Cucumber; nor do they require so much heat as Cucumbers do. Frosts or cutting winds they will not bear, but anything except these will agree with them. Another good way of fruiting them early is to pot and repot until they are in 10-inch pots; then plunge them in a small hot-bed under a frame, and the roots being thus confined, fruit will quickly form at every joint. Short-jointed shoots of medium strength are always the most prolific, and so long as these are produced there is little danger of the plants proving unfruitful. In raising Vegetable Marrow plants for general open-air culture, they are always best when raised singly in small pots. About the end of March is early enough to sow them, as the plants will then be in good time for planting out by the middle of May, and they are not safe before that time. If 3 inch pots are drained and half filled with good soil, a seed placed in each and covered over 1 inch or so, it will germinate in any place under glass, and if grown on like a bedding Geranium will succeed admirably. I have condemned rich soil for plants in frames, and I do the same in the case of plants in the open. In this position we often hear of fruit forming, but refusing to swell, and falling off before it has gained any size, and the cause of this is neither more nor less than growing them in too rich soil, as the luxuriant foliage overshadows everything, and when the fruit-flowers are open they are so much hidden from sun and air that they are never perfectly fertilised; hence the reason of their falling off prematurely.

THE RAISER OF PEN-Y-BYD.

Mushroom culture in Pea trenches.—Has any reader of THE GARDEN tried this method of growing Mushrooms? We have obtained a plentiful supply during the summer and autumn by the following plan. When preparing the trenches for Peas, about 8 inches of stable manure, half rotted, is put in and well trodden down, and on this is placed, about every 2 feet, pieces of Mushroom spawn about the size of a hen's egg. Part of the soil is then returned, and the Peas sown as required. The copious supplies of water required by the Peas, and the shade they afford, seem just to suit the Mushroom spawn, for Mushrooms begin to appear before the Peas are done; and if the sticks and haulms are carefully removed and water given, the supply may be kept up well into the autumn.—W. JEFF, *Tophill, Eastbourne.*

Thin Mushroom beds.—"G. S." (p. 216), who has successfully grown Mushrooms on a very shallow bed, argues therefrom that beds need not be a foot thick, but he forgets that the employment of artificial heat in his case does away with the necessity for thick beds. My note on the subject to which he refers related to Mushroom beds in unheated houses, sheds, or cellars, that, although not built for Mushroom growing, are frequently utilised for that purpose; and I feel sure that in the majority of cases it is desirable to err rather on the side of having too much than too little bulk in the beds. It is impossible to avoid sudden fluctuations of temperature in beds less than a foot thick. Market growers even who carefully study the cost of production do not find that shallow beds pay; on the contrary, they rely on a good body of material to produce a good crop.—J. G. H.

SHORT NOTES.—KITCHEN.

The old Ashleaf Potato.—We have early Potatoes without stint; some of them may have been new at one time, but many of them are old ones named and renamed, but amongst them all the old Ashleaf Kidney appears to retain its name and character, and when true there is no better early Potato in cultivation.—In fact, it is the best; it is dwarf, bears heavily, and the quality of the tubers in all soils is excellent.—J. Mear, *Margton, Port Talbot.*

Asphaltic walks.—Will some of the readers of THE GARDEN kindly give me their advice as to which is the best mode of constructing asphaltic walks? I have tried by boiling 1 lb. of pitch to every gallon of gas tar, and mixing it thoroughly with ashes, leaving it in a heap for two or three weeks before spreading it on the walks, but it does not seem to set well. Would it set better by spreading it as soon as mixed before getting cold?—J. R. WHITEHEAD.

Firm soil around young vegetables is of the highest importance, for if they are loose the drying winds of March will parch them up. At this season all beds and borders should be gone over, and any plants that have been loosened by frost should be firmly pressed into the soil.

Autumn-planted Strawberries, too, that delight in a firm root-run should have the soil well trodden down all over the bed as soon as it is dry on the surface. In the kitchen garden such plants as autumn-sown Cabbages, Lettices, &c., are very liable to suffer in this way and perish before they can get fresh root-hold, unless they are pressed firmly into the soil.—J. G. H.

Carrot Red Valery.—By the introduction of that fine French kind, the Red Valery, into this country, and for which I presume we are indebted to Messrs. Vilmorin & Co., of Paris, we have obtained a Carrot which seems to be in form, beauty, and texture the very perfection of this root. I do not assume that the new Intermediate, the Matchless, or some others just like the Valery are identical. It is not of much consequence, so long as we get a good thing, and not worth quarrelling about. That this new comer will supplant the shorter, though still excellent, Intermediate, there can be little doubt, but being better will presently hold the field, as a general main-crop Carrot it can hardly be surpassed. The long Carrots are hardly so popular as they once were; they come out very handsome and clean from the deep Surrey sands, but give, as a rule, too much bone relative to flesh. I have seen the Long Surrey grown in the neighbourhood of Faruham of wonderful length, and when set out in flat or fan-shaped bunches, quite startling in appearance, but such "sticks" are not desirable. The Altringham has also enjoyed a good reputation, but it thrusts a coloured top up above the soil, the which is waste. Probably the three most useful Carrots we have are Early French Horn, short, early and easily forced, or quickly produced even in cold frames; Early Nantes, so excellent and fleshy, and good for successional sowings on warm borders; and Valery, New Intermediate, Matchless, or however known, for main crops.—A. D.

KITCHEN GARDEN NOTES.

SEED SOWING.—February is said to "fill the dyke either with black or white," but this year shows us that proverbs are not to be trusted, 0.35 inches being our total rainfall for that month; the consequence is the soil is in about the best condition for sowing seeds that I have ever known it to be, and main crops of Parsnips, Onions, and good succession lots of Peas ought to be in by this time. There is just a chance that the tempting state of the soil may not turn out to be an unmixed good, as the probability is that inexperienced hands may be induced to sow all and sundry, with a view, as they think, of getting ahead with their work. To such, I would say, beware, and quote another proverb, which invariably turns out to be true, viz., "the more haste the less speed." Yes, it is very unwise to sow a large plot of Turnips or Beet and large-rooted types of Carrots thus early, for they will certainly run to seed; again, by sowing unnecessarily large successions of Peas, Broad Beans, Lettuce, Radish, and Spinach, there will presently be the difficulty of finding ground sufficient for successional sowings to maintain a constant supply throughout the season. The produce may not be difficult to get rid of, but I always think that sufficient is better than an overplus; besides, vegetables are always best when used as soon as ready, and on that account successional sowings in quantity according to the demand is the best of all rules to adhere to. I would advise that a moderately large breadth of the warmest border be sown with Early Nantes or Early Horn Carrot, Lettuce, Radish, and just a few Early Munich Turnips, and what more of similar ground can be spared should be devoted to early varieties of Potatoes. These will all come in immediately after the supplies from pits, frames, and artificially constructed frames are exhausted. I ought to add that any labour that can be devoted at time of sowing to scattering in the drills, either before or after the seeds are sown, any material distasteful to birds will be labour well spent. We use soot, wood-ashes, old mortar scraps, and artificial manures, each kind according as our judgment deems it likely to be of greatest service to each particular vegetable. Wood-ashes are invaluable for Turnips and Radishes, soot for Lettuces and Potatoes, and either guano or Beeson's manure for Carrots, Peas, and French Beans; mortar scraps are a certain preventive of

club in Cauliflower and Brussels Sprouts—in fact, in the case of all the Cabbage tribe.

GOOD VEGETABLES.—The late severe and long-continued snowstorm was, according to some, myself included, to end in there being no supplies for the kitchen; all must perish. Well, the mercury of one's temperament, I suppose, cannot be always stationary, and now that it has regained its normal state, we see how unfounded were our fears. All root crops are still extra succulent, owing, I suppose, really to the cold winter, which was to kill all. Let me here note all the kinds we now have in use, adding a word or two as to how they were wintered. Carrots, Intermediate, are as sweet and juicy as in autumn. They were left in the ground till December, then lifted, left a day or two in the shed to dry, and finally stacked closely together in a cool frost-proof collar. Beet-root is still perfect in quality—not a bit shrunken. This we lifted in November, twisted off the foliage, and served exactly the same as Carrots. Parsnips, I think, must be better than usual, for I never could relish them till this season. These were wintered in the ground and only lifted some three weeks ago. We spread a little Braeken over them, but I question whether it did any good, as the snow caused it to rot, and therefrom decay started at the crown in the case of some of them. We dug them up as soon as new growth was visible, and they are now stored dry in the cellar with Carrots and Beet. Jerusalem Artichokes are super-excellent and more than well appreciated, as our rapidly diminishing store shows. These were left in the ground all the winter, and only lifted a few weeks since, because necessity compelled us to plant them on the same ground again; so it was trenched and manured. This done the plot was at once replanted. This we did some five weeks since, but it is not too late to plant now.

CELERY is still very good and much relished as a second course vegetable. The snow did this far more damage than frost, as its weight completely flattened down the Braeken covering we had applied, and before it could be uncovered all the large outer foliage was in an advanced state of rotteness. We cut away every bit that could be seen, and raked away every particle of decaying matter with the result that, though not quite stopped, the decay has been but little. The recent severe frosts have hindered new growth starting. Once this is visible we shall lift the whole, heel it in under a north wall with some already lifted, because ground was wanted, and there it will keep in perfect condition so long as our necessarily limited supply will hold out. Turnips at last have turned round: the bulbs are fine and look very tempting, but when cut the flesh looks near akin to a white sponge; but what matter, they are still of the utmost value, and produce a quantity of greens of the best quality that do us excellent service alternately with tops of Brussels Sprouts, Cottagers' Kale, and Rape. The above constitutes the whole of our vegetable *menu* of open-air production, to which have to be added from forcing quarters French Beans, Asparagus, and Seakale.

CAULIFLOWER AND ALLIED VEGETABLES—Notwithstanding our present unexpected good supplies, as the foregoing note shows, it will not do to rest and be thankful; the busy springtime is upon us, root stores will get exhausted, and we must now look ahead. Cauliflowers are an important crop; we planted a few out too soon, and they are not now so good as when put out weeks ago; however it benefited those left in the handlights, so that it is not all loss. These now should have the lids constantly off in the daytime; keep down slugs by dustings of soot, lime, or a-hes. Plant out from frames on to a warm border in deep drills—for shelter—18 inches by 12 inches apart for earliest dwarf kinds, but 2 feet by 15 inches for the larger. Lift with balls of earth adhering to the plants and plant with trowels, when the plants will show but little signs of having been moved, and, as a matter of course, the heads will be ready all the earlier. If autumn-planted Cabbages have suffered, fill up the vacancies with

the best plants at command; never use spring-sown plants with these; it only makes the plot look higgledy-piggledy. I prefer to lift a row from the old plot to make good the others, provided a supply of plants of the same sowing cannot be had. As soon as the Cabbage and Coleworts that were raised in heat and pricked out in frames are sizeable for planting out it ought to be done. The Coleworts will make a fine succession to the autumn plot of Cabbages, and by the time they are exhausted the spring-sown Cabbages will be ready. I do not write for market growers, hence my advice to grow only sufficient, and decide the amount of such sufficiency by taking into account that at the time these will be ready there will be Peas, young Carrots, Cauliflowers, Broad Beans, Spinach, and abundance of new Potatoes. Scotch or Curled Kale, as well as Asparagus Kale, are breaking into renewed growth, and shortly nice sprouts will be obtainable throughout the entire length of their stems, which, having got loosened by frost, have been reformed in the soil by treading round them, and the entire plantation hoed and mulched with half-rotted manure. Broccoli we have attempted to do nothing to as yet, for decay is still going on, but when this has ceased we shall have a final clearance of all dead leaves and freshen up the ground by hoeing between the rows.

PEAS.—We have a quantity in pots that ought to be planted out, but the nightly frosts of from 6° to 10° deter us; ground and trenches are ready, and soon as there are indications of milder weather the work will be done. There are about nine Peas in a 3-inch pot, and each pot will be planted a foot apart, without breaking the roots at all. The trenches are 6 inches deep, and set as wind-guards, together with a good allowance of evergreen spray that will be placed at base of supporting sticks soon as planting is finished. I ought to have said that a good dressing with a mixture of soot, wood ashes, and lime should first be applied; and if needs be, to keep away birds, the soot dressing will be repeated as often as may be found necessary. The sorts we have sown in the open ground for second and third succession supplies are Advance, Best of All, Criterion, Telephone, and Veitch's Perfection—all good varieties—and by sowing several sorts at same time there is greater certainty of a continued succession, as no two sorts are ready on exactly the same date. The Peas already above ground are earthed up and well sheltered with twiggy Hazel sticks, lined at bottom with Yew branches; the latter will be pulled away as soon as the plants have gained strength, and got well inured to bear full exposure.

TOMATOES, CAPSICUMS, AND CHILLIES.—Our first batch of Tomatoes is now ready for potting into the fruiting size—11-inch pots. We pot firmly, in not very rich soil, else the tendency is to wood-growth rather than to fruiting. Soon, however, as a good set of fruit has formed, manurial waterings are given about thrice a week, and oftener if needs be. The plants are now in a Cucumber house, where a temperature of 65° is kept up and plenty of moisture in the atmosphere, and, being near the glass, the growth is all that can be wished. They must be shifted before they begin to flower, or the moisture may tend to non-setting; for, like the majority of fruits, the pollen must be dry to be effective. Plants of two successive sowings are quickly following on the heels of this lot, but for the present have colder treatment to get plenty of stamina into the growth. Long red and the yellow-fruited Prince of Wales Capsicums, together with the miniature red Chilli, we have sown in shallow pans and placed in heat, to be presently pricked off into pots and again returned to heat till ready to be potted singly, then frame treatment suits them well. Of course, their principal value is in their being an indispensable condiment in pickle, or, in fact, for pickling separately, but we generally reserve a few for growing on for ornamentation. They stand well in dark corners of rooms where more valuable plants quickly perish, and they look specially appropriate on the

sideboard or mantelpiece of a dining-room. The variety Prince of Wales is naturally of a bushy habit of growth, and is therefore the best of the three for decorative use in plant form, and though yellow-fruited it is quite as piquant as are the red; it is therefore doubly valuable in comparison with the others.

ORCHIDS.

W. H. GOWER.

ORCHIDS AT DOWNSIDE, LEATHER-HEAD.

A PEEP merely at Mr. Lee's collection of Orchids just now would be sufficient to convince the most sceptical that Orchids are not only free-flowering, but healthy and ornamental. If one were compelled to select ten kinds from this collection better than the rest the task would be a difficult one, for here are thousands of flowers in almost endless variety, both in the way of colour and shape; take, for instance, the

CATTLEYA HOUSE.—In this there has been a grand display from the beginning of the year till the present time, consisting of the choicest varieties of *C. Trianae*. What other flowers would last two months in perfection during the dreariest and coldest period of our winter season, and yet keep producing hundreds of flowers which may keep in perfection another month? This, however, will not be permitted, for they will soon be cut in order to prevent the plants becoming exhausted; by attention in this way the crop for next year will be secured. Of varieties of *C. Trianae*, a most variable species, we will merely on this occasion mention the best. *Leana*, therefore, stands first on the list; it has large bold flowers which often measure as much as 7 inches across; the sepals and petals in this variety are broad, and deep rosy lilac in colour flushed with purple; the lip, which is large, is spreading in front, and rich magenta flushed with lilac-rose, whilst its large throat is streaked with orange. *Osmanni* is another fine form of *Trianae*, totally distinct from the last. It has flowers nearly or quite as large, the sepals and petals of which are bright rose flushed with magenta, and the whole of the front of the lip is deep rich velvety magenta-crimson, the basal portion and throat being pale yellow. Other richly-coloured forms are also numerous, such as *Backhouseana*, *eboracensis*, *magnifica*, *Noimani*, *Emperor*, and *Archiduc*, not single-flowered, but plants producing dozens of blooms. There are likewise numerous kinds in the way of delicata in which the sepals and petals are white, with a more or less deeply tinted mauve lip with yellow throat. There are here, too, some grand examples of alba, a kind in which the whole of the flower is as white as snowdrift, with the exception of a slight stain of lemon in the throat. In addition to these there are numerous forms of that rich and warm-coloured species *C. Percivaliana* associated with the plants of *Trianae*; in one form in particular the flowers are very large and the lip well open; the sepals and petals are deep rich rose flushed with purple, and the lip intense deep purplish crimson flushed with orange. With this variety *C. amethystoglossa* contrasts strikingly, its waxy flowers being pale rose in colour, profusely spotted and dotted with rich purplish magenta. Various handsome forms of *C. speciosissima* are also now in perfection; their sepals and petals, which are pale flesh colour, are almost circular, and the lip is rich amethyst, the throat being variously marked with white and different shades of yellow.

THE *ODONTOGLOSSUMS* here are at present magnificent; many hundreds of racemes are just opening, and many more are making themselves

visible. Foremost amongst them is the unique hybrid called *Lecanum*, which some authorities rank as a variety of *odoratum*, from which, however, it appears to be abundantly distinct. It bears a many-flowered raceme, the individual blooms on which are between 3 inches and 4 inches across; the ground colour is bright canary-yellow, spotted and dotted with chestnut, and on the front of the lip is a conspicuous brownish crimson blotch. *Horsmani*, which is supposed to be a hybrid between *luteo-purpureum* and *Pescatorei*, is a bold-growing and handsome form, the sepals and petals of which are yellowish white blotched with deep brown and crimson. *Hebraicum* is another striking and beautiful variety, having a pale yellow ground, streaked and spotted in a singular manner with bright brown. *Edwardi* is a remarkable plant, different in colour from that of any other known member of the family; moreover, it emits a grateful perfume, resembling that of Violets; the plant, which is a vigorous grower, produces a many-flowered branching panicle from 3 feet to 4 feet in length; the blooms, which measure about an inch across, are violet-mauve in colour, the lip being stained with yellow at the base. Plants of *crispum* *Alexandra*, which are flowering in vast quantities, and exhibiting almost endless variety in size, shape, and markings, from pure white to purplish rose and heavily spotted, are all in lovely condition. *Pescatorei*, a well-known kind, ever chaste and beautiful, with pure white blooms just tinged at the base with violet-purple, may be found there, as may also *mulus*, a large-bloomed sort which bears some resemblance to *luteo-purpureum*; the blossoms, which are borne upon branching panicles, have a yellow ground colour, more or less deep, blotched and barred with cinnamon; the large, fiddle-shaped lip is pale yellow blotched conspicuously in the middle with brown, and a few smaller spots of the same colour occur near the rest, which is beset with bristles. *Erstedii* *majus* also is a truly beautiful variety, the flowers of which are treble the size of those of any *Dendrobium* we have hitherto seen; the flowers are spreading, pure waxy white, with a clear yellow stain at the base of the lip. This variety appears to enjoy a somewhat higher temperature than most of the *Odontoglossums*. The beautiful *Oroseum*, a name recently exchanged for the ugly and unpronounceable one of *cochlioda rosea*, is pushing up its numerous rosy crimson flowers freely, as is also *Roezli* and its white variety *alba*; these three just named have been relegated to the genus *Miltonia*; they require the warmth of a *Cattleya* house to keep them in health and induce them to flower. Other noted kinds were *Willekeanum*, *aspersum*, *Humeanum*, *Rossi majus*, *pulchellum majus*, *tripudians*, *gloriosum*, and *odoratum* in many varieties, all and at the same time beautiful.

AFRIDES, VANDAS, SACCOLABIUMS, and other distichous-leaved Orchids are likewise largely grown, here and amongst them many large plants of *Vanda tricolor*. *V. suavis*, too, with its china-white flowers and purplish crimson markings, loaded the air with an agreeable perfume; many of these Vandas, though standing and flowering in the comparatively cool and airy atmosphere of the *Cattleya* house, are grand specimens some 4 feet or 5 feet in height, and laden with fragrant blossoms. They do equally well in baskets as in pots, an assertion fully borne out by the annexed illustration. Amongst *Aerides*, *Lawrencei* is still in flower, and *A. Thibautianum*, perhaps better known as *A. Huttoni*, is just opening its rosy purple flowers a grand specimen of the white honey-scented *Saccolabium Harrisonianum* is bearing twelve trusses, and of greater length than any we remember to have previously

noted; the rare *S. gemmatum* and *S. bellinum*, though small, contribute their share to the display. They are, however, completely overshadowed by the grand racemes of *S. giganteum*. Other plants worthy of notice in this section are the rare *S. curvifolium luteum*, and the elegant *Angraecum citratum*, which is bearing dozens of spikes of delicate blossoms.

PHALANOPSIS are also magnificent, the chief varieties in bloom being *Schilleriana*, *Brymeriana*, *amabilis* and *Stuartiana*; the flowers of the last are very large and more richly spotted even than usual. The coldest house plants are the *Masdevallias*, which are extensively grown by Mr. Lee; those now in flower amongst them are *igneae*, *Harryana*, *amabilis*, and a very large form of *Shuttleworthi*. The blooms of *Chimara* are just



Vanda suavis.

opening, as are also those of *Backhousiana*, which resemble the preceding, but are larger and brighter; *Roezli*, which also belongs to the same group, has flowers of an intense blackish purple.

DENDROBIUMS are numerous and beautiful, the genus now in flower being the charmingly coloured noble *nobilis*, the flowers of which are deep crimson-purple, with an intensely black-purple blotch in the lip. Many fine examples of *Ainsworthi* may be seen here; this kind is, however, now surpassed by *splendissimum*, the flowers of which are very large and white suffused with rose; the lip, which is deep velvety purple, has just a suspicion of yellow in it near the base. Associated with these were grand examples of *D. Wardianum*, *crassinode*, *fimbriatum*, *Findleyanum*, and its variety *roseum*; also *luteolum*, with its primrose-coloured flowers, and a

curious kind called *Tollianum*, which appears to be a very deep-coloured form of *nobile*, in which the sepals and petals are marked in a manner similar to the lip.

CYPRIPIDIUMS are represented by good plants of *Schlimi* and the variety *albiflorum*, which still continues rare, and does not appear to be so easily managed as many others. *C. venustum*, with its peculiar blue-green marbled leaves, and in this instance brightly coloured flowers, was in great beauty, as was also *grande*, a gigantic member of its race with large bright, flesh-coloured flowers, belonging to the *Roezli* section. We also noticed some deeply spotted forms of *Boxalli*; also *vernixium*, a hybrid raised between *Argus* and *villosum*, in which the beauties of both parents are happily combined; the beautiful hybrid *calurum*, with rich crimson flowers, and *calophyllum*, a kind in which are combined the beauties of *barbatum* and *venustum*. This, with the brilliantly coloured, though somewhat small flowers of *barlatum* *Warneri*, includes the majority of the best Orchids.

ONCIDIUMS, though not numerous in this collection, include some richly spotted varieties of *sarcodes* and numerous examples of *cheiroporum*. The now much-neglected family of *Ependrums* is represented by some beautiful species, especially those of the *paniculate* section. Of these, the most noticeable were *xanthinum*, with large heads of orange-yellow flowers; *arachnoglossum*, with violet-crimson flowers; the lip of which has a yellow crest and is prettily fringed; *Endresi*, a diminutive plant with distichous leaves and small pure white flowers, the lip and column being blue. *Lycastes*, which are well represented, vary in colour from deep crimson to pure white. Amongst *Celogynes* we especially noticed *conferta*, a close, compact form with short spikes and numerous flowers, somewhat in the way of those of *ocellata*. Of *flaccida* there are large specimens with numerous long, drooping racemes of bloom; *cristata*, too, with its numerous snowy flowers, may be seen here in abundance; also fine examples of the variety *alba*, which is perhaps the purest example of a white Orchid we have, there being not a speck or tinge of colour to mar its purity.

Amongst miscellaneous Orchids in flower are *Ada aurantiaca*, with drooping racemes of orange-red flowers; *Zygopetalum crinitum*, with large blue-veined lip; the white and yellow-flowered *Pilumna nobilis*; *Calanthe pleiochroma*, belonging to the *Masna* section with evergreen leaves. In this kind the scape is erect and the flowers lilac, with a crimson crest. Associated with these were the old and now seldom seen *Warrea tricolor*, *Colax jugosus*, with flowers white outside, but prettily barred within with blue; *Laelia harpophylla* and *flammea*, the former with orange-vermilion flowers, the latter with brilliant cinnamon ones; and *Phajus tuberosus*, a recent introduction from Madagascar. This last has hitherto proved to be rather intractable; it is, however, blooming freely here; the scape is erect and the flowers large; the sepals and petals are white, and the lip yellow, the large side lobes being profusely spotted with brownish crimson, while the front lobe is white, spotted with rosy purple; crests yellow. With the new *Maxillaria Sandersi* we close the list. This last is a remarkable plant. It grows as strongly as *M. grandiflora*, and has large flowers, with pointed sepals and petals the shape of those of an *Acanthophippium*, and furnished with the markings of *Stanhopea tigrina*. In all, Mr. Lee must have about 200 species and varieties of Orchids now in flower.

Cymbidium Lowianum.—At p. 199 Mr. Osborne inquires about the number of flowers on

a spike of this species. We have a plant of it now on which the flowers are opening. It has four spikes, on which are 140 flowers; the greatest number on one spike is 43. Previous to this season the greatest number of flowers I ever knew to be produced on one spike was 33. The plant in question was a small one, in a 5 inch pot, in May, 1885. It is now in a 13 inch pot, and will require to be repotted again when the flower-spikes are cut off. We grow this species in loam, leaf mould, and manure in preference to peat soil.—J. DOUGLAS.

Odontoglossum pardinum.—This is a bold, robust-growing plant, nearly allied to *O. Lindeni*. Its flowers are produced in panicles, which are branched and many-flowered, and in some varieties reach nearly 3 feet in length, but a form of it which we recently saw in the Selborne collection at Streatham bears a much-branched panicle not more than 2 feet high, densely laden with very fragrant flowers, the sepals and petals of which are much undulated and golden yellow, profusely spotted with reddish brown; the lip, which is somewhat fiddle-shaped, tapers to a sharp point and has a broad blotch of chestnut-brown at the base, and a few spots of the same colour in front.

Calanthe vestita alba.—From Mr. Laing, of Forest Hill, come some flowers of a *Calanthe*, which he thinks is a white form of *C. Veitchi*. It is not, however, a form of *Veitchi*, inasmuch as its lip is deeply cleft into four deep blunt lobes of the same shape as those in the typical *C. vestita*; whilst that of *C. Veitchi* is only slightly notched in front, resembling in shape somewhat the lip of *Limatodes rosea*. The flowers of this variety are very beautiful, being snow-white without the slightest tinge of colour—a circumstance which should cause it to be sought after wherever white flowers are in demand. This variety, we believe, appeared amongst a consignment of *Calanthes* from Cochin China belonging to the Regnier section, both it and the variety *Stevensi* having pseudo-bulbs resembling more those of *C. Veitchi* or *Limatodes rosea* than the typical *vestita*, and all of them come into flower after the ordinary *C. vestita* has done blooming, a circumstance which makes them most desirable.—G.

SHORT NOTES.—ORCHIDS.

Cheap Orchids (*R. Harvey*).—Consult the lists of the leading growers and importers. At the London sales, too, some kinds are sold at very low prices.

Cœlogyne flaccida.—This is now in flower at Syon House, where it is grown in a basket suspended close to the glass. It is at the present time bearing fifteen of its long, pendulous racemes of flowers, which are very effective.

Dendrobium splendidissimum.—This hybrid raised by Mr. Seiden is a cross between *D. nobile* and *heterocarpum*, and is now in flower in the Messrs. Veitch's nursery at Chelsea. The flowers are very large, the petals and sepals white tinged with pink, the lip also slightly tinged, and with a dark purple throat. It also is in flower in Mr. Lee's collection at Downside.

Phalenopsis at Park Hill, Streatham.—The display of Moth Orchids at this place is now very grand; many of the plants still in full flower have been so for nearly two months. Amongst the principal kinds are *Schilleriana* in variety, with large branching panicles bearing in some cases fifty flowers, whilst some of the forms of *anabilis* have by far the largest flowers which we have hitherto seen.—G.

Masdevallia ignea.—Numerous varieties of this brilliant and tree-blooming species are now in flower in various gardens round London, and one of the finest is that named *Massangeana*, a variety in which the flowers are much larger than in the type. Their ground colour is bright orange-velvet, the prominent veins of the connate sepals being rosy purple. The bright colours of the different varieties of this plant contrast strikingly with the pure white flowers of the *Alexandra Odontoglossum*.

Dendrobium crassinode.—This is characterised by its thickened and knotted joints, from which its name is derived. Many hundreds of plants of it are now pushing up their flowers in Mr. Low's nursery. The blooms are produced on the previous year's growth, which loses its leaves during the resting season. The sepals and petals are waxy-white, the tips being more or less broadly suffused with purplish magenta, lip of the same colour, blotched at the base with a orange. A form with pure white flowers has bloomed in Sir Trevor Lawrence's collection at Dorking.—G.

Lælia anceps Protheroianum.—Large quantities of this Orchid have been introduced during the past few years, and amongst their flowers there has been great variety, some being pure white, whilst others have been darker than the type, but all, nevertheless, beautiful. The variety called *coccinea* has hitherto been the richest in colour, but

Messrs. Horsman, of Colchester, have one even finer than it. In this the sepals and petals are deep reddish crimson, and the lip intense deep crimson, with some yellow line on the sides of the throat.

Mr. Harvey's collection.—This is to be sold by the Liverpool Horticultural Company. It is a choice collection, made so by continual weeding by Mr. E. Harvey, of Aigburth, and contains healthy specimens of such varieties as the old autumn-flowering *Cattleya labiata*, *C. Skinneri alba*, *C. Wageneriana* and *Reineckiana*, *C. calumnata*, *Lælia elegans*, *Turneri alba*, *prasiata*, and *pieta*; *L. anceps* Dawsoni, *Schroederiana alba*, *Williamsi*, *Hilli*, *flamula*, &c.; *Vanda Sandeiana*, *Dendrobium Falconeri*, *giganteum*, and *Harveyanum* (sp. n.w.).

Phalænopsis.—In Mr. W. Philbrick's garden at Oldfield, Bickley, various species and varieties of these plants are now laden with handsome flowering spikes, conspicuous amongst them being two very fine varieties of *P. Stuartiana*, both being densely and delicately spotted at the base of the sepals. *P. casta* is represented by a very fine variety, the flowers measuring upwards of 3 inches across. A good variety of *P. Schilleriana* is bearing eighteen flowers on the spike. The house is of small size and span-roofed. All the plants are suspended in baskets from the roof; and on the borders underneath are planted *Fittonias* and other fine-foliaged plants of free and spreading growth.—J. D.

Odontoglossum Alexandræ.—The first figure of this plant was given in Mr. Bateman's "Monograph of the Genus *Odontoglossum*," a work unhappily still incomplete. It represents the flowers as being pure white, with the exception of a blotch or two in front of the yellow crest of the lip. We recently observed a plant of this type, but infinitely superior to that in question, blooming with Mr. Jacomb at Stamford Hill. Its flowers are arranged distichously on the raceme, and individually they are large and full, the petals being beautifully fringed. This variety stands out conspicuously from dozens of other good forms, quite eclipsing them by its chaste beauty and the purity of its blossoms.

Cœlogyne culture.—The remarks made on this subject in THE GARDEN (p. 191) are not quite in accordance with my experience. We do not consider this a cool-house Orchid, and I should certainly like to know where it is to be seen "grown to perfection in a cool, moist greenhouse." I visit most of the principal collections of Orchids near London in the course of the season, and cannot recollect one place in which it is grown in a cool house. Mr. Pollett has been wonderfully successful with *C. cristata alba* at Bickley, but all the year round it is grown in the warmest *Cattleya* house. Some remarkable specimens may likewise be seen in Mr. Philbrick's garden, which is also at Bickley; the variety said to be *maxima* had thirty spikes, and each spike was furnished with from six to seven blooms, but the plants there are not in a cool house. As to growing Orchids in what is generally understood to be a cool greenhouse, I would go a long way to see such a feat successfully accomplished. I was told that I could see it in Dr. Duke's garden at Lewisham. I went there, and found the case reversed, viz., greenhouse plants growing in an Orchid house—a very different thing. Dr. Duke repudiated the idea of growing Orchids in a greenhouse. What is the experience of cultivators generally in regard to growing such Orchids as *C. cristata* in a cool greenhouse? I may say that we had three plants potted in the new material called *Trepho* last year, and they have done remarkably well.—J. DOUGLAS.

Thrixspermum unguiculatum.—This curious Burmese Orchid we recently saw in the nursery at Holloway. Its foliage reminds one of that of a *Phalænopsis* of the *Ludemannii* section; indeed, it has received the garden name of *Phalænopsis Luckeriana*. Its stem, which is short, bears oblong, strap-shaped, two-ranked leaves, some 9 inches long, bluntly notched at the ends, thick and fleshy, and deep green.

The flower-scape, which is about as long as the leaves, produces towards the top numerous spreading, fleshy, ivory-white flowers; the front lobe of the lip is dotted with crimson, and the side lobes are striped with the same colour. This plant should be grown upon a block of wood or in a shallow pan. The raceme being pendulous, the flowers are seen to the best advantage when suspended from the roof.

CHRYSANTHEMUMS.

E. MOLYNEUX.

WHERE there are no glass structures Chrysanthemums may be grown well on spare walls, and even where there are glass houses such spaces may be utilised by planting against them the old plants that bloomed indoors the previous season. The main point is to employ suitable varieties. Pompons and single varieties are specially suited for such purposes; they flower profusely, and owing to the thinness of their petals they do not suffer nearly so much from rain as do heavier incurved varieties. Reflexed kinds answer capitally for wall culture, especially medium-sized sorts belonging to the Japanese section and a few of the incurved kinds. A southern aspect suits them best, and if there is a wide coping on the wall so much the better, as that prevents the blooms from becoming soaked with wet. If the wall is 7 feet high, so much the better, as larger flowers and more in quantity can be produced than on a wall not so high; still on a wall of less height blooms may be had by training the shoots in a different manner. Let us assume that the wall is 7 feet high, and that large blooms and a quantity of smaller ones are desired. Now is a good time, or early in April if more convenient to plant out the plants. As before stated, old plants are better suited for this purpose than young ones raised from cuttings made of the current year's wood, owing to the extra number of shoots produced at the base, the result being more branches to begin with. Remove part of the old soil from the roots, and plant close to the wall and 3 feet apart; add some manure, increasing or diminishing the supply according to the character of the soil. Between every two large-flowered varieties plant alternately one Pompon and one single variety. The Pompons and single kinds will cover the bottom part of the wall, and thus the space above them will be devoted to the large-flowered sections. Tread the soil firmly about the roots, and when growth has fairly started water freely. Many shoots will spring from the base of the plants if the latter were of good size the previous year. In the case of each of the large-flowering varieties select four of the strongest growths, removing all others, and in that of the Pompons and singles retain six. When the growths are long enough spread them out thinly and fasten them to the wall, continually doing so as growth proceeds. Neglect of this spoils the effect both of flowers and foliage, as the branches are easily broken by wind. Do not top the branches; when the first natural break takes place select two of the strongest growths on each stem, or more if space permits, and remove the remainder.

Where size of flower is a speciality, allow three stems on each plant to produce a single bud, removing all other side growths, but in the case of branches upon the same plant intended to produce a quantity of flowers remove the flower-bud formed in August, when another set of growths will start from the point from which the flower was removed. By growing both single blooms and a number of others upon the same plant the wall is not rendered thin in appearance when the flowers expand, as they otherwise would do were one plant devoted to a few blooms, one on each stem, for instance. The foliage of both Pompons and single varieties being much smaller than that of the large growing kinds more shoots can be retained on the first growths; from 3 inches to 4 inches is a suitable distance at which to train these shoots apart. In the case of

kinds of this character allow all flower-buds to develop in order that blooms may be found on the whole length of the shoots. Encourage free growth by thoroughly syringing the plants after a hot day; this greatly assists in keeping the foliage clean and in rendering the wall cool during the night. Where the wall is low compared with that previously named a different method of training must be practised; tall-growing kinds should be dispensed with, and where large blooms are the object, which can only be had by allowing the branches to grow away naturally, so to speak, these must be laid in to the wall obliquely, and so that they cross one another. Where, however, quantity of blooms is the primary object, top the plants when about 6 inches high, and continue doing so till the end of June, laying in the branches as space permits. As soon as growth is fairly established and the roots running freely give liquid manure in a weak state; the times at which it should be applied must be guided by the weather, be it wet or dry. If the latter, give copious supplies once a week, increasing the strength when the flower-buds are formed. Treated in this manner, in favourable seasons blooms can be had from such walls during eight or ten weeks, a consideration late in autumn. Frost following on the heels of rain is the worst enemy with which Chrysanthemums have to contend during the blooming period; the flowers being heavily charged with moisture are much less able to resist the effects of the frost than when the flowers are dry.

Where choice can be had of varieties the following will be found suitable, but where such is not the case avoid all kinds the blooms of which are heavy in character, holding as they do too much water after rains and heavy dews. Reflexed: Golden Christine, Pink Christine, Mrs. Forsyth, King of Crimson, Phidias, Progne, and Chevalier Damage. Incurved: Mrs. G. Rundle, George Glenn, Mrs. Dixon, Refulgence, Pink Venus, Othello, Jardin des Plantes, and Lady Slade. Japanese: Dr. Macary, Bouquet Fait, Peter the Great, Elaine, Tendresse, Mons. Mou-sillac, Margot, Mademoiselle Lacroix, Lady Selborne, Harlequin, George Gordon, L'Incomparable, The Daimio, Triomphe du Nord, La Nympe, and Madame de Sevin. Pompons: White Trevenna, Snowdrop, Golden Circle, Nelly Rainford, Rosinante, St. Michael, Lizzie Holmes, and Prince of Orange. Single varieties: Oscar Wilde, Patience, Mrs. Langtry, Mary Anderson, Nelly, Oriflamme. These are varieties all suitable for the purpose. Many more might be named, but these will make a good display.

Plants grown for producing large blooms for exhibition will now, in most cases, be in 3 inch pots; some in 4½-inch pots, while others will be only as yet in the cutting pots. The latest should, however, now be ready to receive a first shift; where the plants have had the benefit of a shelf close to the glass in a cool house they will be dwarf and stocky. The strongest, and even all except the very smallest, which have taken to the new soil after the first potting should be removed to a cold frame, and set on a good thickness of coal ashes, which form the best of all foundations on which the plants can stand, as it prevents the ingress of worms which often derange both soil and roots, and thus do injury, as the soil in which Chrysanthemums are grown should be firm and solid. The soil used in potting in this case should be the same as that recommended last week (p. 212), and in mixing it care should be taken to eject any worms seen therein. Place the plants close to the glass; keep them rather close for the first few days after removal, as the winds are often cold and cutting, which, in some instances, causes the foliage to turn yellow. This causes a check which should be avoided, if possible; gradually tilt the lights a little during the daytime, always on the side opposite that from which the wind is blowing; increase the supply of air gradually as the days lengthen and the sun gains strength, until the lights in very fine days can be daily removed altogether for a few hours.

Cover up the frames at night to protect the plants from frost, as if the points of the shoots at this stage are injured, a check will be the result. Do not stop them by taking out the point of each, but allow them to grow in a natural manner, and to each stem put a small neat stake by way of support.

CHRYSANTHEMUM PRIZE SCHEDULES.

THESE should be concise and clear as regards what may be required in order to prevent disappointment. No prizes induce so much competition, or bring so many good specimens together as do challenge vases, which prove a stimulus both to exhibitors and visitors. A good prize in money and a challenge vase encourage the best growers to enter the lists, and the result is a good show. It is, however, a mistake to offer such prizes for very large numbers of varieties, as say, for instance, forty-eight distinct kinds. Such a number prohibits many from competing, as it is most difficult for even the largest growers to cut so many blooms at one time; consequently inferior flowers have to be substituted to make up the number, thus deteriorating an otherwise good stand. What is better calculated to make a good show, and ensure brisker competition, is the class for forty-eight blooms in thirty-six varieties, half to be Japanese and the remainder incurved—not more than two of one sort. There is no comparison between the two classes as to the ease with which they can be filled. More uniform stands can also be obtained by allowing duplicate blooms, and the general public are better satisfied. The classes for Anemone-flowered varieties, too, need consideration; owing to the advent of what are now termed Anemone-Japanese sorts, the older varieties of which, Gluck and Acquisition, are fair representatives, are fast being elbowed out of the shows by their more showy and attractive rivals. To remedy this, separate classes should be made for each. Prizes ought to be also offered for single varieties, both in a cut state and in the shape of plants grown in a somewhat natural style, commonly called "bush" plants. The various colours and forms of these single sorts, combined with the freedom with which they are produced, specially recommend them for more general cultivation than they at present receive. When in a cut state, prizes should be offered for so many bunches of them, number and variety being according to circumstances twelve bunches and, say, six varieties, would be found to meet the case, at least at first. Some societies do not encourage the reflexed section sufficiently. Varieties belonging to this section are, however, particularly well adapted to exhibition, and they are more easily grown than the general run of the incurved sorts; very free, in every respect is the Christine family, more particularly the white one. Dr. Sharpe is specially to be recommended, its lovely magenta coloured blossoms being very rich when seen in a mass. Take, again, Cullingfordi, a variety which has had a good deal of buffeting about, first in one class and then in another. Without doubt, however, it belongs to the reflexed class; were it placed in any other it would soon be neglected, and that would be matter for regret, as the loss of its brilliant colour would be a misfortune. The judges' names, I may add, ought to be published in show schedules, as being more satisfactory to intending competitors. E. M.

Black Vine weevil (*B. Cash*).—The grubs attacking the roots of your Ferns are the grubs of that very destructive insect, the black Vine weevil. They cannot be destroyed without taking the Ferns out of their pots. They also attack the roots of Cyclamens, Begonias, Primulas, &c. The best way of getting rid of this insect is to destroy the parent beetles, which are nearly black and dull in colour. They are about half an inch in length, and somewhat sluggish in their movements; they generally remain hidden during the day, coming out after dark to feed. They feed on the foliage of Vines and many other plants, gnawing great notches in them. If you can find the plants on which they are feeding, place them on a

white sheet, and when quite dark suddenly throw a bright light on them; this generally startles the weevils, and they fall, feigning to be dead. A sharp shake to the plant helps matters; if they do not fall, carefully examine the plants.—G. S. S.

SOCIETIES.

ROYAL HORTICULTURAL.

MARCH 8.

THE meeting of the fruit and floral committees, which was held in the conservatory, was, in spite of the foggy weather we have just had, rendered extremely bright by the fine collection of Camellias from Messrs. Wm. Paul and Son, the Orchids from Mr. Little, and the Narcissi and other welcome spring flowers from Messrs. Ware, Collins and Gabriel, and Barr and Son.

The following first-class certificates were awarded, viz., to Rhododendron La Belle, a cross between R. ciliatum and R. Forsterianum, bearing large, pure white, cup-shaped flowers. Exhibited by Messrs. Veitch. The same firm were also awarded a first-class certificate for Anaryllis Nestor, a variety bearing flowers of fine form of a beautiful scarlet, the petals being tipped with greenish white. On one of the flower-stalks there were four fully expanded flowers. Rose The Bride, a beautiful sulphur yellow Tea Rose. Shown by Mr. J. Gilmour, jun., Sheffield.

Sir Trevor Lawrence, Bart., M.P., Burford Lodge, Dorking, exhibited a plant of Anthurium carneum, bearing three very large spathes, each measuring 6 inches by 7 inches. The flowers are pale scarlet on very long footstalks. He also exhibited a very fine form of Phaius tuberculatus named superbus. This is undoubtedly the finest variety of this we have yet seen. A cultural commendation was deservedly awarded. The Hon. and Rev. J. T. Boscawen, Tregothnan, Probus, Cornwall, exhibited a finely flowered plant of Dendrobium nobile. Mr. De B. Crawshaw, Rosefield, Sevenoaks, sent cut flowers of varieties of Odontoglossums and other Orchids, noticeable being Odontoglossum Wilckeianum albens, O. Rossi majus rubescens, Masdevallia Shuttleworthii xanthocorys. Mr. Vanner, Bickley, sent a plant of Cattleya Trianae Vanneriana. Mr. Courtauld, Braintree, Essex, sent a superb variety of Cattleya Trianae var. Courtauldi. The specimen was superbly flowered, and the flower throughout was of a beautiful dark shade—certainly a very fine variety. A cultural commendation was awarded. Mr. J. Pitt, The Gardens, Cassiobury Park, Herts, sent a beautifully flowered example of Dendrobium nobile grown in a basket. The plant was one mass of bloom, and well deserved the cultural commendation awarded. Mr. B. D. Knox, Caversham, Reading, sent varieties of Cattleya Trianae, Laelia anceps, &c. Mr. Little, The Barons, Twickenham, sent a collection of varieties of Lycaste Skinneri. These varied very much in their markings and size of flowers. Noticeable was a beautiful dark variety carrying twelve of its beautiful flowers. Mr. Little also staged a finely flowered example of Cattleya Trianae and several forms of Odontoglossums. A silver Banksian medal was deservedly awarded.

Messrs. William Paul and Son, Waltham Cross, N., exhibited a superbly flowered lot of Camellias, as also twelve boxes of cut blooms. The pot specimens were thickly covered with fully expanded blooms, set off to the greatest advantage by the healthy foliage with which they were clothed. Conspicuous were the two American varieties, C. M. Hovey and C. H. Hovey; Montrioni vera, white incurved petals, the flower in some cases tinged with pink at the base of the petals; Cup of Beauty, beautifully pink shaded; Mathottiana, the old and well-known alba plena; and L'Avenir, a variety with large, full flowers of a beautiful pink colour. The cut blooms were also large and in fine condition. They well deserved the silver-gilt Banksian medal awarded.

Mr. T. S. Ware, Tottenham, exhibited a magnificent group of Daffodils, both cut and growing in pots, interspersed with such spring favourites as Chionodoxa Luciliae, Chionodoxa sardensis, Lachenalia, Freesia, Anemone fulgens, &c. A silver Banksian medal was awarded.

Messrs. Barr and Son, King Street, Covent Garden, also staged a group of Narcissi, fringed with the showy *Anemone fulgens*. A bronze Banksian medal was awarded.

Messrs. Collins Brothers and Gabriel exhibited a group of Narcissi, brightened up with here and there patches of *Chionodoxa Lucilie* and *Chionodoxa sardensis*, *Anemone fulgens*, *Freesias*, *Iris reticulata*, &c. In this group there was also shown a variety of *Primula obovata* under the name major, and as shown the individual flowers were certainly larger than the type. A silver Banksian medal was awarded.

Messrs. Paul and Son, The Old Nurseries, Chesham, exhibited a small group of hardy spring flowers, consisting of *Cyclamen Atkinsi* in variety, *Galanthus Shaylocki*, *Corbularia monophylla alba*, and *Rosa indica*. From the same firm were also exhibited plants of *Prunus Pissardi*, to show its fitness for forcing. As seen, it certainly merits attention for this purpose, wreathed, as it was, with its beautiful pink flowers, backed by the metallic foliage peculiar to this variety. They also exhibited the new *Saxifraga Frederici Augusti*, a yellow-flowered form, which somewhat resembles a variety named *Sancta*. The flowers of the former are produced in greater abundance and on longer footstalks. From the same firm was also sent *Ilex scurtica picta*.

Messrs. Pope and Sons, King's Norton Nurseries, Birmingham, sent four new varieties of *Primula sinensis*. The flowers were very large and of good colour, but somewhat rough. Messrs. Pope and Sons, Twickenham, exhibited some good forms of *Odontoglossum crispum*, as also a very fine group of *Cyclamens*. The flowers, ranging from pure white to intense purple, were large, more especially in the case of the white varieties, and a bronze Banksian medal was awarded. Mr. Ross, gardener to Sir George Macleay, Pendell Court, Bletchingley, exhibited flowering sprays of *Acacia verticillata*, the earliest and the most graceful of this class of plants, as also cut sprays of *Thunbergia Harrii*, with pale blue flowers and distinct yellow eye. Mr. W. Gordon, Twickenham, sent a Japanese *Camellia*, named *Lady Clancarty*, bearing pure white flowers. Mr. J. James, Woodside, Farnham Royal, sent blooms of his superb strain of *Cinerarias*. Mr. F. Moore, Botanic Gardens, Glasnevin, sent a collection of *Lachenalias*, consisting of *Lachenalia aurea*, *L. Nelsoni*, *L. luteola*, *L. orchoides*, the flowers large, greenish; *L. pallida*, flowers small, greenish white, the points of the flowers tipped with violet; also *Catasetum discolor*. Mr. Barron sent from the Society's Gardens, Chiswick, a pan containing grandly flowered examples of *Saxifraga Bursariana*. Messrs. James Veitch and Sons also exhibited *Amaryllis Iona*, a variety with whitish petals striped with red, and *Lomaria gibba platypetala*, with broader fronds than the type. Messrs. Green and Nephew exhibited their Munstead flower-glasses. These may be had in all sizes and shades of colour, and are very useful for arranging cut flowers. Mr. Benjamin Locker, Kingston-on-Thames, exhibited a new flower-pot in which a portion of the base is cut off, thus forming a saucer with a hole in the centre. This portion is inverted and placed inside the pot, thus affording complete drainage, and doing away with the use of crocks.

Fruit committee.—Messrs. Thomas Rivers and Son, Sawbridgeworth, exhibited a few varieties of Apples, conspicuous being *Archiduc Antoine*, a round yellow-skinned variety; *Buckingham*, oblong green-streaked, very handsome; *Wagner*, *Allen's Everlasting*, a very late variety; *Baxter's Pearmain*, a beautiful late Apple; *Lord Burghley*, *Bailey's Sweet*, and *Mannington's Pearmain*. These were all in good condition.

Mr. S. Ford, The Gardens, Leonardlee, Horsham, sent nine dishes of Apples, consisting of *Blenheim Orange*, *Hoary Morning*, of a beautiful colour; *Cockle Pippin*, *Bosom Apple of Sussex*, *Flower of Kent*, *Golden Russet*, *Barcelona Pearmain*. These had all been kept well and their colour was very marked. A bronze Banksian medal was awarded.

Mr. W. Roupell, Harvey Lodge, Roupell Park, sent some very fine samples of the *McLennan Apple*. They had been grown at Erixton Hill, and were in fine condition.

Messrs. Saltmarsh and Son, Chelmsford, sent an Apple named *Lord of the Manor*, a large yellow-fruited, conical-shaped variety with large open eye. The committee requested that it be again submitted next season.

Mr. Roberts, Charleville Forest, sent fruit of the white *Gros Colmar*, which were quite decayed.

Messrs. Spear and Jackson, 22, Queen Street, Cannon Street, sent a collection of their tools, consisting of spades, shovels, hoes, &c.

HARDY FRUIT SHOW AT CHESTER.

AN exhibition of hardy fruits (Apples and Pears) and a fruit conference were held the other day at Chester, with a view to stimulate both the production and consumption of fruit. A considerable number of local fruit growers, as well as many from a distance, favoured the occasion by sending some very fine collections of Apples and Pears—chiefly the former.

Amongst Apples were some grand specimens of—

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|------------------------|--------------------------|
| Alfriston | Herefordshire Pearmain |
| Golden Spire | Lord Derby |
| Winter Hawthorneden | Tom Putt |
| Blenheim Pippin | Hanwell Souring |
| Calville Maltinge | Improved Seek-no-further |
| Old Hawthorneden | Ashmead's Kernel |
| Stirling Castle | Mère de Ménage |
| King of Pippins | Northern Greening |
| Lord Clyde | Cox's Orange Pippin |
| Annie Elizabeth | New Hawthorneden |
| Rhymer | Orange Russet |
| Court Pendu Plat | Tankard |
| Cellini | Mannington's Pearmain |
| Lord Lennox | Down in Nonpareil |
| Lady Hemiker | Lane's Prince Albert |
| Small's Admirable | Yorkshire Greening |
| Dunelov's Seedling | Ribston Pippin |
| New Northern Greening | Old Northern Greening |
| Golden Winter Pearmain | Echlinville |
| Court of Wick | Summer Quoining |
| Gloria Mundi | Melon Apple |
| Cox's Pomona | Hambledon Deux Ans |
| Scarlet Nonpareil | Cornish Aromatic |
| Lamb Abbey Pearmain | Norfolk Beautif |
| Winter Pearmain | Flower of Kent |
| Fearn's Pippin | Morning Pippin |
| Seek-no-further | Baron Ward |
| Beauty of Kent | Rhode Island Greening |
| Crimson Quoining | Margil |
| Blenheim Orange | Wareham Russet |
| Tower of Ulmus | Norfolk Stone Pippin |
| London Pippin | Northern Spy |
| Royal Reinset | Peargood's Non-such |

Amongst Pears were—

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|------------------------|----------------------|
| Ester Bourré | Winter Bon Chretien |
| Doyenné Comhault | Black Worcester |
| Verblan | Anna Nelis |
| Uvedale's St. Germain | Grasanne |
| Leon le Clerc de Laval | Glou Morceau |
| Catillac | Josephine de Malines |
| Bourré Rance | Directeur Alphonse |
| Chamaent | Vicar of Winkfield |
| Bergamot Esp ren | Bezi Mai |
| Ne Plus Meuris | |

Mr. Baillie, in the course of an address on fruit growing, remarked that in the abstract of agricultural returns published by the Government in 1883 he found that 190,000 acres of land were returned under the head of orchards. At first that struck one as a wide area, but when he stated that in England alone the same return gave 68,000 acres as devoted to the cultivation of Hops, it would be found that Hop cultivation actually took up more than a third of the area given to British fruit growing. The total area of Great Britain was 56,786,199 acres; therefore only one acre in 300 was devoted to the cultivation of fruit. The population was 35,000,000, and it would be found that if the land was to be distributed amongst them, that each person would be the happy possessor, or rather the unhappy possessor, of about 20 yards of land from whence to obtain his fruit supply. Another feature was, that we were paying £7,000,000 annually for the importation of hardy fruits, or equal to 4s. per head per annum of the population for foreign fruits. A feature that he thought ought to be remembered was that fruit of some kind or other could be grown almost anywhere and everywhere. But though in Cheshire they had not the warm sunshine of Kent and Hereford, fruit growers ought not to be discouraged, for though, of course, a great deal depended on the climate, much more might be done by cultivation. He contended that in our own immediate district we had but too frequently the typical farmers' orchard; the too generally neglected orchard, with trees which were

venerable specimens of antiquity, covered with Lichen and other parasites, constituting them the happy hunting grounds of the cryptogamic botanist, but with no assurance of fruit crops.

With regard to storage, he noticed that in one of the collections shown there were some beautiful specimens of fruit said to have been stored in "hoggs," in the same manner as Potatoes; but whether that method could be carried out to advantage was open to trial. So, too, there was another lot said to have been gathered in the autumn of 1885. They were not particularly brilliant specimens, but being gathered so long ago it was not to be wondered at. Yet if Apples could be kept from 1885 till that time the question of fruit preservation was open to be still further considered. A great deal had been said as to whether it was really wise to go on planting fruit trees, but it seemed to him that as long as we went on paying millions of pounds annually for foreign grown fruit which might just as well be grown at home, the question as to whether or not fruit-growing would pay ought not to be asked. Then came the question of what tenants could do without long leases. The landlords should see to the utility and value of their property by planting orchards themselves on their farms.

Mr. Walker offered a few remarks on the growing of Pears and Apples on the northern coast of Wales. The principal conditions necessary for good crops of Pears and Apples, he said, were high temperature and moderate rainfall in July or August of the previous year, so that the wood might ripen, and an absence of severe frost during the blooming season. A rainfall of 2 inches, more or less according to the nature of the soil, was requisite in May when the fruit was setting, and complete rest or cessation of root action during the winter. If he were again to plant an orchard he would select a sunny slope, cut it down into terraces with low, dry, stone walls, and have his Pears and Apples trained on wire espaliers, 5 feet or 6 feet high, placed close to the walls. In his own garden, Apples on espaliers never fail to give a crop of some kind. It was well to take precautions against frost in spring, and he advised the planting of Pear trees on the higher slopes, which escaped the full severity of the frost, while the trees in the bottom of the valley were nearly totally blighted by frost. For Pears and Plums it was necessary to have the preceding July hot and dry, and for Apples the first three weeks in August hot and dry, while for all three considerable rainfall in May was necessary. That winter rest was essential could be abundantly proved by the fact that the countries producing the finest and most plentiful crops of Apples and Pears (North America, for instance) had colder winters than Britain. The best plan of combating this climatic defect on our part was root-pruning in November. Regarding the varieties of fruit best suited to the locality, he made it a rule not to grow dessert Apples that will not keep till February, when the best Pears are done, or attempt to grow any very late varieties of Pears. If the trees were watered in a dry May, they would never be without a crop of Apples. Unfortunately, the same could not be said of Pears, which were always capricious, although summer pinching and root-pruning might improve their chances greatly. In conclusion, Mr. Walker showed the meeting how 100 yards of espaliers could be erected for £1 15s. 1d., which would secure 600 yards of Apple cordon that would produce a great quantity of Apples.

Names of plants.—*G. T. Chichester*.—1, *Adiantum d. labrifforme*; 2, *A. Wilsoni*; 3, *Doryopteris palmata*.—*Sparg.*—1, *Cibotium Baronetz*; 2, *Fadyenia prolifer*; 3, *Cyrtotium carotidatum*; 4, *Vittoria lineata*; 5, *Platyloina atropurpurea*.—*W. B. Scarborough*.—1, *Adiantum Wilesianum*; 2, *A. cucullatum*; 3, *Litobrochia denticulata*; 4, *Lomaria discolor*.—*J. Williams*.—1, *Catasetum Scura*; 2, *Odontoglossum Cervantesi decorum*; 3, *O. odoratum*; 4, *O. roseum*.—*A. Chalbers*.—1, *Catasetum macrocarpum*; 2, *Oncidium (Cyrtochilum) maculatum* var. *Russellianum*.—*W. Cook*.—1, *Asplenium bulbiferum*; 2, *Polypodium Billardieri*; 3, *Davallia canariensis*.—*K. O.*—*Eranthemum macrophyllum*.—*R. W. Waterford*.—*Odontoglossum odoratum*.—*J. F. Edinburgh*.—1, *Lelia harpophylla*; 2, *Dendrobium heterocarpum*; 3, *D. fimbriatum*.—*C. W.*—1, *Oncidium Phalenopsis*; 2, *Dendrobium Wardianum*, very large flower, but not highly coloured; 3, *Epidendrum Stamfordianum*; 4, *Dendrobium Jamesianum*.

WOODS & FORESTS.

PINUS MONTICOLA.

MORE perhaps as an ornamental tree than a valuable timber-producer is the above Pine known to us; yet in this latter respect it is certainly far from valueless, as the several fine samples of its timber exhibited at the late Colonial Exhibition, as well as the various uses to which it is applied, clearly pointed out. That such a beautiful and free-growing tree has now, after a fair and impartial trial, been found to be well suited for planting in our British woodlands is a matter of the greatest importance, for certainly few members of the Pine family combine the useful with the ornamental in so high a degree as the subject of our present paper. With very satisfactory results have we planted *Pinus monticola* in a variety of soils and situations, from the cold, rocky grounds near the base of the Pentland Hills to the warm, maritime situations of Northern England, and the flat, luxuriant plains of mid-Ireland, and in all these places it has done well, and amply repaid us for the small amount of care and attention required to be expended on its culture and general management. Not only in the above-named districts, however, has this Pine been found to be perfectly hardy, for in looking up Mr. Palmer's table in the "Pinetum Britannicum," we find only two instances of trees being killed by the frost during the severe winter of 1860 out of thirty-seven reported on, and one of these was otherwise ailing.

Pinus monticola is a handsome tree, about midway in appearance between *P. Cembra* and *P. Strobus*: indeed by some authorities it is ranked as but a variety of the latter. The whole contour of a fair-sized specimen may be said to be almost strictly pyramidal, not so much, however, as in *P. Cembra*, with an abundance of rather short branches, these being well clothed with dark, rich green foliage. The leaves are arranged in fives, are about 3 inches long, rigid, keeled, and slightly serrated on the margin.

When young the cones are of a pale green colour, but when fully matured they become a beautiful light foxy brown, and add considerably to the ornamental appearance of the tree, the contrast between the deep pleasant green of the foliage and orange-fawn of the cones being both striking and pretty. They resemble those of *P. Strobus* in a marked degree, being about half a foot in length, an inch in diameter, and cylindrical in shape. The male cones are in clusters around the stalk, about half an inch long, and with the scales of the same bright colour as the female cones. A peculiarity of the bark of fair-sized trees is that, like *P. ponderosa*, it splits into square plates, but for all this it never seems ragged and untidy, and being of a pleasing ash-brown or ashen grey has a peculiarly rich and desirable appearance when observed in the woodland. Many fine specimens of *Pinus monticola* are to be found in various parts of the country, notably at Riccarton, in Midlothian, Penicuik, in the same county, as well as in Perthshire, and throughout England generally. It flourishes best in a dampish, loamy soil, although we have known it to do well amongst shingly rock, and where but a small quantity of very inferior loam was present, and in this latter to put on a healthy tone that was not even surpassed by trees growing in what would be considered to be far more congenial situations. Sheltered positions are by no means necessary in the cultivation of this tree, for we have found it doing well and increasing rapidly in stem-bulk on high-lying grounds, and where partially exposed to occasional storms that told badly on certain other Pines that were considered to be far more hardy than the one in question. Where the soil is of poor quality we have found it highly beneficial in the cultivation of this tree to substitute a couple of hand-cartloads of good well decomposed leaf-mould for that in the pit where it is to be planted, although, as before stated, it is by no means fastidious when placed amongst

rocky debris, provided that constant dampness is always present, few Pines disliking alternate changes from damp to dryness more than this. Ample room should likewise be provided for it, the branches losing much of their fresh green appearance and well-furnished look when infringed upon by those of adjoining trees and shrubs. *Pinus monticola* is local in its distribution, being almost confined to high, rocky situations along the banks of the Columbia River, and one or two kindred places almost inaccessible.

The timber, of which a plank 18 feet long, 46 inches wide, and 3 inches thick was exhibited at the late Colonial Exhibition in the Canadian court, is well packed and firm, not of too deep a colour, but from what we could see of it and from a little experiment we were allowed to make, it should be well adapted for any purpose where strength and lasting qualities were of first importance. We were told that the timber is highly valued in its native country, but as the tree is scarce and grows in almost inaccessible situations, the chances of converting its wood are few indeed. As young plants of this Pine are now offered by our nursery firms at a very moderate cost, we would strongly advise all those who have planting operations on hand to give it a trial, and should these succeed in a satisfactory manner, additions can be made, for certainly experiments carried out on various estates from thirty to fully forty years ago warrant us in recommending *P. monticola* as a tree that even for ornamental appearance is well worthy the attention of planters.

A. D. WEBSTER.

Penrhyn Castle, North Wales.

CHOICE HOLLIES.

I WAS pleased to see a short, but encouraging notice of *Ilex dipyrrena* in THE GARDEN (p. 173), and hope many who have not hitherto planted it will be induced to add one or more plants of it to their collections. I can corroborate the statement that it is perfectly hardy, an established plant of it having withstood the severe winter of 1860-1, when the temperature, after a cold, wet, sunless summer, sank to 2° below zero. The same plant, now a large pyramid, without the slightest protection beyond that afforded by one or two common Hollies on the north side, has, since that time, passed through many a scathing storm, but I never knew a single twig a year old or a leaf injured by the weather. Here, on a high and rather dry bank, it is quite at home in a stiff calcareous loam, and would no doubt grow much faster on a dry sandy soil, but I question if this would be an advantage, as it starts early, and intending planters will please note, the young tips are sometimes blackened by late spring frosts. When this happens a second growth starts and ripens, but prevention being better than cure, I would suggest planting where it can have the full blaze of the midday and afternoon sun, whilst shade and shelter protect it from the east. Many trees, notably the *Cephalonian* Conifer and *Picea Webbiana*, although capable of withstanding our severest winter cold, being early growers sometimes suffer in the same way, but planters now get over this disfiguring difficulty by placing them on the west side of a hill, or where tall trees will break the rays of the morning sun until such time as hoar-frost will have passed away. This Holly is sometimes taken for *Quercus bambusaefolia*. Side by side they are, of course, quite distinct, but, like all the Japanese Evergreen Oaks, this one is a gem, and a worthy companion to *I. dipyrrena*.

ILEX LATIFOLIA.—Within 40 feet of the preceding we have a very fine tree of this noble Holly, but having been longer in the country, it is better known, although seldom met with. A native of Japan, it is supposed to be, and perfectly hardy, a plant fully exposed to the north and east having passed through the winter of 1860 with impunity. The leaves being very large, from 9 inches to 12 inches in length, shelter from cutting winds should, if possible, be secured for this handsome

and distinct species, and further north, like the Magnolias and Griselinias, it would certainly repay if it did really require the shelter of a wall. Worked on the common Holly, this species, like the preceding, is not fastidious as to soil, always provided it is well drained and rich enough to produce fine foliage, its chief ornament. This and *I. dipyrrena* flower freely and the first produces berries in fine seasons, but notwithstanding the fact that several varieties of *I. Aquifolium* growing close to them produce fertile seeds in abundance, I have never succeeded in getting these to germinate. Turning to one of the leading London nurserymen's catalogues, containing about fifty of the best species and varieties of Holly, I find names of useful kinds running consecutively. Some are species, and being specially adapted to certain purposes, I will enumerate them.

I. BALEARICA (the Minorca Holly).—Described by Loudon as "a very distinct variety of the common Holly, readily distinguished at sight by its yellowish green leaves, sharply acuminate, slightly waved at the edges, and with few prickles." Had Loudon seen large trees growing on our dry, calcareous loam, he might have said more in its favour, for with us the foliage is dark, dense, and remarkably bright, and the large coral berries, which the birds always leave till the last in the sharpest winters, are magnificent.

I. CORNUTA (furcata).—Introduced from China in 1848, and described as having leaves nearly quadrangular, each corner armed with a stout, sharp spine, besides a terminal one at the apex of the midrib. Very stiff and coriaceous, dark green, paler beneath. The leading type of several other species, such as *I. Fortunei* and *I. furcata*, which Mongredien, I presume, considers to be distinct. I planted the two side by side, and after some three or four years' growth, arrived at the conclusion that they were identical. *I. furcata* died, but *I. cornuta* is still alive and making slow, but sure, progress. This distinct Holly should be planted above the line of fogs and sharp morning frosts. It is a remarkably slow grower, and well adapted for front rows, for grouping in sheltered nooks, and winter bedding in the flower garden.

I. FORTUNEI OR *CRENATA*.—A very distinct species, with rather small, crenated leaves. A slow grower; consequently, like *I. cornuta*, well adapted for front rows and grouping in the winter garden. There is, I believe, a fine golden variety from Japan especially useful for winter bedding, and as an edging for beds and broad walks.

I. MADEIRENSIS.—This is a very handsome species, with light green leaves of moderate size. It is quite hardy at Eastnor, and forms a good, medium-sized standard, also a compact lawn pyramid, which does not readily grow out of bounds.

I. M. ATROVIRENS has very dark green leaves of large size; it is a free grower, and is strongly recommended for hedges, which it is said to form much more quickly than the common variety.

W. COLEMAN.

Cedars at Syon House.—The effects of the heavy fall of snow during the past winter are now to be seen in the destruction of many of the specimens of the above. Some of the largest plants have been quite spoiled, the entire tree being stripped of nearly every branch. Many of the other deciduous trees have also been injured to a great extent. This is to be deplored, as at Syon House some of the finest specimens that are to be found in the country are growing.

The result of tree planting.—Three years ago much of the lands westward of the Mississippi were considered almost valueless because of the generally believed unchangeable aridness of the climate. This has, however, now been altered. The change is the result of tree planting and cultivation of the soil. So far as the work has gone the effect produced has been wonderful. Cultivation and trees cool the air near the surface, rendering it so light that it has the same effect on the particles of water that the pressure of one's hand would have on a wet sponge.

"This is an Art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—Shakespeare.

FLOWER GARDEN.

SPRING IN A NORTHERN GARDEN.

A FEW months ago you were good enough to insert in THE GARDEN a few remarks of mine on the winter aspect of my garden, and as spring is now at hand, and some hardy plants and flowers already lend a charm to the borders, perhaps I may be permitted to say a few words concerning them at this, to me, the most interesting season of the year. I am a great admirer of alpine plants, and as, for some mysterious reason, Box declines to grow in my kitchen garden, I use half-buried stones as edgings to the walks, and make small colonies of plants amongst old weather-worn, Moss-covered blocks, of which there is great abundance here. The stones are interesting also by reason of their great antiquity, being, in fact, the *débris* of the old Roman wall which formerly intersected this property, and I may remark in passing that the adjoining military road between Newcastle and Carlisle for the first thirty miles west of Newcastle was constructed upon the foundations of Hadrian's Wall, and which are still quite visible on the surface of the road at Heddon-on-the-Wall and other places—the wall itself having been demolished and utilised for the formation of the aforesaid road, and of sundry farmhouses and other buildings in the vicinity.

These stones are of many shades of colour, ranging between cool grey, yellow, olive, and deep red, the latter showing unmistakable evidence of fire action in former ages. The tints afford charming contrasts of colour with the deep green *Scyllas* and *Saxifrages* which clasp and over-spread the stones, and the green mossy carpets are just now pierced by the slender stems of *Scillas*, dwarf *Daffodils*, *Iris reticulata*, *Crocuses*, and *Snowdrops*. Here and there among the mossy blocks are snug nooks full of winter *Aconites*, *Hepaticas*, and varieties of silver *Saxifrages*—*pectinata*, *rosularis*, *Sturmiiana*, and *lanceana*, and a few of the spiny-tufted sorts, such as *Bursieriana*, *juniperina*, and a variety as yet but little known, resembling *juniperina*, yeleft *Boydii*, also with yellow flowers and beloved by sparrows, and therefore requiring protection while in bloom. *Saxifraga oppositifolia major*, a fine variety obtained from Backhouse, and which deserves to be more generally known, is now in great beauty. *Sempervivum californicum*, *montanum*, *Boutignianum*, *Laggeri*, and others nestle among and seem quite at home in the fissures of the stones.

I can strongly recommend these rock borders as unfailling objects of interest at all seasons of the year. They give no trouble, and every day almost as spring advances some tiny, but exquisite plant lifts its head above the ground and charms the eye with its modest beauty. This is especially the case just now when the rigours of winter are retiring before the ethereal mildness of gentle spring. *Sedum Lydium* and *Sedum glaucum* are capital plants for a rock border, and make charming cushions, and contrast well with the lowly bronze leafage of *Acena Nova-Zelandiæ*. *Arenaria balearica* is a very interesting plant, and is allowed to cling to the blocks and wander where it likes, even a little on the walk, upon which it throws out tiny feelers, as if try-

ing to cross to the other side, thus imparting to the path a picturesqueness and grace far beyond the reach of art, and immeasurably more grateful to the eye than the formal, stiff, monotonous Box edging.

Behind the stones are planted some of the best dwarf herbaceous plants—*Lithospermum*, *Gentians*, *Phlox setacea*, *Achillea umbellata*, and *Veronica candida* and *incana* (both very good silver-leaved plants), *Enocheras*, *Veronica repens*, *rupestris*, and *saxatilis*, flake *Carnations*, *Violas*, &c., and behind these a row of somewhat taller plants, as *Delphinium Bellalonna* (a gem), *Lobelia Victoria*, and *Anemone japonica alba*. So far, I had written in the pleasing belief that an exceptionally mild and genial spring had set in, but this morning on looking out, lo! what a transformation!—the beauties of the spring flower garden have departed, and the hills and valleys which yesterday were green with bursting vegetation to-day are clad with a thick coat of snow. The spring has evidently set in with its usual severity.

JOHN P. MULCASTER.

Bemmel, Northumberland.

SEEDLING PRIMROSES AND POLY- ANTHUSES.

WE raise many hundreds of these annually, because they are never so beautiful as when they produce flowers for the first time. No garden should be without a few clumps of Primroses—I mean of our native plants, and the first week in April is the best time to sow seeds of them. The most charming display of Primroses I ever saw was in Mr. G. F. Wilson's garden at Weybridge. He planted all the best varieties he could obtain and then left them to take care of themselves. His seedlings were self-sown, and were prettiest where the seeds had fallen on good ground amongst Moss or mossy *Saxifrages*, which kept the surface cool. The Primrose likes a cool bottom, and is more at home by a river's brim or on the shady side of a wood in damp, nutritious loam on pasture land than on sunny banks. My plan with seeds is to sow in pots or pans, filled with fine soil. The seeds are just covered over, and when the surface is made smooth I place over it a thin layer of green Moss in order to maintain a uniform degree of moisture in the compost. The pots or pans are plunged in a gentle bottom heat in a part of the frame where they are shaded from the sun. If the surface becomes dry during germination many of the seeds will be destroyed, and, on the other hand, if too wet and over-heated they will rot. The soil ought to be just moderately moist when the seeds are sown, and the Moss should be kept moist by lightly sprinkling it, and the pots being plunged in a moist bottom-heat, this will keep the seeds uniformly moist without wetting the medium in which they are sown. In about a fortnight most of the seeds will have vegetated, when the pots containing them should be placed in a cold frame. After the first plants appear, which will be in about three weeks, they are pricked out in boxes at distances of about 2 inches apart. The boxes may be kept in frames until the plants are established; after that place them out of doors in a shady situation. Such plants as these do not succeed well if freely exposed to the sun, at least in the south. We set them out a foot apart on well prepared ground about the end of June or early in July. Under such circumstances the leaves will meet together and form a compact mass. Those who have plenty of seeds to scatter freely in the open ground may think these details tedious, but it is the plan which I pursue with the small pinch of laced *Polyanthus* seeds we are able to save, and Primrose seeds gathered with great care from the choicest varieties.

One might imagine that Auricula seeds and those of the Alpine and Himalayan Primulas might be treated exactly like Primroses and Polyanthuses, but the same treatment does not answer for all of them. In the first place the seeds do not vegetate so freely as those of Primroses, and they do best if kept in a cool place. To this Alpine Auriculas must be regarded as an exception, as the seeds of these vege-

tate freely, either in a cool place or in a hotbed. Alpine Auriculas are supposed to be garden varieties of *Primula pubescens*, and really ought not to have been designated Auriculas at all. Auriculas, properly so called, are divided into four classes—green, grey, white, and self-edged. The seeds of these should be sown as soon as they are ripe, in July or in February. About a fourth of the July-sown seeds will vegetate soon after they are sown; the remainder will not do so until February and March, but the pots and pans containing the dormant seeds must be attended to for six months, when the second lot of plants will come up. Rather than have this trouble with them I have kept the seeds until February, and the results have been very satisfactory. The young plants should now be pricked out, say about a dozen in a 3-inch pot. Be careful to repot as they require it, and excellent flowering plants may, as a rule, be obtained in this way.

The seeds of the garden varieties of *Primula pubescens* are as easily dealt with as ordinary Primrose seeds. These produce beautiful varieties with yellow or cream coloured centres, having shaded edges of a rich crimson-maroon colour or purplish maroon. *Primula viscosa* from seed sports freely; the small white variety *nivea* produces lilac and purplish coloured varieties freely. The seeds of this we sow along with those of Auriculas, and treat them in the same way; indeed, most of the Alpine Primulas should be treated like Auriculas. All who have the means should annually raise seedlings of these beautiful spring flowers.

J. DOTCHAS.

Erica carnea.—This attractive early-blooming Heath succeeds admirably in South Wales, where we have four beds of it. Each of them is about 15 yards in diameter, and they have not been disturbed for upwards of twenty years. At the present time every inch of them is aglow with masses of cheerful pink flowers, and as open-air blossoms are by no means plentiful as yet, these Heath beds are greatly appreciated. This Heath should invariably be found in gardens of all sorts and sizes. I regard it as one of the most valuable of all hardy Heaths.—J. MUM.

Petunias in the open air.—As a rule the culture of Petunias in the open will only end in disappointment. They grow in a very straggling manner and the wind is apt to break the shoots off by the ground. I have known beds of them to be almost swept away at a time when they ought to have been in perfection. Their flowers are most flimsy, and rain soon disfigures them. Pegging down helps to prevent the shoots from being broken, but nothing will save the flowers from being disfigured, and all who plant them ought to do so with the understanding that they are most uncertain flowers with which to deal.—CAMBRIAN.

Violets on the Cotswold Hills.—A correspondent (p. 204) says he has been gathering a full supply of Violets all winter consisting of the tender kinds, such as *Neapolitan*, *Comte Brazza*, &c., and I presume from the open air, as he does not refer in any way to glass-protection, or other special culture, while here, within sight of the Isle of Wight, open-air Violets have been conspicuous by their absence. Even the hardy *Czar* and other single kinds have had their foliage destroyed by frost, and they are only just now pushing fresh leaves and making an attempt to bloom, the winter having been unusually long and severe. Our tender Violets of the kinds mentioned are blooming nicely in cold frames, but the few left in the open air look wretched indeed. If such good results can be realised on the Cotswold Hills, we must in future say but little about the sunny south.—J. C., *South Hants*.

Blue winter Windflower.—The *Anemones*, next to the *Gentians* and *Edelweiss*, have always been great favourites with the tourist, who never tires of describing the wonderful beauty they display in their native wilds. In the garden, too, however, the display can be equally beautiful if care be taken in the selection of a proper position, for on this alone as all gardeners know, success to a large extent depends. A few of the truly alpine kinds are showing flower just now, and though charming in their way,

they are not to be compared for vivid colouring and profusion with the early *Anemone blanda*, which is just now opening its large azure or deep sky-blue flowers. It grows about 4 inches or 5 inches high, and though nearly allied to the better known *Anemone pennina*, it may readily be distinguished by the black pointed styles, smooth sepals, and much darker flowers. It seems to stand exposure better than the Apennine Windflower, and we find it perfectly hardy and generally vigorous in the semi-neglected or wild garden. It should also be on every rockery in good, deep soil and fully exposed; thus treated it will flower freely in mild seasons soon after Christmas. It may be multiplied easily by division. *Anemone apennina* and *Anemone apennina alba* are both worthy of a place in every collection. They begin to flower later than *A. blanda*, and continue for a considerable time in beauty. *Anemone fulgens* seems to have suffered very much this spring through severe frosts following close on the mild weather we were having. The leaves seem to have been entirely destroyed, and many of the buds showing in the more sheltered places have also been nipped; our soil is light and sandy, and as the tubers ripen well in summer we never lift them.—K.

HARDY CYCLAMENS.

LIKE the greenhouse class of Cyclamens, there are many varieties of hardy ones with flowers ranging from pure white to reddish purple. Being perfectly hardy, they, as a rule, thrive best when planted under the shade of shrubs—in the rock garden or at the foot of a wall. To grow them successfully they should be planted in a free, open soil with plenty of good drainage, consisting of lime rubble and broken bricks. Some growers allow them to scatter their own seed, but it is advisable to collect it and sow it as soon as ripe in a well-drained pan filled with light soil. Give a good watering through a fine rose, and cover the surface of the pan with a piece of brown paper or Moss to keep the soil moist and place it in a cold frame, removing the covering from the pan as soon as the seedlings appear. When large enough to handle, pot into 3-inch pots, using a mixture of loam, leaf mould, and sand, and place them in a frame. To encourage growth as much as possible throughout the winter, air should be given plentifully until the following summer. When the leaves are decayed they may be planted out in their required places. When planting they should be buried to the depth of 2 or 3 inches.

Some years ago I remember seeing in the south of England a remarkably fine bed of Cyclamens. They were planted in a Rose bed, and during the late autumn and early winter the whole bed was one mass of flowers, varying from pure white to a deep red. Some tubers were quite a foot in diameter, and had as many as 200 blooms on them. The foliage also was very pretty, and retained its beauty throughout the whole winter and spring.

CYCLAMEN HEDERIFOLIUM will grow in almost any soil, but it thrives best when planted in a well-drained, rich border. We have some planted here at the foot of a wall, and with a little protection these were in full flower at Christmas. I have also seen them growing in a semi-wild state under the shade of trees and planted by the side of walks, but wherever planted they should not be removed, as they do not like being disturbed. The flowers are purplish red, striped with a lighter colour, and produced in great profusion before the leaves.

C. EUROPEUM is another species of which there are several varieties, producing flowers varying from pure white to a pinkish colour. This, with a little attention, may be had in flower from July to the end of December. This, unlike *C. hederifolium*, produces its leaves before the flowers.

C. COMMUNE, another useful species coming into flower when outside flowers are very scarce, is also noteworthy. I have seen this species growing on open borders one mass of flower from January to the end of March. Like other species, it has several varieties varying greatly in colour.

C. VERNUM is a late-flowering species, producing its flowers in March and April. Though perfectly hardy it is seldom seen in the open border. There

are many other varieties too numerous to mention but all worthy of culture, and if a little judgment is used this beautiful plant may be had in flower during the greater part of the year. OLITOR.

"**Bonnie Daffodils.**"—As we are now in, or approaching, Daffodil time, perhaps some of your readers might like to know that in Milton's own autograph of a copy of "Comus" in the library of Trinity College, Cambridge, he writes (lines 850-1)—

And throw sweet garland wreaths into her stream
Of Pansies, Pinks, and gaudy Daffodils.

A far prettier epithet would have been—

Of Pansies, and of *bonnie Daffodils*.

The epithet "bonnie Daffodil" is surely more appropriate than "gaudy." Why Milton altered it in the printed editions I cannot say. The printed editions have *Pansies*, a common old spelling, but Milton's own spelling, according to Warton and Todd, is *Pansies*.—RICHARD HOOPER, *Upton Rectory, Didcot*.

Outline drawings of Daffodils.—We are half-ashamed of engraving feeble ghosts of Daffodils, and warn friends that all *Narcissi* intended for engraving in THE GARDEN must be in future photographed or drawn in the true way. The difference is that of life and death. We do not agree with Mr. Walter Crane that outline is the beginning and the end of art; he is wrong! Outlines and diagrams are but the feeblest substitutes for true art—abstractions, only excusable in savage men.

White Daffodils.—All the Irish white Daffodils are now in flower at Temple Hill, Cork, in congenial soil. Any member of the Daffodil Committee can have blooms posted of *Leda* for comparison with Mr. Barr's *tortuosus*, and of Bishop Mann when in full perfection, which it will be about the 20th. It is now (March 14) over a foot in height, and will then be 18 inches. When the discoveries of botanical travellers in Portugal relative to white Daffodils are made known, will it be quite fair to keep such names registered as Bishop Mann, *Gladys*, *Leda*, *Colleen Bawn*, &c.—*i. e.*, should such be re-discovered? These have been shown at South Kensington from Ireland, and surely if travellers match them with wild forms, the sooner we stay our hands with names the better, for where shall we draw the line? If the names just quoted are allowed to stand distinct, selections from *pallidus præcox*, *variformis*, *wild bicolors*, &c., should be tolerated. There are many beautiful Daffodils, regular gems in fact, in the wild bicolor section and *variformis*. Let us therefore have the matter settled, as from what I see in THE GARDEN (p. 203) bulbs found in gardens in Ireland are to be all re-matched from their native country; yet when we consider that the extent of the Pyrenees is about equal to that of Ireland, the job will be rather trying. When, however, Mr. Maw is to be the advanced guard, I have no doubt that some good work will be accomplished; and as regards the Chiswick trial, that is all premature, and Ireland still holds the field as to white Daffodils until the travellers return with their booty.—A MEMBER OF THE DAFFODIL COMMITTEE.

Gaillardias from seed.—There are few more attractive summer flowering plants than these, and in addition few can be more cheaply and readily obtained. They are suitable for planting in mixed borders, and are still more effective when massed in beds as a substitute for some of the better-known bedding plants. The seed ought to be sown not later than March in pans of fine sandy soil, and only lightly covered with more of the same. Placed on a mild hot-bed shaded from bright sunshine and kept uniformly moist, the seeds will soon germinate, and before the seedlings are far advanced they should be transferred to a shelf near the light in a cool house, or be placed near the glass in a frame. When about 2 inches high or before they crowd and spoil each other, the seedlings should either be potted singly in small pots, or be dibbled thinly in boxes or pans of good soil. If shaded and kept rather close for a time they will quickly become established, after which cooler treatment should be given, the aim being to have

strong sturdy plants for putting out late in May. It is not advisable to plant them in very rich ground, as when once well established they seem to be more floriferous on comparatively poor borders and beds. The best display of the double flowering varieties I have yet seen was at Heytesbury House, Wilts. They were planted in a hot sunny border, and were singularly effective long after the majority of the ordinary summer bedding plants had been cleared. I think the old *Gaillardia picta* is the prettiest and most useful sort, whether for borders or for affording cut blooms. It mixes beautifully with other cut flowers in almost any kind of vase. *G. grandiflora* is of a more vigorous habit and later in flowering. A few plants of this sort may with advantage be shifted into 6 inch pots, and will be found useful for the autumn decoration of greenhouses and conservatories. Seed of *G. picta Lorenziana* also germinates freely, and these double forms are quite as attractive as the singles, especially when planted in patches of three or more plants, a way in which we prefer to put out this class of border flowers.—W. I.

Violets.—One has but to walk along the London streets to observe that the flower-girls have few English Violets, but plenty of imported ones, chiefly double pale blue, fresh and sweet. At home Violets have materially suffered, and perhaps as much from fogs and hoar-frost as from snow. Just now, when in ordinary seasons there should be an abundance of flowers of both the Czar and Russian, they are not only flowerless, but almost leafless, the former having suffered most. This is productive of severe loss to the market growers, many of whom expect to be in receipt of from £50 to £60 per week from Violets. When the bloom does come this year it will be late, and in the form of a glut. Double Violets, which thrive so well in the open, and make fine plants with robust leafage up till Christmas, then begin to show signs of decay; the leaves rot and disappear, and the plants are greatly injured. This is chiefly the result of fogs, which are very dense and destructive in West Middlesex. Not only do the growers suffer, but the women pickers suffer also, and, through the resulting loss of wages, the local trade; so that failures, even of this comparatively unimportant kind, are widespread in their effects. It is an undoubted fact that no such good Violet seasons are now experienced as were wont to be fifteen years ago.—A. D.

Colchicum neapolitanum.—Though, strictly speaking, this is an autumn-flowering species, the form which we grow, and which we believe to be in the trade, flowers in re or less during winter when the weather is mild. At present it has thrown up several of its pretty, well-formed flowers, which are somewhat similar to those of *Crocus autumnalis*, but smaller and neater. I was at first inclined to doubt the constancy of this habit of spring-flowering, but on reference to notes I find that the plant has not varied since it was planted in 1882, although once or twice the display has been greater than that which we are now having, owing probably in this case to the prolonged severe weather. The flowers, which are mauve-lilac, are just now very welcome. *C. crociflorum*, of Regel, is just making its appearance. It is quite distinct from all the other types as regards colouring. As its name purports, it very much resembles a *Crocus* belonging to the biflorus section. The flowers, which are small, are milky-white and about the same size as those of *Crocus biflorus*, with three dark purple markings running down the outside of the segments and losing themselves in the purple tube. It is a sweet little flower, only equalled by *C. luteus*, a species with orange-yellow flowers of rare merit for spring decoration.—K.

SHORT NOTE.—FLOWER.

Double flowered Periwinkles.—In my note upon the hardy *Vincas* (p. 161) I inadvertently stated that there were double-flowered varieties of all the single kinds in cultivation. This is not so, as no double white-flowered form of *Vinea minor* has been seen, and, like a double white Hepatica, it is a plant much to be desired. A nurseryman friend reminds me of my error, and adds that he is ready to give a substantial sum for the first double white *Vinea minor* that is forthcoming. He will probably have to wait a long time.—W. G.

LAMBTON CASTLE.

THE first of the accompanying illustrations of Lambton Castle, the seat of the Earl of Durham, shows the front of the building that faces the river, to which the ground descends precipitately, as is shown by the presence of the high retaining wall rendered necessary to support the terrace. This wall is partially hidden by trees, the heads of which barely reach its top. Southwards, on the opposite side of the river, the land, which is well clothed with timber, continues to rise for a mile or more, as it also does for some distance northwards in the rear of the castle; consequently little is seen of the place from a distance, or of the surrounding well-kept grounds. The castle is a noble stone building, extensive, and well proportioned, and agreeable in colour. The second view (p. 253) represents a portion of the western side, as seen from the grounds in that

became a question as to pulling down the building and erecting it elsewhere, or the alternative course of shoring the ground up in the old workings. The calculation made by competent authorities was, I believe, that the cost of the respective courses would be about the same. The shoring up of the ground was therefore adopted, and has been effectual, but it turned out to be a herculean undertaking, occupying a good many years, and swallowing up millions of bricks. Scores of tons of wrought iron were also used in bolting the walls together, rendering the building probably stronger than if nothing had happened to it, and so well has the work been done that no trace of the damage or of the remedies employed to set it right is perceptible either inside or outside.

The gardens are extensive, and in all depart-

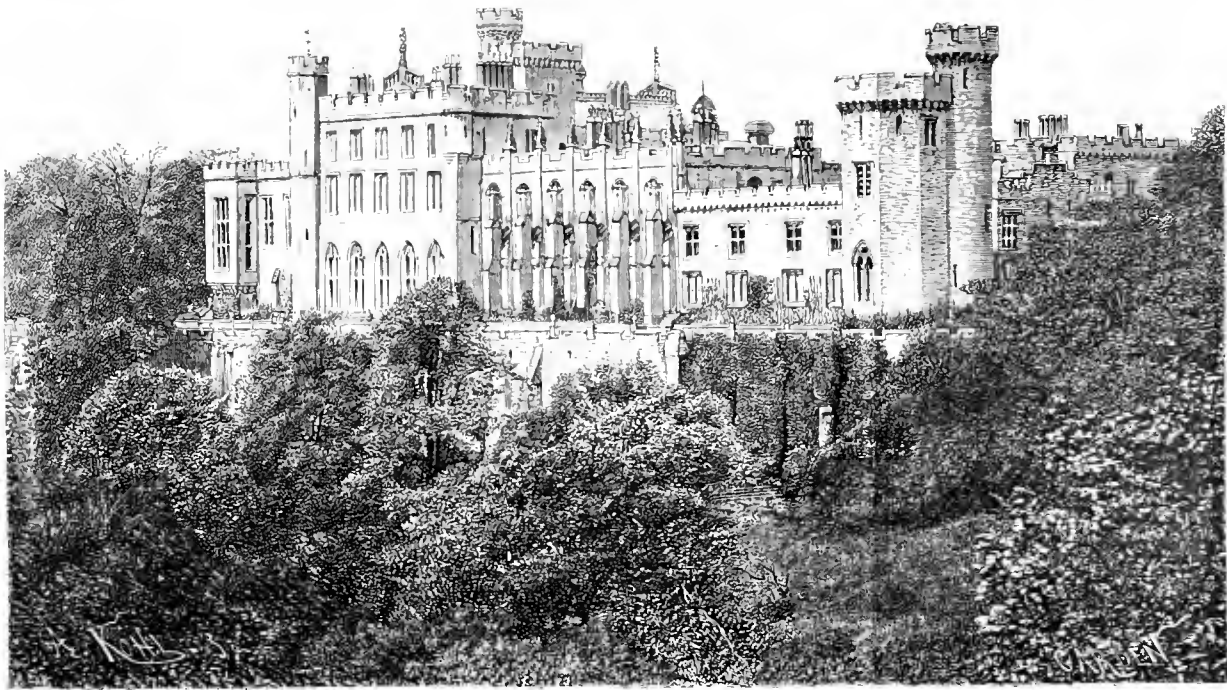
and is cheaper than silver sand and equally good.—OLITOR.

ROSE GARDEN.

T. W. GIRDLESTONE.

ROSES TO LOOK OUT FOR IN 1887.

AMONG the new Roses that will probably be to the fore at exhibitions and elsewhere during 1887, there are about a dozen varieties whose appearance will be watched for with especial eagerness by enthusiastic rosarians. It really seems as if, after one or two very dull and unproductive seasons, 1887 were likely to prove a Jubilee year of the queen of flowers as well as of Queen Victoria. Several novelties that have already attained a wide reputation are to be sent out this year, or having been distributed in England last spring, may be confidently expected to display their



Lambton Castle, from the south-east. Engraved for THE GARDEN from a photograph.

direction. Lambton Castle at the present day may be said to be unique amongst buildings of this, or possibly any other, country. The ground on which the castle stands, in common with that of the surrounding district, rests on a coal-field, the workings of which had been driven underneath the castle. When the coal was exhausted, the pit, as usual, was abandoned and was allowed to fill with water. For a time nothing unusual occurred until a powerful pumping apparatus was put down in one of the pits at a distance; this not only removed the water, which it was intended to do, but rendered the old workings under the castle dry as well. After a time the surface began to subside so far as to affect the foundations of the building, the result being that some of the inner walls cracked to an extent that admitted of a man's arm being passed through the openings. It then

ments cultivation is thoroughly well carried out. In fruit especially Lambton has a well-deserved reputation. T. B.

Sea sand for plants.—"Is sea sand injurious to plants?" is a question in answer to which many would doubtless say, "Yes." Until recently I, too, entertained the same opinion, but I find that harm occurring through its use is the exception rather than the rule. Here we use it for all purposes for which sand is required just as it is carted from the shore, and ordinary stove and greenhouse plants seem to thrive luxuriantly in it; Carnations are also benefited by its use. Some time ago Carnations could not be grown here until sea sand was applied plentifully about their roots, and now they do well. Sea sand being, as a rule, of a sharp gritty nature, is superior to the fine, soft sand which is used in the majority of gardens for keeping the soil open,

charms in many gardens, and at not a few exhibitions during the summer. First and foremost, Her Majesty (Bennett, 1886), whose magnificent, clear rose-coloured blooms, so finely exhibited at the South Kensington show of the National Rose Society and at the Crystal Palace in 1883, must be generally remembered, will probably grace some of the Rose shows with her truly royal presence, although those who do not possess cut-backs of this Rose must not count too much on obtaining flowers, for its perpetual character is not yet fully established, and though, like Mdme. Gabriel, to which it bears a certain resemblance in many points, it may prove autumnal-blooming on established plants, it does not appear to flower as a maiden. Another of these very large and vigorous light Roses comes from that veteran raiser, M. Lacharme, whose seedlings are almost invariably worth growing. The raiser of Victor Verdier, Xavier Olibo, Alfred Colomb, Louis Van Houtte, Charles Lefebvre, Captain Christy, Mdme.

Lambard, and Violette Bouyer—to name but a few of his triumphs—has sent out fewer uninteresting Roses, and more varieties of the first rank, than any other grower; and his name has come to be so far held as a guarantee of excellence, that his novelties are awaited with the keenest anticipation. Clara Cochet, the seedling distributed in this country for the first time last spring, is a Hybrid Perpetual of exceedingly vigorous growth, with very large, bright rose-pink flowers; and if it does not actually surpass (as it has been said to do) all previous Roses from this raiser, it is at any rate not likely to lower his great reputation.

With hardly less interest than the Hybrid Perpetuals of M. Lacharme are awaited the Tea Roses of M. Guillot, who, in addition to the notable hybrids, Horace Vernet and La France, has sent us such sterling Tea-scented varieties as Madame Falcot, Catherine Mermet, Comtesse de Nadaillac, Hon. Edith Gillord, and Madame de Watteville among many others. His new Comtesse de Frigneuse has a deep, clear yellow flower, pure in colour, and with a very large petal; is, as far as has been seen at present, free-flowering and vigorous; and has been exceedingly favourably reported on this winter from America, where growers have a happy knack of speaking their mind about novelties with wonderful plainness and promptitude. Two very promising new Roses come from America, one a Tea, and the other one of the so-called Hybrid Teas. The former, named The Bride, has been very generally flowered, and is on all hands well spoken of. It originated in the garden of Mr. J. May, of Summit, New Jersey, as a sport from Catherine Mermet, from which beautiful Rose it appears to differ only in colour. The habit of the plant and the type of flower are identical with those of the parent, but the petals of The Bride, instead of being rose-coloured, are quite white, with a faint tinge of lemon at the base. The flowers are large, well formed, freely produced early and late, and open well; and, in fact, as far as is possible to judge from one season's experience, the variety will constitute one of the most valuable of recent additions. The new American Hybrid Tea referred to is called American Beauty (Bancroft), and produces large deep flowers, with a fine petal, and of a red colour. Whether this red may not be of rather too purplish a tint only further experience can show, but the variety is so free, so thoroughly autumnal, and so phenomenally fragrant, that it is sincerely to be hoped that it may not be found guilty of the charge of dull colour, from which, of all the other red Hybrid Teas, the invaluable climber Reine Marie Henriette alone stands acquitted.

A new Rose, however, of the brilliancy of whose colour there is no question, is Mr. Wm. Paul's seedling from A. K. Williams, which received a first-class certificate from the Royal Horticultural Society in 1886 under the name of Grand Mogul. This Hybrid Perpetual produces a large imbricated flower of the same type as its parent, but of a more vivid crimson, shaded darker, and lighted with an almost scarlet flush; and if it is only as constant and as thorough an autumnal flowering variety as A. K. Williams, it will prove an acquisition. There is also a new English Tea of great promise, namely, Viscountess Folkestone (Bennett), which was well shown at the Crystal Palace last July. It produces large rosy-tinted flowers, with rather a salmon shade, something in the way of, but brighter and fresher coloured than, Souvenir d'un Ami, and is of good form and substance.

Two other seedlings of this raiser are being distributed this year, both of them Hybrid Perpetuals. Oddly enough, one of them, The Puritan, named after the winning yacht in the recent Anglo-American yacht races, is not described at all in the preliminary announcement, even as to colour; but the other, Mrs. John Laing, which was awarded the gold medal of the National Rose Society, at their exhibition at South Kensington as a first-rate novelty in 1885, is well known in this country in the cut state, having been finely shown at South Kensington and at the Crystal Palace. It may perhaps best be described as an

improved Monsieur Noman, being a large, deep flower of a pale rose colour, very full, and apparently very constant; by some considered more refined in outline, and consequently preferable to Her Majesty. But comparisons are odious, and there is ample room for both varieties, which are thoroughly distinct.

There are three new Roses being now sent out by Messrs. Alexander Dickson & Sons, of Newtownards, Ireland, of which a good deal has been heard, and not a little been seen, especially at some of the northern exhibitions, during the two past seasons. Two of these are Hybrid Perpetuals and the third a Tea-scented variety, while to one of the former no less than seven, and to the last four, first-class certificates have been awarded by such leading Horticultural Societies as those of Dublin (R. H. S.), The West of Scotland, Liverpool, &c. Earl Dufferin, as this frequently commended Rose is called, is described as "a Hybrid Perpetual of a bushy and vigorous habit, with dark green foliage; an early, continuous, and late bloomer; flowers large, full, and finely formed; colour rich brilliant velvety crimson, shaded with dark maroon; petals large and very smooth." In spite of its numerous certificates, however, the best recommendation of this Rose to exhibitors will probably be found in the fact that at two Rose shows in 1886, a bloom of it was selected by the judges as the best bloom in the show, a test of excellence in competition with all the leading varieties which cannot be gainsaid. Lady Helen Stuart is described as a "Hybrid Perpetual of strong growth; a most continuous bloomer, and very fragrant; colour bright crimson-scarlet, with beautifully smooth petals of great substance;" and Miss Ethel Brownlow as a "Tea of most robust branching habit; foliage rich and handsome; flowers large, of great substance and magnificent form, always opening well and lasting a long time; petals very thick, smooth-edged; colour bright salmon-pink, shaded yellow at base of petals." It is much to be regretted that it has not been found possible to exhibit these varieties at some of the southern Rose shows; but it may be hoped that they will be in evidence at the northern exhibition of the National Rose Society at Edinburgh on the 13th of July this year; and, at any rate, their appearance generally will be awaited with keen interest.

Of the above dozen promising novelties, only four are from abroad, and of those four, two are from America. There is no doubt that British raisers are now taking the field that has been too long monopolised by Continental growers, and numerous advantages may be anticipated to all concerned; notably one—that the new varieties will get names which it shall be possible to articulate without danger of leek-jaw.

SHORT NOTES—ROSES.

Rose The Bride.—A very pretty box of eighteen blooms of this new American white sport from Catherine Mermet (The Bride) was shown by Mr. P. Gilmore, of Sheffield, at the meeting of the Royal Horticultural Society at South Kensington on the 31st inst., when this charming variety was deservedly awarded a first-class certificate. Many of the blooms staged displayed exactly the characteristic form of Catherine Mermet, and the white of the petals faintly tinged with lemon at the base was quite uniform in tint throughout the box.

Rosa indica.—Another interesting Rose was shown by Messrs. Paul & Son, of Chesham, namely, a single form of *Rosa indica*, probably a representative type, if not the actual species, from which the numerous tea-scented Roses of gardens have been raised. It should make an attractive addition to desirable single Roses, as the flowers have large petals of a beautiful flesh colour.

Rose hedges.—Mr. Wilson has suggested using *Rosa rugosa* for Rose hedges, but if the efficiency of the hedge be a consideration, an even stronger and more formidable variety or species of the ferocious section for the purpose is *R. kantschaber*, which throws up its truly ferocious shoots with great vigour. A much stronger-growing form of Sweet Brier also than the common type, and also better adapted for use as a hedge-plant, will be found in the double marbled Sweet Brier, which has semi-double, very bright rosy-coloured flowers, and is, like most of the rubiginosa, a most prolific seed-bearer; whilst its immense erect shoots, 8 feet to 10 feet long, and covered with great hooked prickles, constitute a barrier by no means to be negotiated with impunity.

ROSE GROUPS FOR ODD PLACES.

MR. GIRDLESTONE'S timely remarks on the grouping of Roses recall some interesting features of ancient landscapes that are seldom reproduced in modern times. Among these some of the most cheering were Rose groups in woods, or as accompaniments or fringes to avenues and woodland walks. Rose groups in unexpected places formed some of the most cheering and pleasing surprises in not a few of the older gardens. No doubt these sources of surprise were often developed to absurd extremes, which led to their being entirely banished from many of our finer landscapes. Such surprising exhibitions of statuary, vases, fountains, as disfigure rather than adorn one of the loveliest vales in England at Alton Towers, the squirting fountain that suddenly and impertinently drenches the enthusiasm of the beholder of the fernery at Chatsworth, and the grotesque forms of not a few of the fine shrubs at Elvaston, have done much to cover surprises in landscapes with ridicule. Still, there is room for their moderate exercise in most gardens. It is no more needful for a garden to be unfolded all at once than for the plot of a novel to be set forth in its preface, if it has one. The landscape beauties of gardens should unfold as night melts into day. No one who has carefully watched this gradual lighting up of Nature but must have felt it to be a successional series of surprises—new features, fresh beauties spread over all the distance from darkness into light. So in degree should also be the unfolding of a landscape. To concentrate its beauties into one spot, and thrust them on the bewildered vision all at once, is like stepping at once from midnight into noon. All the most beautiful pictures have been crammed as it were into one room, and most of the other walls are bare. The sweetest harmonies of colour and form have been crowded into one spot, and the major portion of the landscape is silent or bald.

The remedy alike for this congestion and poverty of beauty is to be found in a wider diffusion, a freer and more natural distribution of its elements and materials. Never were we enriched—I had almost written encumbered or embarrassed—with such a profusion of material for charming and varied landscape as now. The wealth of the temperate vegetation of the world has been pouring in upon us for years, and is not seldom distributed in the most grotesque and unsatisfactory manner. What is now most needed, and that want promises to be met soon, are heads and hands to distribute the rich materials in question with more catholic and cultured taste.

Roses will probably be the first and the last to participate in the coming *renaissance* of landscape gardening. Considering their matchless beauty of leafage and bloom, their inimitable sweetness, their almost infinite variations of habit and stature, their striking and varied capacity for effect in landscape, it is surprising how little and what wretched use has been made of them for the formation and enrichment of garden and woodland scenery. Roses are ever pleasing, always welcome and beautiful. But their results in landscape have been too often nil, or a blot. The chief reason for this in the past has arisen from the carrying of the individualism of Roses to extremes. Each Rose bush or standard had to stand alone or at some considerable distance from its fellow, and it is no reflection on the substantial merits of Roses to add that few of them were strong enough as landscape plants to bear the test of such severe isolation. Some of the stronger ones managed to fill their appointed niche creditably when in full flower and leafage, but when both disappeared, Roses cut a rather sorry figure in the landscape. In the case of the majority, however, they seldom proved satisfactory at their best: for, indeed, it was and is impossible to make single or even groups of ordinary garden Roses form satisfactory features in the general landscape. While as for beds or rows of closely-pruned, stiffly-trained standards, it passes the art of the rosarian or artist to mould them into picturesque or pleasing forms.

The bolder grouping of the freer-growing Roses in unexpected places, and the giving them the power to run as they list, with little or no pruning or training, would do much to develop their landscape merits. The landscape effect of skilful grouping far outstrips any mere mechanical aggregate of numbers. For example, six Roses in a group are not merely six times as effective as one, but thirty-six or even fifty times more striking; and so with any other number. Again, surprise groups are, as a rule, far more telling than those duly discounted beforehand. One visits a garden reported to contain from one to four thousand Roses. We not seldom leave such, astonished to find how infinitesimally small or even nil the landscape effects of such gross aggregates of Roses can be toned down to. On the other hand, you come on a few groups or beds of Roses unexpectedly in the course of a woodland walk, and the effect is pleasing and effective, far beyond any mere mechanical proportion to the numbers of plants or size of groups. For example, reaching the summit of a rising walk, a small valley suddenly opens before you. Its opposite side and bottom are furnished with beds and groups of Roses. Looked down upon from an elevation of from 60 feet to 100 feet, every leaf and flower, as well as the outline of the groups and beds and grass or gravel divisions, are thrown back to the eye with a charm and a clearness impossible under other conditions. Elevation as well as distance lends enchantment to the view, and the very fragrance gains fresh sweetness as it mingles and mixes its odour on its way up to the beholder. Rose rests, again, in some secluded spot alike in the garden, pleasure grounds, or home woods, are equally welcome as shady seats, and when skilfully managed, which they seldom are, are as pleasing and satisfactory features in the general landscape. But these, where they exist, are mostly too prominent; note, for example, the Rose garden with many arches or bowers at the Crystal Palace; an ironmonger's shopful of iron perched against the sky, proclaiming to all the world a roseroy in which the iron for many years predominated, and which up till now has furnished little shadow and less retirement to its many tired-eyed and weary-footed visitors.

Rose arbours or mounts may prove welcome rests indeed to visitors if they furnish shadow as well as rest by the way. But they are all the more welcome if they can be so posted as to be seen but little, if at all, till a sudden turn or opening usher one into their friendly shade and refreshing rest rendered doubly welcome through being unexpected. Neither is it necessary that so-called Rose arbours or rests should stand out bleak and bald, generally marring rather than enriching the surrounding landscape; on the contrary, it is generally possible to link on, as it were, groups or beds of Roses to the bases of Rose rests, thus forming easy and natural stepping-stones between the more or less formal Rose rests and the more natural features of the shrubbery or wood beyond. A great deal may also be done to bridge over the gulf between art and Nature in Rose rests by allowing the plants on the latter to run out freely to meet and mingle with the more natural vegetation in their immediate neighbourhood. Nothing has crippled the landscape effects of Roses so much as restrictive training and severe pruning. The usual close pruning of Roses entirely unfits them for taking their proper place in landscapes; neither is there necessity for it. Were the show tent the ultimate or only goal of all Rose blooms, there might be reason in close pruning, but as landscape effectiveness depends rather upon numbers of blossoms than size or individual perfection, the more flowers, as a rule, the more effective the landscape. Certain thinnings maybe are needful to preserve the health and prolong the life of our Roses, but beyond this the knife or shears should hardly be felt if our Roses are to assume their due place and power in the adornment and enrichment of our landscapes. D. T. F.

English Rose The Puritan (Bennett).—This, which, like Her Majesty, is coming into the hands of

English rosarians via America, resulted from a cross between Mabel Morrison and Devonensis. The flowers are said to resemble those of Baroness Rothschild in form, but to be of a creamy or waxy white tint. The variety is reported as blooming with great freedom, while the flowers have the valuable quality of remaining fresh for a considerable time in a cut state. Assuming that its parentage is correctly reported, it is satisfactory to observe that in the English circulars the novelty is offered as a Hybrid Perpetual and not as a Hybrid Tea, an indication, it may be hoped, of an intention to discard the latter confusing and unnecessary term.

Rose Clara Cochet.—Lacharme's new Rose, according to accounts from Germany, is likely to prove one of those very vigorous light-coloured Hybrid Perpetuals which must not be pruned too hard, or it will be all growth and no flowers. Roses of this class are often not very free as maidens, but in spite of this Clara Cochet is already highly recommended by the German as well as by the French growers.

Rose Her Majesty is another Rose which must be only moderately pruned to ensure flower. This variety is evidently hardy enough, for its immense long shoots appear quite uninjured by the 25° of frost to which they have this winter been exposed unprotected, the buds already swelling to the very tips of the shoots, and the piths where the shoots have been cut being quite fresh, and not at all discoloured.

FRUIT GARDEN.

W. COLEMAN.

THE MULBERRY.

THE Mulberry, like the Quince and the Medlar, does not stand remarkably high as an edible fruit, and certainly it is not profitable, yet withal, the produce of the black variety, *Morus nigra*, is grateful, very wholesome, and highly appreciated by those who have acquired a liking for its sub-acid flavour. In past ages, when choice edible fruits of all kinds were less plentiful than now, the Mulberry was more or less planted throughout the kingdom, and being a slow-grower and long-lived, many grotesque specimens of immense age are still met with near the crumbling walls of old monasteries and in the best-kept gardens where the destruction of centenarians is regarded as sacrilege. Whether these relics of the past were planted specially for their fruit or their leaves when our forefathers embarked rather extensively in a British silk industry, which, like Tobacco culture, did not pay, we need not pause to inquire—suffice it to say, they have handed down to us extremely quaint forms which all lovers of Nature admire. Being short-grained and brittle, their peculiar habit of growth renders old trees liable to be broken by wind, the weight of their foliage, or by snow; but, being tenacious of life, they have a wonderful knack of casting their huge branches on their knees or their elbows, where, once they touch the earth, they strike root and throw up fresh shoots, which grow up as protectors to their parents. In this way a very ancient tree on the lawn at Stoke Edith, near Hereford, has dropped its branches one by one, which, in their turn, have grown into aged, hoary trunks, although hardly anything is left of the original. This rather extensive family of comparatively young trees now covers a very large space just in the right place; they produce bushels of bright black fruit annually, and form a most pleasing and refreshing contrast to Nesfield's clipped Box and coloured gravels hard by.

PROPAGATION.—From the preceding remarks the young aspirant to silk manufacture will gather that once planted in deep, rich soil, the tree will perpetuate itself through many generations. But where it does not already exist, fruit-bearing trees can be established in a very short time. Budding, grafting, and propagation by means of layers and cuttings are more or less practised by the trade. The black Mulberry comes true from seeds, and suckers make good, but some say sterile, trees. This fact, if fact it is, however, makes little dif-

ference, as such trees being free and kind, make excellent stocks for trained trees or standards, which begin to bear fruit at the age of six or seven years. Cuttings of the past year's wood 1 foot or 2 feet in length slipped off with a heel and let into the ground like Currant cuttings in the autumn soon strike root and make the best of plants for general purposes, but speed being the order of the day, the short cut to fruit-bearing trees is by means of large boughs, sometimes called truncheons, which may vary in size from 3 feet to 10 feet or more in height when let into the ground. The proper time to sever these large pieces from the parent trees is early autumn when the foliage is ripe, and the better to prevent wind-waving they should be let in some 18 inches, firmly rammed, and steadied with stakes, as we always support newly planted fruit trees.

SITUATION.—Although the black Mulberry is said to form a low stunted tree in Iceland, there exists but little doubt that it is a lover of heat, especially when in our temperate climate it is reflected by sheltering walls and buildings. Moreover, it revels in a deep, rich, warm soil, free from stagnant moisture; therefore, where these conditions do not exist, a sheltered nook fully exposed to the sun should be well drained and enriched with good turfy loam and leaf mould. These remarks, of course, apply to trees which are grown for their fruit, for, like all other edible fruits, there are Mulberries and Mulberries, and in order to have them in perfection they should be as black as jet, full of juice, and not unlike a large rich Blackberry. When planted for ornament, extra warmth is of less consequence, but being a late-leaving tree a good site should be selected, if only to extend its season of beauty. When properly planted, the tree generally takes care of itself without the aid of the pruner. When young, it is, however, a good plan to shorten all strong horizontal branches, and gradually to work it up into a clean-stemmed, round-headed standard.

GENERAL CULTURE.—When grown on the open lawn with perfect drainage beneath its roots, a given space round the bole should be kept free from Grass, which not only keeps the soil cool, but robs it of a great deal of moisture. Rich mulchings composed of highly concentrated stimulants that will keep in moisture without checking the influence of solar heat are advantageous to old fruit-bearing trees, but solid masses which prevent the soil from attaining its average summer temperature should be avoided, not only here, but wherever fruits of other kinds are valuable in proportion to their high flavour. Whilst re-venting water in a cold stagnant form, the Mulberry enjoys copious libations in summer, and very often casts its fruit when this element is not forthcoming during long periods of drought. Further, being liable to attacks of red spider, want of water fosters the enemy when the foliage becomes brown and rusty-looking, and although it unfolds late in spring it falls prematurely in the autumn.

VARIETIES.—*Morus nigra*, the common Mulberry, a native of Persia, and introduced three and a half centuries ago, is the only variety worth growing for its fruit, and the abundantly produced heart-shaped, rough, and coarsely serrated leaves rendering it unique among other deciduous trees of totally different habit, it is generally selected for the dual purpose of producing fruit and foliage. Silkworms devour the leaves, but it is to two varieties of *Morus alba*, a native of China, that the French and Italians look for their supply of leaves. The fruit of this species, which is white, is not considered fit for food, but that of the two cultivated varieties, *M. multicaulis* and *M. Morettiana*, is black and edible. The white Mulberry is considered more tender than the black; it grows much faster, is less enduring, and is highly impatient of stagnant water. Its leaves are comparatively smooth, very succulent, and contain much glutinous matter which gives tenacity to the silk produced by the worms fed upon them. Calcareous, sandy, or gravelly soils rest-

ing on dry rolling ground produce the finest quality.

Merus rubra, a native of North America, like the preceding, is a rapid grower, and makes a tall tree. It produces an abundance of leaves, and the fruit is said to be tolerable, but it is only from the landscape planter's point of view that this and *M. alba* should be looked upon in this country.

The black Mulberry makes a very handsome wall tree where it produces and ripens its fruit in the highest perfection. It is also well adapted for pot culture under glass.

DIGGING AMONGST FRUIT TREES.

WE have for some years past given up digging amongst fruit trees and bushes as far as possible; when compelled to cultivate the soil near them we use steel forks, and keep spades at a respectful distance. We give, however, a good top-dressing or mulching of manure every winter. There is hardly any substance that will rot that does not make food for fruit trees; we, therefore, spread the mulching around the bases of the trees, and occasionally over the whole surface, removing anything that will not rot. Under this treatment the roots form a regular network close to the surface; these are the roots that make trees fruitful, and although our soil is shallow and resting on gravel, we get very healthy trees, with scarcely a trace of disease of any kind. The mulching not only prevents drought from affecting the roots, but it forms a medium from which they derive food. Our soil is not strong enough to produce large trees, but it grows small and very fruitful bushes, that show as good a return for the space they occupy as the most approved fruit trees can do, and in this way very much of what is at present unremunerative land might be brought into use for fruit culture. It is from trees in comparatively shallow soils that the earliest fruit can be gathered, and by extra care in mulching to keep the roots on the surface good crops may be secured. I do not think that bush fruits need to be dug amongst, for with plenty of mulching on the surface the soil does not get hard, and the digging breaks the best roots or turns them up to drying winds. Raspberries and Strawberries do decidedly best in firm soil; in fact, we take some pains to tread it around the crowns at this time of year. Autumn-planted ones are liable to get their roots so loosened by frost that they perish from exposure before they get fresh hold of the soil if not trodden in in the way just named. Old beds, too, are much benefited by a little pressure, at least in light soil. Raspberries do not produce shoots all over the ground when kept firm at the root, but push up a few canes close to the parent stock; and the best bed of Gooseberries I ever had never had a spade or fork used amongst them. I would therefore recommend all interested in the subject of profitable fruit culture to try a portion of their stock without any digging, and devote the sum saved thereby to purchasing manure.

J. G. H.

English and American Apples.—When "A. P." (p. 166) speaks of American Apples being superior to English in colour and beauty only, I think he is surely subordinating his palate to his patriotism. Mr. Gilbert (p. 222) knows better, or has a more sensitive mouth; it is not with a view to red and yellow only that he advises English gardeners to set to work at raising seedlings "to match the American." Not only do I consider Newtown Pippin to be superior all round to any English Apple, but my sense of what is good tells me that such a common and cheap American variety as the Baldwin possesses, when in perfection, a crispness, juiciness, and briskness of flavour which can scarcely be found in English Apples. Our Ribston is supreme in rich flavour, but is leathery in texture; Blenheim is a fine, handsome Apple, very prolific and serviceable, but it is apt to be mealy when quite ripe, and can never be called crisp, brisk, or juicy—epithets which are deserved by so many of the American sorts. Mr. Gilbert is right; there is a great future in England for Apples with fresh blood in them.—G. H. E.

Strawberries at Twickenham.—A curious instance of the capacity of soil to carry fine crops of

Strawberries successively for a long series of years may be seen in Mr. Richard Clarke's garden at Strawberry Hill, Twickenham. There, almost without a break on a long, broad, south border, and, indeed, in nearly all the garden, Strawberries have been grown for some twenty-five or thirty years, and the plants and crops seem even now to be as good as ever. Of course, the plants do not remain above three years, and a considerable portion is renovated every year. The plants are usually those that have undergone a gentle forcing. In a market establishment such as this it is found most profitable to force moderately, as the best market, allied to best crops and richest coloured fruits, is found during the months of April and May. As many thousands of plants are grown under glass, there is always a considerable bulk of old pot soil at command, and this proves most serviceable in helping to replenish the garden ground. Mr. Clarke grows Sir Charles Napier and Garibaldi chiefly, the former being the most favoured.—A. D.

PEACHES INDOORS AND OUT AND MELONS.

MR. GILBERT, I see, says that Peach-house building is "overdone," which, considering that the more gardeners and their employers see of Peach houses properly managed the more inclined they are to build, is rather a doubtful assertion. We even hear of fruit growers for the market building Peach houses on an extensive scale. I like to hear of successful Peach growing in the open air; it shows careful culture, and might be encouraged where, for any reason, glass houses cannot be had; but if it comes to a question of which is the best way in which to grow Peaches in this country, under a glass roof or in the open air, then I say under glass is so incomparably the best way from almost any point of view from which one chooses to look at it, that the two systems cannot be named together. Both methods require careful management, but the returns under glass in the shape of crops are so much greater and more certain, as to drive, as I have said, all comparison out of the question. Where in England, in a general way, can you ripen and crop Peach and Nectarine shoots from 3 feet to 5 feet long annually in the open air, or where can you produce trees from 12 feet to 20 feet in diameter in two years with crops of ten and twenty dozens, more or less, in the same time? The answer is, Nowhere. While the cultivator outdoors is fighting with blight, frosts, mildew, and cold seasons, and waiting sometimes years for his first crop, the underglass man is away far ahead of him. Over-building Peach houses, forsooth! There is only one complaint on that head I ever heard of, and that is, that the supply of Peaches exceeds the demand and makes them too cheap in the market for the grower. Next, says Mr. Gilbert, "Nobody can grow Melons now in manure frames because they have houses." Why should they attempt it? Hot-water pipes are cheaper and far better in every way, as has been proved by overwhelming testimony. Lumbering stage coaches have gone out of fashion because railway trains are a thousand times better, and who regrets the change? Here is a debtor-and-creditor account of the old manure-bed system of growing Melons compared with pits heated by hot water, and as Mr. Gilbert understands both as well as I do, let him disprove my statements if he can. Our Melon pits, heated by hot water top and bottom, and which have been worked most successfully these 22 years back, are 25 yards long, and all that is needed to set them in operation in spring is to turn a valve. Previously, the same amount of frames 6 feet wide would have required a heap of litter and leaves at least 26 yards long, 3 yards wide, and 5 feet deep at the beginning, as all such hot-beds sink down 70 per cent. before the season is over. Such a hot-bed would have required at least fifty loads of leaves and litter, all of which would have had to be first collected in the woods and afterwards carted, and prepared for several weeks previous to putting up, not to mention linings later on and other attention in the way of protection. And this work would have to be repeated annually in all such

cases, the mere cost of which alone for two years would build a Melon house completely heated. Horse labour at the rate of 10s. per day is one of the heaviest items of garden expenditure. And this takes no account of the uncertainty of crops in the manure frames, for, say as one likes, they are uncertain compared with hot-water pits, in which the crops are generally both heavy and good. Of course, in small places where the materials are readily procurable and there are no hot-water pits, manure frames are useful, and I have not a word to say against them, but wherever Melons are in regular demand in quantity, the less such pits are used the better for both employer and gardener.—J. S. W.

—Mr. Gilbert's progress is in the wrong direction when he advocates the culture of Peaches on walls instead of under glass, and Melons in frames instead of in houses. Wall culture of Peach trees is not now so popular as it used to be, because superior fruit can be obtained from houses, and, as some allege, at less expense. As for Melon culture, Mr. Gilbert does not practise what he preaches, for some of the best crops of Melons I have ever seen were cultivated in houses at Burghley. In cases in which Peach houses can be afforded, walls facing the south or south-west could be better utilised if planted with the finer varieties of late Pears—such as would come in during February and March—than with Peaches. That excellent Peaches can be grown on open walls there is no doubt whatever, but success cannot be attained without considerable expense; and when the best has been done for them, the crop is neither so certain nor so good as that which can be obtained from an orchard house or an ordinary Peach house, where the trees are planted out and trained to the roof-glass. The finest wall Peaches—such as Noblesse and Royal George—I have ever seen were gathered north of the Tweed. The walls were about 14 feet high and built of red bricks. There was one house for early Peaches, but the entire late crop was gathered out of doors. The border in which the trees were planted had been well made and drained. The soil ought to be of a character to promote the formation of a large mass of fibrous roots, and they should be encouraged to grow most freely near the surface. With wall trees out of doors my plan has been to make the ground moderately rich, and in planting to place a barrow-load of decayed turfy loam, broken up fine, amongst the roots. In this loam the trees accumulate a mass of roots the first year and make good growth; the next season they become much more vigorous, and if any of the leading shoots are likely to grow too strongly, pinch them back, an operation which causes them to make three or more shoots of a better kind; by this time the trees will be of large size and well furnished throughout with bearing wood. Every tree should be lifted again in autumn and replanted in the same kind of turfy loam, spreading the roots out to their full extent. As a rule, they will not require any more lifting and replanting, but if any of them should grow too vigorously, they may again be lifted and replanted. If this is done every second year, such a mass of fibrous roots is accumulated, that the mere lifting and immediate planting of the trees do not affect the blossoming and setting of the fruit, but sufficiently check the growth of the young wood for the season. Summer-pinchings, thinning-out, and nailing-in of the young wood are essential to the well ripening and colouring of the fruit. So, also, is keeping the leaves clean. Red spider, mildew, and the Peach aphid, if allowed a fair chance in the dog days, would ruin the best of prospects in a week.

Peach and Nectarine trees in pots come next. I have purchased maiden trees—that is, trees one year from the bud—potted them in November, and by careful pinching and training the year following, they have become handsome fruitful trees, which bore a crop of most excellent fruit the next year—that is, in the third season's growth from the bud. I carried off the first prize at the Crystal Palace with six fruits from one of these three-year-old trees against fifty-six competitors

for the best dish of Peaches: and I also gained the first prize with Nectarines from trees of the same age. I mention these matters in order that Mr. Gilbert and other practical men may guess what the quality of the fruit must have been that could take a first prize against fifty-six competitors in September. An orchard house full of well-grown trees from the time when the blossoms open in spring until the ripe fruit is gathered in autumn is a source of daily interest, and the labour attendant on cultivating the fruit to perfection is not so exacting as that of growing a collection of Auriculas or Carnations up to the highest degree of excellence. The trees, of course, require summer pinching and pruning, and the shoots have to be tied down in order to expose the fruits to the light, and this must also be done in the case of wall trees. A Peach house may be constructed in two divisions—one to be forced and the other for the production of late fruit. As in

at-home, matter-of-fact individual, and may not be well posted up on this subject; still I do think that I should have heard from the many visitors who call here in the course of a year some tidings of failure had such been the fact. At any rate, so far as the district for many miles round here is concerned, there is not an atom of truth in such a report. At this place our Peach and Nectarine trees are models of health and vigour, and they fruit, not a little, but heavily every year—indeed they never fail; and the fruit is hardly second either in appearance or quality to that produced by trees that have all the advantages of glass. In further justification of my opinion that open-air Peach cultivation is not failing, I would mention the magnificent trees at Strathfieldsaye, Bearwood, Somerley, Broadlands, and Dogmersfield. Is the wish father to the thought, *i. e.*, is outdoor cultivation too troublesome, or is it, as my friend Gilbert hints, an overplus of glass erec-

training suits it best. Plant healthy fan-trained trees, and let them spread out evenly in all directions. Keep them clean during the growing season, by dusting with tobacco powder or syringing with tobacco water, dipping the points of the young shoots into the mixture. Cover with nets to keep off birds so as to let the fruits get fully ripe. In winter cut out weakly and exhausted fruit-bearing wood, and nail in the young shoots of the preceding summer's growth full length, as the Morello bears the finest fruit on the young wood. Even in fruit-growing counties Morellos are always profitable.—J. G. H.

APPLE POMEROY.

ALTHOUGH this delicious old Apple has been obliterated from the leading nurserymen's lists, and the tree is rarely met with in a young state, it possesses qualities so peculiarly its own, that it would be a mistake to allow it to die out. Pomo-



Lambton Castle, from the south-west. (See p. 249.) Engraved for THE GARDEN from a photograph.

the case of out of doors fruit, the foundation of successful culture must be laid in well-constructed borders. We made our Peach borders on the same principle as the Vine borders. They were dug out 3 feet 6 inches deep. About 9 inches of brick-bats were placed in the bottom, and over these was laid the compost, consisting of decayed turf; a good sprinkling of mortar rubbish was mixed with it, and some crushed bones. There is a depth of 2 feet 9 inches of this material, and in it the trees have made grand growth, and also bear well.—J. DOUGLAS.

— I am at a loss to understand the meaning of various communications that have recently appeared in THE GARDEN as to the non-success of Peach growing out of doors. Is there, or has there been a general collapse of open-air Peach cultivation? My answer is, no. I am, I confess, a stay-

tions that makes people less attentive than they were wont to be to outdoor Peach trees, allowing them to get smothered with aphides early in the season, and then bewailing the climate and crying deterioration, when a thorough drenching of clear water would have annihilated the aphides and have been salvation to the trees. Prevention is better than cure, and this we practise; hence our trees do not get smothered with aphides.—W. WILDSMITH, *Hockfield, Hants.*

Morello Cherries for cottage walls.—Let me direct special attention to the value of the Morello Cherry for covering the walls of cottages, on which it hardly ever fails to produce good crops. The latter sell well owing to the fact that they come in after the glut of other fruits is over. This Cherry grows and fruits well on any aspect, and the simplest kind of

logists say there are several varieties of the Pomeroy—the early, the late, the new, the old, and the winter—but, provided young trees of each were planted side by side in the same soil, it is questionable if the Pomeroy of the western counties and that of the north, sometimes called the green Blenheim, would not embrace the whole family. One of our oldest Apples, and at one time a great favourite, aged trees of it are occasionally met with in all parts of England, but never, so far as I am aware, in any quantity; and so distinct is the fruit, with its rough covering of russet richly suffused under warm sunshine, that once seen, it can never be mistaken. At this place, although there may be more in the parish, I have only met with one tree in our orchards, and this is a hoary relic of the last generation. It generally bears a crop of fruit, fair specimens of which justify me in say,

ing it is the Pomeroy No. 1 figured in the "Herefordshire Pomona." There it is described as an early Apple, ripe in October, and in use through November and December. The editor was quite right in giving it this prefix, as I have had it fit for use in September. It is not, however a fleeting Apple, for, soft and tender though it be, it keeps well, apparently without undergoing any change, throughout the winter. This quality, it may be well to remark, does not appear to exist everywhere—a fact which leads me to think many of our fruit rooms are open to more than one improvement. Early and mid-season Apples, all admit, are too numerous, and men of progress are looking for varieties that will carry us well over Easter. Of these we have a few, but most of them are deficient in quality; and few care to eat an Apple in an uncooked state that is hard and acid. Others who appreciate the flavour of the Ribston and other crisp Apples cannot at any season eat them; consequently, they are obliged to seek flavour in fruit of softer texture. To this class of consumers the Pomeroy should prove valuable, for not only have I kept it for six months on a shelf in a cold fruit room, but I have always found it remarkably tender, with a peculiar delicacy of texture, juicy, sweet, and richly flavoured. It is not one of the Apples I should advise anyone to plant in quantity, but connoisseurs who appreciate these peculiar qualities should grow a few for their own eating.

W. COLEMAN.

SEASONABLE WORK AMONG FRUITS.

VINES.

THE principal work in early houses will be thinning the bunches and berries, stopping the shoots where the sub-laterals have filled their allotted space, and tying down as growth proceeds. The first part of this programme many people think should be deputed to a disinterested person, but this is a mistake, as no one knows better than the gardener in charge what his Vines are capable of doing. In all cases, be the Vines young or old, it is always well to err on the side of light or moderate cropping, as Grapes in these days must be perfect in colour and finish, otherwise they will barely pay for carriage to market. This point settled, the thinning of the berries should be pushed forward, as every day lost in the performance of this operation throws a useless strain upon the Vines. How to thin is another matter, as no two Vines of the same kind in different soils and under different treatment form their bunches and swell their berries exactly alike. The man in charge, as I have just remarked, should be the best judge, as one or two years' acquaintance will enable him to tell to a nicety what number of berries will go to the formation of a bunch that will neither be crowded nor straggling when ripe. When thinning is finished the inside borders should be mulched with well-worked horse manure or rotten manure, and watered to an extent that will ensure every particle of soil being thoroughly moistened. The general syringing of the Vines having been discontinued, all available surfaces should be well damped twice a day, the first time with clear, tepid water, the second after the house is closed with diluted liquid. If the Vines are weak, similar liquid, a pinch of guano, which makes foliage, or soot water may be advantageously used two or three times a week for filling up the evaporating pans, and a syringeful of the last, wherever it can be delivered without casting spray on the berries, will have an invigorating effect on the leaves and laterals. From this stage until the berries are stoned the laterals should be tied down where space remains uncovered, the strongest only being pinched, whilst those showing a tendency to weakness may be allowed to ramble, provided they do not reach the glass or impede a free circulation of air. The temperature in the Hamburg house may range from 60° at night with a little air, to 75° on dull days, 80° on bright days, and 5° higher after closing with solar heat. Night air should be shut off when the fires are stirred in the morning, and the ventilators stay remain closed until the rising temperature

touches 70°, when a gradual increase should set the maximum at 80°. Bearing in mind that the admission of air should never lower the temperature, the house at this changeable season should be closely watched, and so soon as the sun begins to lose power, reduction and final closing must be performed in time to run up a few degrees in the afternoon. Madresfield Court Muscat, Foster's Seedling, and Buckland Sweetwater do well under Hamburg treatment, but Muscats require a little more heat when they are setting. We sometimes find a Muscat Vine occupying the warmest end of the house, but in order to set and finish them properly early Muscats should always have a small compartment to themselves.

Succession houses being generally furnished with similar varieties, with perhaps Gros Colmar and a Frontignan thrown in, make good progress, and set their fruit well under identical condition as to heat, air, and moisture. The only difference I would suggest is more air on all favourable occasions, and perhaps a slightly increased temperature after closing. Gros Colmar, of which we have heard so much of late in a contemporary, is not the difficult Grape some writers who have recently achieved success would have us believe. The fact that it requires plenty of time not only to mature its fruit, but also to throw off its earthy flavour, has long been known by Grape growers generally, and those who have been most successful have invariably started their Vines early enough to give them the full benefit of the season and plenty of time for winter rest. Because it is a late-keeping Grape it is too often found in the Lady Downes house, perhaps the least suitable in the whole range of vineries, unless, as they ought to be, the Lady Downes are grown under Muscat treatment. Gros Colmar sets and swells well in a Hamburg house, but it should be sufficiently advanced by the end of July to ensure plenty of sun-heat and air for ripening the fruit and wood before fire-heat and diminished ventilation become imperative in the autumn. To secure these conditions, the secondinery, or a Gros Colmar house, should be devoted to its culture. When the berries of this Grape first become black they are unripe; when the leaves fall they are not at their best; but when they have been allowed to hang for a month on ripe wood, and another in a dry and rather warm Grape room, the quality of this by-no-means rich Grape becomes passable.

Late houses.—If Lady Downes and other late Vines are not already swelling their buds, the houses should be closed every day, with plenty of sun-heat and moisture, and the pipes may be warmed on dull days and cold nights. Water in a tepid state, as a matter of course, has been freely administered to the internal borders, and this may be repeated, as there is less danger of giving too much than too little water after this period, especially when it is borne in mind that the clouds this season have not contributed to the external roots their usual quantum. The syringe in this house plays a very important part, and where the canes are young they should have the benefit of fermenting material. Young rods of Lady Downes break well or uneven according to their state of ripeness. To ascertain whether they are properly matured one only need look at the last Grapes they produced, now hanging in the Grape room; if fresh and plump, the Vines will break freely; if black in the stalk and shrivelled in the berry, all long rods should be bent down over fermenting leaves until the back buds have started.

Late Muscats, especially the Bowood variety, are generally in advance of Lady Downes, and will now be moving freely. When well started, these and the late sorts in the adjoining house should be helped forward under precisely similar treatment.

Pot Vines now swelling their fruit will require plenty of stimulating food both in the way of top-dressing and liquid. The first can be replenished as often as the old is washed away, and the more frequently the second is varied the better the progress. Good liquid from the manure-heap is of course the standing dish in all matters horti-

cultural, but where this is flanked by guano, soot water, or some of the thousand and one kinds of highly concentrated artificial manures, members of the vegetable, like those of the animal, kingdom benefit by the change. When the Grapes are well through the stoning they may be pushed on apace, not by a high night temperature, which should be kept below 70° with a little air, but by closing early in the afternoon and running up with plenty of atmospheric moisture. If not overcropped and the roots have escaped into the bed, good laterals will require tying out in preference to pinching, as every leaf helps the fruit.

Cut-back Vines that have been shaken out and potted in 7-inch pots should soon be fit for the final shift into the fruiting size, which need not exceed 14 inches in diameter. Rough half-rotted turf, bone dust, and lime rubble make good compost, and as this will have to filter hundreds of gallons of liquid for the next fifteen months, animal manure should not be used. If dry it may be firmly rammed or pressed into the pots to prevent its holding much water in suspension; if warm also so much the better, as the tender roots, which must be slightly uncoiled, will not then feel the check. A bottom-heat of 75°, not too far from the glass in a light pit, is the best place for the newly potted Vines. Shade for a few hours on bright days may be necessary, and as water at first must be given sparingly atmospheric moisture will be found an invaluable sustaining agent until they can be freely exposed to air and light. This stage reached, ordinary vinery treatment will suffice.

Vines from eyes.—When the eyes have exhausted the stored-up sap they will make a dead stand, and as this is the critical period, bottom-heat must be maintained to favour their making roots. Being plunged in a moist bed slight shade and frequent dewing over with the syringe will render the baneful practice of watering unnecessary until the young roots touch the sides of the pots, and as these will quickly flush the dry-looking, elongated buds into miniature leaves and stems, the veriest tyro will know when to give water and reduce the shading. When in free growth the first shift into clean 5-inch pots must be made, and more room being needed a fresh sweet bed ranging about 80° should be ready for their reception. Here they must be treated as newly potted cuttings, and when re-established, more light, air, and water and less bottom-heat, by drawing them gradually to the surface of the bed will favour a firm, short-jointed growth of Vine.

FIGS.

When the fruit on early started trees show signs of moving, as now will soon be the case, more heat by day may be given to them, and the temperature may range about 65° on mild nights, always with a little air when the lights can be opened without sensibly lowering it. As days increase in length and the sun gains power large trees in pots or planted out in confined borders will take heavy supplies of water more or less enriched by stimulants, according to their vigour and the crop they are carrying. It is not, however, a good thing to over-feed, as strong liquid produces coarse unfruitful wood, whilst turf and old lime rubble or burnt earth produce a surface root run in which they revel without becoming gross. A word as to thinning here may not be out of place, as many people often thwart themselves by leaving all the fruit, no matter how thickly it may be set, to allow for dropping. At first sight this may appear sound practice, but the very fact of overloading, as I have often pointed out, is the straw that breaks the camel's back. If this erroneous notion could be got rid of, and Figs, like other fruits, were thinned at an early stage, this badly treated tree would soon redeem its character, and, comparatively speaking, under glass it would become a perpetual bearer. Although late, if not already done, heavily cropped trees may still be relieved by the removal of the least promising fruit, whilst those left should be well bathed twice a day and have all the sun and light that can be admitted.

Late houses, from which one crop only is expected, should now be tied in and ready for starting. If well watered and mulched the point buds will soon commence swelling, but unless fire heat is at command for falling back upon in bad weather, full air by day and a liberal supply should be admitted when nights are not frosty until the season is further advanced.

MELONS.

A good supply of fresh young plants must now be kept on hand for putting out as space occupied by winter Cucumbers becomes vacant. Where Melons are extensively grown it is a good plan to have a special nursing pit well worked with fire-heat and fermenting material combined, and to sow a few seeds once a fortnight. If not wanted the oldest batches should be thrown away, otherwise when pot-bound they soon become attacked by spider and rarely make satisfactory progress if planted out. Upon this principle a constant relay of sturdy young plants fit for house or frame is always at hand, and it is needless to say a good start with these soft-wooded tropical plants is more than half the battle. Early plants from which ripe fruit is expected early in May will now be well advanced, and once they have taken to the trellis will gather daily in strength. To maintain this it will be necessary to remove all male blossoms up to the time the female flowers are ready for

Fertilisation, when, provided the bottom-heat is kept at 80° and the air temperature proportionately high, there will be little difficulty in securing an abundant "set." This high temperature must not, however, be secured by keeping the ventilators closed, as Melons when setting or ripening are often injured by confinement in a moist atmosphere. On the other hand, they should have sufficient heat to maintain a circulation of fresh air, whilst root and atmospheric moisture during these processes should be slightly, but not injuriously, decreased. As soon as the fruit is safe, *i.e.*, the size of Walnuts, more water may be given, and gradually increased in quantity and quality until the Melons have attained their full size, when the second high and dry epoch will set in. When thinning the fruit it is very important that uniformity of size be well considered, and the better to secure this point the final thinning should not be made until after all the laterals are stopped and the Melons are large enough to require supports. For this purpose small pieces of board with wires attached to the corners, squares of galvanised wire netting, or bands of matting are used. I prefer the first, as the others, especially the last, sometimes leave marks upon the fruit when it is ripe.

Top-dressing.—When the young Melons commence swelling freely, and the soil recently kept dry has been properly moistened, the plants will be fit for the final earthing, if growing on hills; for top-dressing if in pots. For plants on hills a good covering of strong, friable loam made pervious to water with lime rubble will be found suitable; but plants in pots require the addition of bone dust, which suits them better than any other highly concentrated stimulant I have met with. Of this as much as will lie on a spade may be added to a good barrow-load of compost, and, provided it is thoroughly mixed a few days before it is wanted, slight fermentation will set in, when it will be fit for use. In either case the compost should be very firmly rammed with the potting rammer, as Melons rejoice in a solid, resisting soil that will not readily part with moisture. When the young roots have taken a firm hold of this, mild manurial stimulants answer best when supplied in a liquid form, as solid manure sometimes induces canker, and always encourages worms. From this time forward full exposure to sun and light, of which we have none too much, must be secured by keeping the glass clean and divesting the plants of laterals, but on no account must the main leaves be injured. Moisture can be created by damping the surface of the bed, the paths, and walls, but not the foliage before the house is

opened; and, provided the plants will stand it, they may be well syringed after it is closed in the afternoon. Some varieties will not, however, bear direct syringing at any time, and I question if the best flavoured fruit is not gathered from plants that never receive a drop of water over their leaves after the female flowers open. Spider is the worst enemy, but it rarely makes much headway when the plants are well grown with plenty of heat, fresh air on fine days, and an abundance of moisture.

W. C.

MARKET GARDENS.

FRUIT-GROWING FOR MARKET.

MR. GROOM is right in calling attention to the merits of the southern counties for fruit growing, but, as recently remarked in *THE GARDEN*, the English growers have not yet begun to compete with the Americans. They might do much more in the way of early Apples, as the American varieties do not arrive until later in the season. A good lesson might be learned from the Americans as regards the selection of sorts by growing only three or four of the varieties best suited to the locality. It is the mixed consignments sent into market by some of our home growers that give such small returns, when perhaps the same bulk of one variety would be worth double the money.

Conversing with a large grower a short time back, he informed me that he only grew five or six varieties. For the first crop he depends upon Early Julien, which is a heavy cropper, and can be marketed direct from the tree. Of Yellow Ingestre, sometimes called Summer Golden Pippin, he grows several acres. It is a great cropper, and, owing to its beautiful, clear primrose colour, sells well. On the same fruit farm Keswick Codlin is still grown in quantity, and Lord Derby, a large Apple, is a great favourite. The same may be said of Warner's King. A consignment of 3000 bushels of Wellington sent to the Borough Market realised 10s. per bushel. Mr. Charles Whitehead says, "An acre of woodland, whose underwood was never worth more than £7 or £8 per acre at twelve or fourteen years' growth, has yielded as much as £150 annually where grubbed and planted with Strawberries." Such facts as these ought to give some encouragement towards the production of good fruit, which must follow a judicious selection of varieties.

The soil is not so important as the varieties. Mr. Groom seems under the impression that the Kentish growers are favoured with the best of soil. This may be, but the fruit farm under notice, comprising more than 200 acres, was originally woodland covered with a poor growth of underwood, and many would have condemned the place at first sight. If soil is good, all kinds of fruit will succeed, but the geological formation often differs greatly over a small area. Chalk, with a thin surface layer of soil, is about the worst, but a fairly good soil mixed with the chalk will grow Cherries, Plums, and Red Currants. Round about Maidstone the soil overlies the Kentish ragstone, but very good Apples are grown. Apples and Pears also do well in the stony lands about Orpington. All through the weald of Kent the soil is very heavy, but good Apples are grown. Black Currants thrive admirably on the heaviest soil, provided the drainage is good.

The situation of the plantation is important; it is useless to plant on an exposed hill; while, on the other hand, if the plantation is in a valley or too near a stream, there will be great danger from spring frosts, as the mist will rise from such damp situations and settle on the flowers, a slight frost causing their destruction. If a little shelter is necessary, nothing is much better than Pampsons; they stand the wind well, and form a good screen, while the fruit will give a good return.

There is much truth in the remark made concerning English *v.* American Apples, that "the freehold system encourages fruit-tree planting." The English growers, if the land is not their own, have to bear many charges. The fruit farm before referred

to is an instance. Previously a poor woodland, it was taken in hand by the present cultivator, and at considerable expense made into a fruit garden. Then comes the extra tithe charge. It is like taxing a man for his industry. The grower remarked to me, "the land cannot bear three charges, and as the landlord has a right to his rent, while the labour must be paid for, the tithes must go unpaid."

A. HERRINGTON.

NOTES ON VEGETABLES.

BROCCOLI.—Whilst the commonly grown purple-sprouting Broccoli has stood so well, all white Broccoli has suffered severely; indeed, breadths of extra strong plants have been almost entirely destroyed by the recent hard weather. When later it is asked, why is it we import so much Broccoli or similar vegetables? let the reason be found in the nature of our winters, which play such havoc with green stuffs generally, and white Broccoli in particular. Could these be grown with safety, it is certain they would be grown abundantly. There ought to be an ample supply grown in the most southern districts for the London market; but it would even then be doubtful whether it would pay to send so far to such an abundantly stocked market as London usually is. I have found a few late-planted white Broccoli on poor soil to have stood exceedingly well; but they doubtless owe their immunity to the fact that they are not so robust as market plants must be if they are to be saleable.

PURPLE-SPROUTING, happily, is so hardy, that it almost always pulls through the roughest of winters. Its stems are well protected by its dense heads and side shoots, and there is not that tendency to gather moisture at the base of the shoots as is found in the broad, flat leaves of white Broccoli. The rule with market growers is to begin clearing off the purple-sprouting breadths quite early, much before all the sprouts have fully developed, and in this way a large amount of useless matter is sent into market, which would be better left at home. A large grower complained the other day that the condition of the roads in winter compelled him to keep quite three horses more than otherwise would be needful; but it is a fact that vans are sent into market day after day with loads of material, one-half of which is superfluous. If, instead of cutting sprouting Broccoli by the head, just trimming off a few of the roughest of the leaves, the edible portions of the sprouts only were taken off, packed neatly into baskets, and so loaded, what a very decreased bulk of matter would be sent into market. In the one case the green stuff is roughly handled, loaded, and exposed to all sorts of coarse usage; in the other the greens would go to the shopkeeper well preserved, fresh, and neat, and if sold per pound weight would findly pass to the consumer in excellent condition. But for sprouting Broccoli many fields would look barren indeed now.

WHITE TURNIPS, owing to drought which prevailed last autumn, have not been plentiful, and the severe frosts with snow seriously injured what bulbs were left in the open. For that reason we must not look for any considerable bulk of tops in the neighbourhood of London, but probably more remote districts will furnish a good quantity in due season. Some of the regular market growers purchase breadths of Turnip-tops in remote districts, and have them gathered and sent into the market in sacks in the spring. Ample employment is thus afforded for labour in that rural locality for a short time. Of course, the farmer still has the bulbs and rough leafage for manure, but the price given is not so considerable but that the question of turning in the entire green crop as manure is worthy of consideration. Having regard to the mild, tender, and pleasant quality and flavour of the tops of Swede Turnips, it is odd that breadths of these have not been grown specially for the London market, but possibly the bulbs can be more profitably utilised as cattle food. It is unfortunate that there should be such a prejudice against yellow Turnips, as these are more hardy than white ones, have richer flavour, and even produce tops less astringent in taste and much more pleasant eating. We seem in the yellow

Turnips to obtain some of that pleasant quality which has served to make Swede tops so acceptable.

A. D.

PROPAGATING.

DOUBLE PRIMULAS.—Unlike the single-flowered varieties of the Chinese Primula which are raised from seed, the double kinds are increased by layering, cuttings, or division, and where the plants have been flowering throughout the winter they will by this time in many cases lose their freshness, and may then be taken in hand for the purpose of obtaining a stock for next season, as the earlier in the year they are struck, so much longer will be the time to grow them into flowering plants. As propagation by cuttings is, unless carried out by one well versed in such matters, not always successful, layering is a mode of increase that commends itself to those who have not propagating cases and other appliances at hand, though by means of cuttings a greater number of plants can be obtained than from layers, as many shoots will form a cutting that cannot from their position be brought in contact with the soil unless separated from the parent plant. When the stock is to be increased by layers the plants must be thoroughly cleared of all old flower-spikes, dead leaves, and decaying matter, and the branch selected severed half way through with the knife, bringing it up in an upward direction, thus forming a sort of tongue from which the roots will spring. Generally speaking, the plants may be layered in the same pots in which they have grown, and when the above-mentioned directions have been carried out, the branches may be bent down as far as can be done with safety, and secured in position by a peg or pegs. Meanwhile, some turfy pieces of good open loam having been broken into lumps about the size of a Walnut, are packed around the stem, so that a plant when layered will have all the branches at its base embedded in this new soil, which being rather fibrous will ensure a good cluster of roots when the plants are struck sufficiently to be divided. After layering, the plants may be placed either in the greenhouse or in a frame, but after potting off they must be kept close till root action is restored. Increase by division is but a form of the above, as some plants will be potted at such a depth that the lower part of the branches is embedded in the soil, and when such happens they form roots on their own account, and all that is necessary to increase them is careful division. Any that are reasonably expected to have the different branches rooted should be turned out of their pots, and the soil removed very carefully, so as if possible not to injure a single fibre. Then with a sharp knife division is effected, the principal point being to leave a few roots on each part into which the original plant is split up. If the plants are flowering sufficiently to prevent their being divided, any time during the next month will suffice for the purpose, and where it is intended to propagate them by means of cuttings, a few weeks later will be a better time than now for that operation. A method I have followed with great success in striking cuttings is about this time to take the old plants in hand, and give them a thorough cleaning, then place them in a structure where the temperature is higher and the house closer than that in which they have been wintered. The result will be that in the more humid atmosphere the exposed portions of the old rugged stems all show a tendency to push forth roots, and when they are perceptible the whole plant may be cut up. In doing this, the roots at the base should be left on wherever possible, but by far the greatest number will have no roots of their own, unless it be those just on the point of pushing forth from the stem. The cuttings should, if it can be so arranged, have a couple of inches of old stem below the foliage, and any decaying leaves may then be removed. Small pots are by far the best for the reception of the cuttings, and they must be firmly secured therein, as the roots are very brittle. For this reason each cutting should be tied to a small stick, and when this is done it may be watered,

and after being allowed to drain for a short time, placed in a close propagating case in a structure kept at an intermediate temperature. If there is a slight bottom heat it is better to stand the pots on the surface for a week or ten days, and after that plunge them a little, in order that the additional stimulus may accelerate the formation of roots. The plants must not be kept too close, as decay is greatly to be guarded against, and on that account the lights should be removed every morning, and if condensed moisture is visible on the foliage tilted for a longer period. At the same time if possible the cuttings must not be allowed to flag, but even that is better than too much moisture. The soil best suited for the propagation of these Primulas is loam, peat or leaf-mould, and silver sand, the whole being sifted through a sieve with a quarter of an inch mesh. Besides this the top of each pot must be covered with pure silver sand, and a little of it sprinkled around the base of the cutting during insertion.

GRAFTING of the various fruit trees will now be in progress, or close at hand, and while this is an operation that does not need the delicate manipulation of some that are carried out under glass, yet attention to a few simple rules will be well repaid by the future measure of success. In the case of large trees with a head of branches that, owing to inferior fruit or some other causes, it is desired to graft with another kind, the head must be shortened in during the winter, and the scions intended for grafting taken and laid in by their heels in a cool spot, so that they will remain in a dormant condition longer than the stocks, as those latter should be just bursting into growth while the scions are in a dormant state. Crown-grafting is the method generally employed for large branches, as several grafts can, if necessary, be put on one branch, and the whole operation is very simple. The scions must be formed of the preceding season's growth, choosing such as are clean and well ripened. When required they are taken from the ground and prepared by making a sloping cut some 3 inches or 4 inches long, beginning opposite a bud and gradually sloping to the point. Just where the knife first enters a kind of shoulder must be formed, which will rest on the wood of the stock and assist in holding all secure. In inserting the graft it will be generally necessary to make a longitudinal incision in the bark of the stock, extending far enough to allow the graft to be pushed into its place. In the event of two or more grafts being put on one branch, a single cut in the bark of the stock will often allow sufficient space for all the scions, and of course they are held more securely than if the bark was cut at each point of insertion. This method is generally employed for the renovation of Apple trees, but the same, or at all events a slight, modification of it is available for many other fruit trees. The great point in all grafting is to ensure as complete a union as possible, and this being done the scion must be tied securely in position. After that the point of union must be made perfectly air-tight by means of good tenacious clay, mixed with cow manure, that has been moistened just sufficiently to render it pliable. This coating of clay will need examination from time to time to guard against cracking, and if this has taken place the defect must be at once made good, otherwise the grafts are liable to shrivel up. In the case of trees that are headed back in order to be grafted, some of the minor sprays should be allowed to remain on so as to keep up a complete circulation of the sap, and when the grafts grow and these shoots have discharged their functions they may be removed.

BOMAREAS.—These beautiful climbing plants, which have attracted a considerable amount of attention within the last few years, do not admit of any rapid modes of increase, unless seeds are obtainable, for although division may in a few cases be possible, it is an operation that requires considerable care, and some kinds very rarely push up a separate crown. Occasionally, where a plant has been confined in rather a small pot, so

that its vigour is considerably curtailed, it will divide into a couple of plants, which may be separated and potted singly. I have tried increasing the large-growing Bomarea (Arderi by means of the tubers that are attached to the roots, but though they remained perfectly sound for a very long time, none of them ever gave the least indications of starting into growth. The present season is the best time of the year for dividing any that are available for the purpose, and it should be carried out as carefully as possible, while the plants had better be kept rather close, and shaded for a few days, till root action recommences. When seeds are obtainable they should be sown in well-drained pots of good open soil, and must not be covered too deeply; care, too, must be taken not to over-water, otherwise many will perish, while, on the other hand, if they get very dry the loss amongst them will be as great. Not only is this caution necessary in the case of Bomareas, but in that of many other plants, for should the seeds at any time be subjected to extremes either of dryness or moisture, they will, in all probability, lose their vitality. T.

GARDEN FLORA.

PLATE 588.

IMPATIENS HAWKERI.*

REPRESENTATIVES of the genus *Impatiens* (of which the common greenhouse annual Balsam, *Impatiens balsamina*, is the best known) are widely scattered over the western as well as the eastern hemisphere, one or two species being found in Europe. Amongst the kinds best deserving of cultivation may be named *I. Jerdoniae*, a dwarf-habited species that was introduced from the Neilgherries over thirty years ago, but which, notwithstanding the length of time that has elapsed since it came into cultivation, and the distinct and beautiful character of its flowers, is not so well known or so often met with as it deserves to be. The deservedly popular *I. Sultani*, that made its appearance a few years back from Zanzibar, is too well known to require any notice further than saying that the high opinion formed of the plant when first it came out has not only been verified, but has increased as its cultural requirements have become better understood.

The subject of the accompanying plate, *I. Hawkeri*, is most like *I. Sultani* in the character of its growth, and in the form and appearance of its flowers, but it is a much finer plant. The ground colour of the flowers, which is dark carmine, is intensified by a conspicuous white eye, around which is a peculiar shade of bluish violet that gives to the whole an appearance that is not easy to describe. As will be seen, the flowers spring from the axils of the leaves, and are produced in continuous succession so long as the plant makes growth, which may be set down as from the beginning of spring to the end of autumn. For the decoration of a warm house its merits cannot well be over-rated.

Its cultivation is simple; cuttings consisting of two or three joints of the shoots root readily in sand in a warm house, but from the succulent nature of the stems and leaves they must not be confined too closely, or kept wetter than is found necessary to prevent flagging, otherwise they will damp off. A compost consisting of moderately open soil enriched with a little rotten manure and leaf-mould, and some sand, will answer for it. It comes from the South Sea Islands, and consequently will require to be grown in a warm house or pit, though cooler quarters may answer for it in summer. One of the principal matters to be kept in view in the cultivation of this and other soft-wooded quick-growing plants

* DRAWN FOR THE GARDEN by MR. MOON IN MR. BULL'S nursery, August 19, 1886, and printed by G. Severeys.



MIATHEM HAWKEE

is that they must be stood well up to the glass in light houses or pits, without which the shoots are drawn out long and weak, in which case half the beauty and pleasing appearance of the plants is lost. T. B.

STOVE AND GREENHOUSE.

T. BAINES.

GREENHOUSE RHODODENDRONS.

THERE is no race of hard-wooded flowering plants with which so much has been effected in recent times as in the varieties of greenhouse Rhododendron that have resulted from crossing some of the species that have been introduced. Amongst the various species possessing more or less merit from a cultural point of view may be named *R. Gibsoni*, a white-flowered kind with which most people who take an interest in gardening matters are acquainted. It was introduced about fifty years ago, and as it got plentiful was usually to be met with amongst collections of Azaleas, which to the casual observer the plant is not unlike in the character of its growth, as well as the appearance of its flowers, which generally come in pairs, although the habit is somewhat more erect, and the wood stronger than in the present race of Azaleas. A well-grown example of this Rhododendron when well furnished with flowers is a beautiful object, yet, somehow or other, it seems to be falling so far out of favour with most plant growers, that it is not unlikely to soon be numbered amongst desirable things that are all but lost to cultivation.

Amongst the largest growing representatives of the genus *R. Nuttalli* stands at the head. It is a magnificent species that bears white yellow-shaded flowers, and attains the dimensions of a small tree, but in habit the plant is somewhat spare; still, where there happens to be a structure large enough to allow its being turned out in a bed so as to admit of the plant showing its true character, it has a noble appearance. It comes from Bhotan. The plant is seldom met with, as the size to which it attains precludes the generality of those who grow plants under glass from attempting its cultivation.

R. DALHOUSIEI is another fine species, bearing large white flowers. It comes from the Himalayas, a country that has given us numbers of fine plants. Why this grand species has not come more into cultivation it is not easy to say, as it does not attain an unmanageable size. There are numbers of other kinds introduced from various countries which succeed under greenhouse treatment, or even with the protection afforded by an unheated house, for which latter description of structure many of the Rhododendrons in question are suitable subjects. It is about forty years since the fine and distinct *R. javanicum* was introduced, which has played such an important part in giving us the numerous beautiful hybrids now in cultivation. There are two forms of *R. javanicum*, one with pale yellow or buff-coloured flowers; the other with flowers of a deeper shade of yellow, and lightly suffused with salmon. Both forms are inclined to an erect, spare habit of growth, especially whilst the plants are young; this disposition shows itself to some extent in many of the varieties that have the blood of *R. javanicum* in them, although the more bushy habit of such kinds as the Malacca species, *R. jasminiflorum*, where used in the cross, has gone far to correct this straggling habit. Examples of the earliest raised varieties that have attained a size of several feet in diameter, and as much in height, may now be met with; these, when in bloom, are very valuable in the conservatory and greenhouse, and prove the enduring character of the plants, which evidently are not impatient of a little occasional inattention, such as would be of serious consequence to many kinds of hard-wooded subjects. This ability to keep on in a healthy condition for a lengthened period is exemplified in *R. Gibsoni*—already noticed—as some of the plants that were first raised are yet in existence, and are still

healthy and vigorous, and bloom profusely every year. One of the features which these hybrid Rhododendrons possess is the unusual range of colour present in them, which even exceeds that of the now numberless varieties of greenhouse Azaleas. The varieties of this section of Rhododendron embrace every shade from pure white and sulphur to pale and deep yellow, pink and red to the deepest crimson.

The usual method of propagation is by grafting, which is easily effected when the plants are kept in a genial growing temperature. But in private gardens the stocks whereon to graft are not often available, and although grafting presents the advantage of getting the plants on quicker, and also of each single joint of wood making a plant, still there is not much doubt but that these Rhododendrons would strike readily from cuttings of half or three parts ripened shoots if taken off at a joint and inserted singly in pots filled with sand, kept close and moist in a cool house until the base of the cutting is callused, then moving them to where they will receive a moderate amount of heat. So treated they would soon form roots and push top growth, after which they should be potted in peat to which a little sand is added. In fact, soil similar to that which Azaleas require answers for them in every way. Although nothing more than a greenhouse temperature is required to grow them, still with a view to getting the plants up to a useful size as quickly as possible it is well to keep them in an intermediate temperature for a year or two.

Young plants show little disposition to produce lateral shoots; consequently stopping must be resorted to, or bending the point of the leading shoot down in a horizontal position will answer the same purpose by causing the buds in the lower joints to break. It is important that this should be attended to early enough before the plants have had time to become leggy, otherwise the single shoot of which the young plants will most likely consist will require to be cut back, which obviously will be so much time wasted. Sufficient attention to this, by stopping or bending down any shoots that show an inclination to take an undue lead, is necessary until the plants have attained some size and are sufficiently furnished, after which they usually require little further attention in this way. Like most plants that are long-lived, the progress these hybrid Rhododendrons make in the early stages of their existence is somewhat slow, alike in the formation of roots as in top-growth; consequently care must be taken not to over-pot them, although ultimately, as they attain size and age, it is requisite to give large pots, otherwise the growth becomes weak. After they have been grown for something like two years under glass, they will be better stood out of doors during summer, but in thus exposing them in the open air care must be taken to protect the roots from the drying influence of the sun and wind, which, if allowed to act directly on the pots, will cause much harm. To prevent this, the pots should be plunged in coal ashes, or have some sort of material, such as a piece of mat, tied round each, looking frequently over them to see that they do not want for water. When well managed many of the varieties produce flowers two or three times in the course of the year from successional growth which the plants when in a vigorous condition make. T. B.

Cyclamens.—The favourite spring flowers may now be seen in great beauty at most of the nurseries, in which a specialty is made of them, in the neighbourhood of London. Mr. Walker, Whitton, who devotes great attention to the above, has, at the present time, a very fine display, the colours ranging from pure white to very dark purple. The plants are very dwarf, and show off to great advantage their wealth of bloom.

Steaming or smoking plant houses.—The system of destroying insects in plant houses by steam from tobacco water is, as yet, but little practised. Its merits are, however, well tested by plant growers, who report favourably in reference to

it. Mr. Williams, of Holloway, who has practised it for some time, states that its merit consists in the ease with which it destroys green fly upon flowering plants, and without damaging them. Amongst plants subjected to it were many Orchids, and some others, which invariably suffer from the fumes of tobacco-smoke. These were quite uninjured by the steam; even the half-developed fronds of tender Ferns were unscathed. Mr. Wolford, gardener to Mr. Lee, of Leatherhead, has also tried it, both upon flowers and plants, and reports favourably of this kind of insecticide, which promises to be a boon to plant growers. —G.

Phyllanthus submarginatus.—Some kinds of *Phyllanthus* are well-known stove shrubs, but this appears to be far from common, though it is worthy to be ranked with many of the others. This plant will, if stopped once or twice when young, form a neat-growing bush with slender branches, the upper portions of which arch over in a very graceful and pleasing manner. The minor branchlets are also of a pendulous character, and are regularly furnished with small, roundish leaves of a pale green tint. From the slender branches, neat foliage, and general contour of the specimen it is well adapted for use as a table plant, or for any other position where a subject of this class is required. It may be grown in the cool end of the stove, or even in the temperature of an intermediate house, as, if required for indoor decoration, the cooler it is grown the longer will it stand in a room. Cuttings of this *Phyllanthus* strike root readily during the spring and summer months, and it is in no way particular as to soil. —T.

Hebeclinium ianthinum.—Among bold, free-growing, free-flowering subjects suitable for the embellishment of the conservatory during the spring months must be included this plant. This is a near ally of the *Eupatorium*, which it closely resembles in many particulars. Perhaps an enlarged *Ageratum* would convey a better idea of its general appearance, for, in colour as well as in other particulars, it closely resembles some of the members of this genus, but flowers now instead of during the summer months. Another species, viz., *Hebeclinium atrorubens*, which flowers later, is in some particulars superior to *Hebeclinium ianthinum*. In *Hebeclinium atrorubens* the leaves are larger, and have the midribs as well as the leaf-stalks and young shoots densely covered with dark-coloured hairs, which extend even to the exterior of the calyx. They are plants of the easiest culture, as they root in a few days and grow very freely. They should be grown during the summer in company with, and under the same conditions as, *Salvias*, *Eupatoriums*, and similar subjects. Care must be taken that during the hot weather they do not suffer from want of water, as the foliage once discoloured seldom regains its freshness. —ALPHA.

Chorozema cordatum splendens.—Trained at the end of a greenhouse so as to form a screen, this *Chorozema* is now profusely laden with its bright-coloured, pea-shaped blossoms. At the same time its value is greatly enhanced by the fact that grown in small pots in the shape of little bushes it is equally floriferous, and for this reason a place may be often found for it where its rambling habit would be inadmissible. This is one of the most vigorous growing of the *Chorozemas*, and at the same time as showy as any, a good companion to it in its shrubby form being the yellow-flowered *Chorozema flavum*. It is a plant by no means fastidious in its requirements, doing well in good fibrous peat with an admixture of turfy loam and sand, this latter being very essential. Cuttings of this *Chorozema* strike root fairly well if taken during the summer just as the current season's growth commences to acquire a woody texture, and dibbled into pots of sandy peat pressed down very firmly. The whole must be covered with a bell-glass and kept in a greenhouse temperature for a time, when a little additional heat will hasten the formation of roots. To get bushy little plants they must have the points of the shoots pinched out when young, but when large enough to bloom if cut back after flowering the following season's display is often considerably curtailed, for though the plants grow freely they seldom flower so well as if the long shoots are tied in rather than cut off. When grown in a position, such as the end of a greenhouse, it is

rather liable to be infested by red spider, which soon causes the foliage to acquire a sickly hue and permanently injure the plant. To prevent this it must be well syringed during the hot weather, and in the case of plants in pots they may with advantage be placed out of doors during the summer in order to mature their growth.—H. P.

Gesnera macrantha.—Several of the Gesneras, in addition to *G. cinnabarina* alluded to in THE GARDEN (p. 185), are well worthy of notice, and of these one that has been for some time and still remains very showy is *Gesnera macrantha*, the prominent feature of which is the bright coloured blossoms, as the foliage is by no means richly tinted. It is a tuberous-rooted species that has a season of growth, then flowers, and after that gradually goes to rest to start again later on. Such being the case, it is evident that the time of flowering will depend to a great extent upon the duration of the period of rest, but if allowed to follow its natural inclination it will commence to grow some little time before Christmas, and flower during the first three months of the year. The blooms are of a bright vermilion tint, and during the dull days of winter are very conspicuous. The cultivation of this *Gesnera* is easy enough; all that is required is to pot the tubers in good open, fairly rich soil, and gradually water as they start into growth. They should not be syringed very frequently, as too much wet is liable to injure the leaves, owing to the hairs with which they are covered.—T.

Erica melanthera.—This is about the least fastidious of all the greenhouse *Ericas*, and may readily be grown wherever there is a structure with sufficient heat to keep out the frost. It is a dense, much-branched kind, and flowers throughout the early months of the year, some specimens here being now in full bloom. The individual blossoms are but small, yet they are borne in such profusion that the whole plant is quite covered with them, and in that state they exhale a rather singular, but to many agreeable, perfume. Their colour is whitish, against which the black anthers stand out very conspicuous. This *Erica* is far less liable to mildew than most of the others, so that it can be often wintered successfully in a cold frame where most other kinds would perish from damp. It is very useful for cutting purposes, as the blooms can be used in many of the smaller arrangements of cut flowers, and last a long time in a cut state. Added to this, even if severely mutilated, it will break freely into growth and flower profusely the following season. Shoots that are produced when the plant is cut back but moderately are more likely to strike if taken as cuttings than those borne on plants more severely reduced, as in the case of these latter the shoots are more succulent, and thereby additionally liable to decay.—H. P.

Camellia house.—This is now very gay, and the flowers are most useful when a lot of cut bloom is required. We find the old French White to be one of the best for cutting. It is less formal than many of the doubles, stands well, and its many shades of colour add greatly to its usefulness. It is a profuse and consistent bloomer. *Fimbriata* and *Lady Hume's Blush* are also just now a mass of flower, but, beautiful as the individual blooms are, they cannot be used for vases like the French White; their chief value is for bouquets, wreaths, crosses, &c. A very old variety, in shape like *Donckelaari*, but pure white with tiny markings, is also worthy of note. It is a pretty and attractive flower, and its partially expanded blooms work up nicely with the French White. *Donckelaari* in all its varied markings is also useful in the same way, as it also lacks the formality of many of the newer varieties. *Woodsii*, an old and little-known variety, of a deep, rich rose colour, is used where this particular colour is required; and other serviceable varieties are *Bealli*, *eximia*, *Chandleri*, and *conspicua*. As will be seen from the above list, our varieties are of the oldest, but from the reasons already given they are more useful than newer sorts, for, highly ornamental as these are, their very stiff, formal flowers are of little use for cut purposes. A great deal has been written of late on the dropping of *Camellia* buds: this is a state of things practically unknown to us. Our beds are thoroughly well drained and a perfect mass of roots; therefore it is

not easy to over-water them except just in the dead of winter, and any loss of bud would under these circumstances arise from drought. Given careful planting at the outset, with plenty of drainage, I do not know a flower that, when it is once well established, will give, year after year, such a continuous supply of flower with so little trouble and expense. The labour bestowed on the *Camellia* house is trifling. Disbudding, an occasional fumigation, and the least bit of fire in very sharp weather, and in summer abundant ventilation with some heavy syringing at intervals, enable us to have an abundant supply of bloom from Christmas until the latter end of May. Very little in the way of stimulants is required to keep them floriferous and in vigorous health. So far as our plants are concerned, all they get in this way is a liberal top-dressing of cow manure just as the young growth is beginning to move. This remains on the beds all through the year, and serves, after all the strength has been washed out, as a good mulching.—E. B.

Hibiscus schizopetalus.—Four years ago I purchased a plant of this from a nurseryman, and it bloomed a few months after it reached me. I have struck some cuttings from it, but I cannot induce either the old or the young plants to bloom. The latter are perfectly healthy. They are about 2 feet high, in 5-inch pots, and in a soil consisting of peat and sand, tightly potted, and kept in a small stove-house, the average heat of which is about 70°. What treatment differing from my own can I adopt to induce these beautiful plants to produce blooms?—J. B., *North Devon*.

* * The cause of failure is most likely want of pot-room and manurial stimulants during the growing season. Unless the plants after the first year have pot-room proportionate to the growth natural for them to make, they linger on, producing shoots not strong enough to bloom. By annually cutting the shoots in moderately and partially removing the soil, replacing the old exhausted material with new, that is well enriched, and by liquid stimulants given regularly whilst active growth is going on, the plants may be kept in a flowering condition for a time with their roots somewhat restricted. Still, even thus treated, they must have larger pots than would suffice for most things. The young plants, now 2 feet high in 5-inch pots, if bushy in proportion to their height, should have had pots much larger. Even when planted out in a good-sized border they must have rich top-dressings, and manurial stimulants as well, in the growing season, or the plants soon get too poor to flower. I should recommend their being treated more liberally in this direction, shortening the branches in each spring so as to keep some proportion between the top-growth and that of the roots.—T. B.

North aspect for glass houses.—We are so accustomed to value south aspects for glass houses, that we hardly realise how valuable the opposite is until the need for utilising it arrives. When only the forcing of plants or fruits is concerned there can be no question about the value of direct sunlight. But there is the question of retarding as well as of forcing, and during the last few years the former has assumed much greater importance than it used to do. I need only refer to the value of late *Chrysanthemums* as compared with early ones as an instance of the advantage of retarding, and there can be no doubt but that a glass house with a north aspect is much more easily kept at an equable temperature than a south one, even if temporarily shaded, and at all times of the year where flowering plants are largely grown the north house is one of the most useful. At this season when bulbs and the host of other early flowering plants are being forced into bloom, it is necessary to gradually inure the plants to cooler quarters before they can withstand the cold draughts and dry atmosphere of drawing rooms, and a north house offers just the conditions necessary, and if glazed with Hartley's plate glass, a subdued light and equable temperature will be obtained nearly all the year, and the flowering season of many plants greatly prolonged.—J. G., *Hants*.

Pelargonium (zonal) Dr. Orton.—This beautiful variety is alike useful for winter flowering and also the decoration of the flower beds. In habit

it is very dwarf and compact, remarkably free-flowering, the trusses and individual flowers large and of fine form, and very dark scarlet. We have seen it bedded out during several seasons, and its bright colour was very pronounced amongst all the other varieties.

AMHERSTIA NOBILIS.

THE following account of the discovery of the *Amherstia* in Burmah will doubtless be interesting to many: The first notice of this beautiful tree is to be found in Wallich's "*Plantae Asiaticae Rariores*," published in 1830, in which work it forms the subject of the first plate. It was named by him after the Countess Amherst and her daughter, Lady Sarah Amherst. He was first told of its existence by Mr. Crawford, who brought him a leaf and dried specimen of the flower in 1826. In March of the following year Mr. Wallich saw himself the trees noticed by Mr. Crawford, and gives the following account of his meeting with them: "In about an hour I came to a decayed *kioum* (a sort of monastery) close to the large hill of Kogun, distant about two miles from the right bank of the river (Saluen) and twenty-seven from the town of Martaban. . . . There were two specimens of this tree here; the largest about 40 feet high, with a girth at 3 feet above the base of 6 feet, stood close to the cave; the other was smaller, and overhung an old square reservoir of water lined with bricks and stones. They were profusely ornamented with pendulous racemes of large vermilion-coloured blossoms, forming superb objects unequalled in the flora of the East Indies, and, I presume, not surpassed in magnificence and elegance in any part of the world. I call this tree *Amherstia nobilis*. The Burmese name is *Tboka*. Neither the people here nor at Martaban could give me any distinct account of its native place of growth; but there is little doubt that it belongs to the forests of this province. The ground was strewn, even at a distance, with its blossoms, which are carried daily as offerings to the images in the adjoining caves. . . . There can be no question that this tree when in full foliage and blossom is the most strikingly superb object which can possibly be imagined." The first specimen was brought to England for the Duke of Devonshire in 1837, and flowered in the stove at Chatsworth some years later. But the first plant to flower in England was one which belonged to Mrs. Lawrence, of Ealing Park, Middlesex. It was then only 11 feet high. This plant was afterwards presented to the Royal Gardens, Kew, where it continued flowering for a few years, but, on growing too large for the Fern house, it was removed to the Palm house, where, not having sufficient moisture or heat, it pined and died. The specimen now in flower at Diddington Hall, Norfolk, was presented to Mr. Tyssen Amherst by Sir Joseph Hooker in 1882 when it was only 18 inches high. It was placed in a Cucumber house, where it did not thrive well. Last spring it was removed to a stove specially arranged for it, where it grew rapidly and is now a well-furnished tree 9 feet 6 inches high, and 11 feet 6 inches across the branches. It has at present six flowers with from fifteen to eighteen blossoms on each. It is kept in a temperature between 70° and 80°, and excessively moist. Not only are the flowers of this tree quite lovely, but its long dark foliage and drooping growth form a most beautiful object, which well repays all the trouble and care bestowed upon it.

SHORT NOTES.—STOVE AND GREENHOUSE.

Habrothamnus elegans in fruit.—The berries of this favourite greenhouse plant, which are but little regarded, are equally as attractive as the flowers. When the specimen is planted out and favourably situated they are borne freely in large bunches, and during winter and spring are seen at their best. They are nearly as large as a small grape, and of a rich rosy crimson colour. So continuously does the plant bloom, that clusters of flowers as well as bunches of ripe fruit are often to be seen at the same time.—T.

Imantophyllum flowers.—We keep our *Imantophyllums* for the most part in a greenhouse, but directly the flower-spikes are visible they are removed to a warmer structure. If this is neglected the flowers are not nearly so fine, as the lower temperature seems to prevent them from attaining full development, though the plants kept therein are in robust health. I have also wintered them successfully in

a cold frame whence frost was just excluded, but in that case they must be quite dry, otherwise many of them will rot.—T.

Clematis indivisa.—This New Zealand species of Clematis should be grown by anyone requiring a free-growing greenhouse climber to flower throughout the spring months. If allowed to grow at will, the branches dispose themselves in graceful festoons, and are now quite laden with their pure white starry blossoms. The principal things to guard against in the case of this Clematis are aphides, which often make their appearance on the young shoots, and quickly cripple them unless removed. If the atmosphere of the house is rather stagnant during the winter months, the foliage is liable to be attacked by mildew, which soon disfigures it. A good circulation of air is the best preventive, and should any signs of mildew be seen, this, combined with a good dusting of sulphur, will generally effect a cure. This Clematis may be increased by cuttings of the half ripened shoots, treated in the same way as many other greenhouse subjects, but a quicker method and one that is usually followed in nurseries is to graft a young shoot on a portion of the root of the Traveller's Joy, in the same way as the many garden varieties of Clematis are increased. As the point of union is below the surface of the soil the scion will after a time form roots of its own, and is thus rendered independent of the stock.—H. P.

Hybrid Amaryllids.—In reply to Mr. H. Nehrling (p. 236), I may say that I have devoted much attention to intercrossing Amaryllids. I have tried to effect a cross between Crinum and Hippeastrum (being tempted to do so by successes with other apparently impossible parentages), but never succeeded; nor had I better results when I tried Amaryllis reticulata, which, having oval, wingless seeds more nearly in form approaching the bulb-like seeds of Crinum, promised a better chance. I found A. reticulata to be a very good pollen giving parent, and with its pollen used on A. vittata rubra, I succeeded in making the first break tending to the A. Mrs. Garfield mentioned in the communication just alluded to. With its pollen, too, I obtained from the now apparently lost apricot-ground Hippeastrum parlinum, which never yielded a seed when tried with its own pollen, the seeds from which A. O'Brieni was raised. This charming plant partakes of the beauty of both its parents, but I am afraid it also partakes of the weaknesses of both; in fact, it seems to be a parallel case to that of the showman's hippopotamus, which, being amphibious, he explained, "could not live on the land, and died in the water." At least, so it seems, for, although I could always manage it well, I find it has only succeeded, so far as I know, in a few other places. With the pollen of A. reticulata I also crossed that distinct plant, A. prosera (Impératrice de Brésil), known as the blue Amaryllis, but the seedlings after a time languished and died. With respect to correct lists of Crinums, Paneratiums, &c., I am afraid nothing can be done complete or accurate. Some of us know the varieties in cultivation, and others figured, but there is an amount of uncertainty about the distinctness of many of the kinds figured under different names, that until they can be grown side by side and determined, any enumeration of species must include many false ones. I have repeatedly talked over the whole question with Sir Chas. Strickland, of Hildenley, who has a good and practical knowledge of all these things, but we could never see how the mysteries were to be elucidated, or the beauty of the Amaryllids done justice to by means of coloured illustrations, at least, at present, as an illustrated work on the subject would be costly, and at first the demand for it would not give anything like a sufficient return for the time and money expended in its production.—JAMES O'BRIEN, *Narrow-on-the-Hill*.

Araucaria excelsa.—Those who are fond of trees which assume a geometrical form should grow this Araucaria, as the branches appear at stated intervals up the stem and its outline is altogether stiff and formal. Some might regard it as a nice shaped tree, and on this account it might attract attention, but I cannot say I like it. It grows quickly, and unless it can be accommodated with a lofty house, it is a difficult matter to deal with it when it attains large dimensions.—J. MUR.

SEASONABLE WORK IN PLANT HOUSES.

WINTER-FLOWERING PLANTS.—It is advisable now to look over the young stock of autumn and winter-flowering plants that have been recently propagated, with a view to making good any deficiency before the season is too far advanced to admit of the plants attaining the requisite size and solidity in the shoots before the growing season is over. It is well to bear in mind that with quick-growing subjects that are propagated annually for the purpose in question, something more than size is required to enable the plants to bloom satisfactorily. In the case of free-growing things of this character, it is possible, with the aid of a high temperature and a moist, confined atmosphere, to grow the plants up to a large size in little time, yet when the work is hurried on, the wood is so far wanting in solidity, that when the season for them to bloom arrives they show a greater disposition to keep on growing than to produce flowers.

EUPHORBIA JACQUINIEFLORA AND SCUTELLARIA MOCCINIANA.—Special attention should be given to securing a good supply of these plants. They occupy little room in comparison with the quantity of flowers they yield. With a sufficient stock of the first-named it can be had in flower from the latter end of November to April, as if the plants are as strong as they should be they will produce a second crop little inferior to the first from the young growth that is made after the first flowers borne on the extremities of the shoots are gathered. Plants of this Euphorbia that have now done flowering require to be carefully watered for the next two months. Flowering has a more exhausting effect on the Euphorbias than it has on most things, so that for a time after the plants have ceased blooming both root and top growths are sluggish, and if whilst in this condition the soil gets too much water it is more than likely the roots will perish. This applies equally to stock that is grown in pots as it does to plants that are turned out in a bed; in the case of both no more water should be given than will keep the soil from getting dust-dry until the young growth has made some progress.

TOXICOPHLEA THUNBERGI.—This fragrant free-blooming plant appears to not be yet so well known, or its good qualities so well understood as it deserves. It has the merit of occupying much less room than many things that will not yield a like amount of bloom, as when well managed it not only produces its pretty trusses of flower from the extremities of the shoots, but also in pairs at the axils of the leaves on a considerable extent of the preceding season's growth. Its somewhat spare habit of growth necessitates attention being given to pruning after the plants have flowered, otherwise they get into a straggling, unsightly condition. Plants that have done flowering should now have their strongest shoots shortened a little; after they have again broken into growth they will require a shift, but less root room will suffice than would be necessary for larger growing subjects. Cuttings of this Toxicophlea should now be put in; if they are taken off with a heel there will be more certainty of their striking. In a brisk heat, kept moderately close, moist, and shaded, they will soon root. Ordinary stove treatment is all that is required to secure free growth, stopping the leading shoot as the young plants begin to move freely.

JASMINUMS.—J. gracillimum is one of the best stove plants that have appeared in recent years. It is more dense and compact in its habit of growth than most of the other kinds, in addition to which it is a profuse bloomer, flowering from every bit of growth made, the weak shoots as well as the stronger ones. Plants that were struck from cuttings last year should now have more room; give pots proportionate to their size and the amount of roots with which they are furnished. Older specimens should at this season be turned out of their pots and have a portion of the surface of the balls removed, giving them more room if it is found that the pots are much crowded with roots. But a deal may be done in

keeping up the requisite vigour by the use of manure water during the season of active growth. J. Sambac and J. Duchesse d'Orleans are both more straggling in growth than J. gracillimum, and are better adapted for training round a pillar in the stove than for growing in the form of a bush or standard. If planted out they should not have so much root room as more vigorous growing things; their shoots should be shortened in now so far as necessary to keep the plants furnished with young flowering growth from the base upwards. A portion of the soil from the surface of the bed in which the plants are turned out should be removed, replacing it with new; if grown in pots, a larger size must be given as the roots require it. Good turfy loam with some sand and a little rotten manure suit the different kinds of Jasminum. Where young stock is required cuttings of all the kinds should be put in now; treated in the way that answers for ordinary stove plants, they will strike in a few weeks. When sufficiently rooted move them singly into small pots, and keep through the summer in a moderately warm house; they will make useful plants by autumn.

ACHIMENES.—Roots of these started some weeks back should now be in a condition for potting off or putting in hanging baskets. If allowed to remain too long in the pans in which the tubers were started, the young roots suffer in moving, so that the top growth receives a check that it is much better to avoid. In potting it is best to err on the right side by not overcrowding the plants in the pots, as when this occurs, however much they are assisted with manure water, their time of flowering is shorter than it should be, and in addition to this when they are too much crowded, the lower leaves lose the healthy green hue so necessary to give the desired appearance. More tubers should be started in heat; these will come in so as to give a succession of bloom after the earliest batch is over.

GLOXINIAS.—Another set of tubers that have been at rest through the winter should be potted. Give pots proportionate in size to that of the tubers. Large tubers make a fine display when in bloom, as they usually produce flowers proportionate in number to the size and strength they have attained, but if under-potted their flowering is of short duration, as when they have not enough sustenance, little in the way of successional flowers need be looked for. Medium sized tubers that have enough pot room given them, generally produce the largest flowers, and keep on giving successional bloom more freely than very large old bulbs, unless the latter have pot room in proportion to their size. Keep the early started plants close to the glass; a shelf over the path of a stove if such is available, where they can have their tops near the roof is the right place for them. In such a position the leaves come thick and leathery in texture, and the flowers have plenty of substance in them; so grown they stand firm and plump for several days in water when cut; whereas if, as one often sees them, they receive insufficient light, the flowers are all but worthless for cutting.

GREENHOUSE.—Old plants of Abutilons that were cut back after flowering last autumn and have been kept cool during winter will by this time have made some shoot growth and be in a condition for repotting. In the case of these and other quick-growing soft-wooded subjects that will bear a considerable portion of the old soil shaking away at the annual potting, it is not well to defer shifting them until the young shoots have attained much length, as when in this state the disturbance of the roots that takes place in getting the old exhausted soil away gives the young growth a check that prevents its again moving freely. Where the object is to grow plants to a large size they must have pot room in proportion, but for ordinary decorative use medium-sized examples are preferable, and if manure water is given regularly during the growing season the plants can be kept in an active condition without large pots. Cuttings of any varieties that it is

deemed desirable to increase should now be put in; the young, soft shoots strike readily in moderate heat. It is better to propagate a sufficient number each spring to take the place of any old plants that are discarded.

PLUMBAGO CAPENSIS.—Large examples of this fine old climber, that are planted out and were cut in after flowering, should now have as much of the old soil taken off the surface of the bed as can be got away without undue interference with the roots, replacing it with new that has been well enriched with rotten manure. If this is not attended to annually, free-growing plants like this after a time fail to make the requisite amount of growth, with a proportionate falling off in the bloom; for, though much may be done by regular applications of manure water, still, without the help of a portion of new soil, it is difficult to keep the plants in a satisfactory state. Young stock should be struck from cuttings each spring; the little plants that are raised in this way, if pushed on in a growing temperature until they have made some progress, will bloom nicely towards autumn. Small examples, thus treated and kept in 5-inch pots, will frequently produce half-a-dozen large heads of bloom. So managed, they are very useful for either greenhouse or room decoration.

SOLANUM JASMINOIDES.—This pretty climber is not nearly so much grown as it deserves to be. Where elegant white flowers, that differ from the ordinary plants one meets with everywhere, are required for bouquets and other arrangements, this is the plant to grow. The long succession of bloom that it gives when fairly treated is not the least of its good properties. It is not so rampant a grower as many greenhouse climbers, and may either be planted out in a bed of limited dimensions or kept in a large pot, the soil in which should be partially renewed at this time each season. Where planted out the bed ought to be surfaced with rich soil. The head of the plant, even after it attains full size, can be easily kept in bounds by shortening the branches in the winter. T. B.

TREES AND SHRUBS.

W. GOLDRING.

THE CONSTANTINOPLE NUT.

(*CORYLUS COLURNA*.)

THE Constantinople Nut, or Turkish Hazel, is a tree found only in very old gardens in this



Foliage of the Constantinople Hazel.

country—gardens that were planted fifty years ago, when it was the fashion to include as much variety as possible in their tree and shrub growth. Richly planted tree gardens like those

at Fulham Palace, Kew, Syon, Farnham Castle, and Westdean contain very fine, fully grown specimens of this tree, which, so far as its habit of growth and foliage go, is quite distinct from any other small tree with which I am acquainted. As an ornamental tree it possesses considerable merit, being handsome in outline and dense with its broad light green foliage. Adult trees have broad spreading heads excessively branched horizontally, generally with a tendency to lean much in the same way as an old Mulberry tree does. The most beautiful phase of the Turkish Hazel is in spring, generally in April, when it is adorned with a thousand long hanging catkins, which are much the same as those of the common Hazel, but larger. In catkin-time the tree is, of course, bare of foliage, and the catkins give the



The Constantinople Nut: fruiting twig, catkins, and ripe nut.

tree a most graceful appearance. In autumn, again, it attracts attention by its nuts, which, as may be seen by the accompanying illustrations, possess an unusual development of beard, which is so much fringed as to give the appearance of bristles. In some trees the nut-cups are less divided, but in all cases the nuts are smaller than Cob-nuts, and the kernels, if by chance one happens to find a good one, are insipid.

It is a tree that may be grown in any soil, but grows finest in heavy loams such as suit the common Hazel best. It has been planted purely as an ornamental tree by Mr. Howitz, of Copenhagen, who included it in his list of the most suitable trees for reforesting Ireland. He recommends it for underwood, but his experience of the tree in this respect must be limited. It is a native of South-eastern Europe and Asia Minor, where it grows into a lofty tree; but north of Central Europe it rarely grows beyond what we term small trees—say, from 30 feet to 40 feet high. The largest I have seen did not reach quite 40 feet. It is one of the very old introductions, having been cultivated in English gardens during the latter half of the seventeenth century. It is now rather a rare tree, and it can be only found in the largest nurseries in the country. Loudon mentions two varieties in his Arboretum,

namely, *intermedia* and *arborescens*. The first is said to be a hybrid between *C. Colurna* and *Avellana*, and the latter differs from the type in having the involucre cut into finer shreds; but this is a variable character.

Lonicera flexuosa.—Those who wish to plant a beautiful climber to clothe a wall pier, trellis, arbour, or such like, should make a note of this the most beautiful of all the climbing Honeysuckles. It may be distinguished from the rest by its slender twining stems being of a dark purple-brown, by its broad deep green leaves stained with a purplish tint, and when in bloom by its large clusters of deliciously scented flowers, coloured with various shades of yellow and reddish purple. It flowers persistently throughout the summer far into autumn—in short, it is one of the very best of all hardy climbers. It

never looks finer than when seen falling gracefully over a buttressed wall, where it forms quite a canopy of foliage and flower. It is not too late to plant it now, as hardy climbers are generally kept in pots in nurseries.

Forsythias in masses.—The slender *Forsythia suspensa* is among those shrubs that have the best effect when planted in isolated groups or massed by themselves in a shrubbery, and thus placed, nothing in the way of flowering shrubs can have a finer effect in May than this beautiful *Forsythia*. It well repays cultivating as regards mulching with manure and fresh soil, for then it makes vigorous growth, producing a thicket of its long, wand-like shoots, which yearly are wreathed with yellow. I saw the other day a bold mass of this *Forsythia* margined with a row of the small *Deutzia gracilis*, and the whole mass was edged with the variegated-leaved *Euonymus radicans*.

Forsythia suspensa.—This is one of the best of early flowering wall plants, as the long flexible branches are, before the expansion of the leaves, completely clothed with bright golden coloured blossoms, but apart from this it can also be used for other purposes. It is now flowering finely in the conservatory at the present time, and that with very little forcing. When required for flowering in this way, the plants are best confined in large pots, and if secured to a stout stake the wand-like shoots depend therefrom in a graceful manner, and when in full flower a large specimen forms a

very attractive feature. Another kind, the bushy habited *Forsythia viridissima*, can be grown under the same conditions, but its habit is altogether more stiff than that of the first named. No preparation is necessary in the case of *Forsythia viridissima*, as if the bushes are lifted from the open ground and carefully potted, they will flower well and may again be planted out. *Forsythia suspensa*, or *Fortunei*, as it is often called, will frequently emit roots where the point of a shoot comes in contact with the earth, and thus form a base from whence shoots are soon pushed up which quickly grow into established plants. —T.

RENOVATING SHRUBBERIES.

NOT for many years have the winter's snowstorms left such serious marks behind them as that through which we are now passing. The damage done to choice trees and shrubs is in many cases very great, and how best to repair it is a question that must be considered. I have never known very

to do this, as will also young plants of *Arbutus*, *Box*, *Laurustinus*, *Phillyreas*, and *Gum Cistus*. It is unnecessary to cut all the remaining branches back to a stump; they only require to be shortened to bring the head into better form. Such subjects as *Ilex*, *Thorns*, and *Hollies* may, if badly damaged, be pollarded; but, generally speaking, it is best to cut all the branches back to within 4 feet or 5 feet of the stem. Once *Conifers* have lost some of their main branches they are not easily replaced. Nor is it desirable, with a few exceptions, to expend much labour on an attempt to restore aged trees that are much injured. If they cannot be spared, plant young ones in the same line, either before or behind them, to ultimately take their place. In all cases, more satisfactory results will be obtained if the roots are attended to at the same time as the branches. Where there are valuable specimens which it may be desired to retain and the soil is known not to be of the best description, it will help them considerably if some of the old staple is removed and

is excellent for this purpose, but when these are not available use the next best that comes to hand. Before this sort of work is begun it is necessary that every part should be gone over, to see what plants are likely to respond to such treatment. If too much weakened by age or other causes they had better be removed and young ones put in their place, and any that are overcrowded should either be pruned hard back, or some of them should be altogether removed in order that those left may stand quite clear of each other. This is the proper time to prune all evergreen shrubs and such of the deciduous kinds as flower on the current year's wood. Those which are encroaching on walks should always be pruned with a knife; shears should not be used, as they leave the surface too smooth to look well, and instead of cutting back all the small twigs some of the larger branches should be cut out nearer to the stem than they would be by shears. Now is also the best time to go over *Laurel* plantations and banks; the knife alone should be used for the latter, but in the case of large plantations strong nippers are best. *Laurels* are very accommodating as regards pruning; those with large boles will break into strong growth at any point to which they may be cut back, but in the case of very old plants the nearer they are cut down to the ground the better. *Laurustinuses* are for the most part now in full flower, and it would be a mistake to spoil their beauty when pruning may be advantageously deferred for a few weeks longer. It is too much the practice to prune all kinds of shrubs at one and the same time. Shrubs should all be pruned as soon as they go out of flower, a statement which applies particularly to *Rhododendrons*, but in dealing with plants of large size it is better to cut them down to one uniform height or nearly so. If some are cut hard back and others left unpruned, the unpruned branches invariably monopolise the whole strength of the roots and the cut-back branches decay. It should, however, be remembered that the less *Rhododendrons* are pruned the better they flower. Cultivators of hybrid *Rhododendrons* should go over them once a year, and remove any suckers that may have arisen from the crown of grafted plants. The experienced grower will have no difficulty in ascertaining which shoots belong to the stock and which to the scion from the colour of the foliage; that of the stock is usually a darker green than that of the scion. Where any doubt exists this part of the management should be delayed until the plants are in flower.

With regard to filling up vacant places, the sooner all deciduous subjects are planted now, the better chance they will have of forming new roots before the summer sets in. In the case of *Evergreens*, I would rather plant in April than in March. I find when planting *Evergreens* in spring that they invariably move best just as growth commences, or rather when it is on the point of starting; but long experience has convinced me that whether planting is done in winter or spring, a good deal depends on the character of the weather which follows. If severe frost follows immediately after winter planting the injury done is often great; indeed, not unfrequently the plants are killed; when planting is done in April, and drying cold winds and an absence of rain follow, the result is often disastrous. But at any time I would much rather have to contend against unfavourable climatic conditions late in spring than in winter. Trees or shrubs which require stakes should now be supplied with them, and those which have been staked for some time should be examined to see that they are sound, and also the ties. Any choice trees or shrubs which have been recently planted in places much exposed to sun and wind should have a mulch of half-rotten manure laid over the roots for the purpose of confining moisture in the soil. J. C. C.

SHORT NOTE.—TREES AND SHRUBS.

Prunus Pissardi.—I see by THE GARDEN (p. 238) that this shrub has been exhibited at South Kensington in pots from under glass. Here with me it has been in full bloom out of doors for the last ten days. The contrast between the



Corylus Columna (Constantinople Hazel). Full-grown tree at Syon, 61 feet high.

satisfactory results to attend any attempt to restore trees and shrubs of large size that have been much injured in this way; therefore in the majority of cases it will be best to grub them up. Any tree or shrub, however, that was in vigorous health before being damaged will be likely to respond to renovating measures. Trees which under ordinary circumstances have only a limited number of large branches will be the least likely to recover and make handsome specimens. Such subjects as the *Horse Chestnut* and the *Beech*, which are usually well furnished with limbs and not too old, will prove eligible trees to operate upon if not irreparably injured. The *Cedar* and *Yew* are both remarkable for their recuperative powers, and I should hesitate before I removed them to make room for young trees. The same remarks apply to shrubs and trees of more diminutive growth. Some, if judiciously pruned now, so as to balance such growth as is left, will in time assume their original contour. *Common* and *Portugal Laurels* will be pretty sure

some good rich earth substituted. In doing so there need not be much root-disturbance, as the principal roots can be traced as far as it is desirable, which, in the case of large trees, should commence at 6 ft. from the bole, and be continued for a space of from 8 feet to 10 feet. Where so much labour cannot be expended, the benefit arising from a surface-dressing of good soil laid on the roots is surprising; but what would have an earlier effect on trees that have lost limbs would be first a layer 6 inches thick of good manure and then a covering of soil.

The most speedy and satisfactory way of renovating shrubs which have lost vigour is first to prune them moderately so as to reduce the strain upon the roots, and then to dress the surface with a layer of good soil at least 6 inches thick; there is, too, no better time for doing such work than the present; almost anything in the way of fresh earth will do good, but the better it is the more benefit the plants will derive from it. Good loam mixed with an equal quantity of farmyard manure

dark coppery foliage, dotted over with myriads of pinkish white flowers, is admirable. So much for our mild southern climate.—W. B. H., *York*.

KITCHEN GARDEN.

W. WILDSMITH.

SHELTER FOR KITCHEN GARDENS.

ON the principle that each thinks his own misfortunes the worst, I have, I suppose, imbibed the idea that in no part of Britain are bitter north-easterly winds so severely felt as here. Be that as it may, however, we certainly get them to some time all through the early spring-time, and having this season begun their annual raid we are busy taking steps to counteract their disastrous effects on all early vegetable crops. We have good walls, and they do much to break the force of the wind, though over some two-thirds of the garden the current sweeps down in full blast, infinitely more damaging than frost, and some kind of shelter is imperative in order to keep early Peas, Lettuces, Broad Beans, Cauliflowers, Spinach, early Potatoes, and transplanted Onions in vigorous growth. We usually stick Peas on the windward side as soon as sown, and when well out of the ground they receive additional protection by means of thicker spray. Lines of pyramidal Peas also greatly break the wind, as do also Raspberries trained to strained wire fencing that runs the entire length of the garden. We have lately planted small bush trained Apples on the dwarfing stock with the same intent; Black and Red Currants in lines a good distance apart, so as not to shade the vegetable crops too much, would serve the same purpose. Much as one dislikes this mixed way of growing fruit and vegetables together, there is much to be said in favour of the plan, especially as regards early vegetables. The warm border, invariably recommended to be made use of for every description of early vegetables and salads, is no doubt the proper place for all such crops, but unfortunately there is a limit to its extent, and owing to this some few years ago we determined on doubling the extent of such borders. This we did by taking a slice of 12 feet from the entire length of the kitchen garden, and being taken from the upper portion of the main plot it has a full southern exposure, has a thick screen of Pear trees on the northern side, and in order to make the position still warmer the ground was thrown up into the form of a bank, slanting to the south. The plan has succeeded beyond our expectations; indeed, the crops from this border are quite as early as those from borders in front of south walls. This question of shelter for the vegetable garden, though of the greatest importance as respects forwarding early crops, is by no means limited in its beneficial effects to these, as everyone would be ready to admit if, after a severe gale in early autumn, they would take the trouble to examine the effects that the wind had on such crops as Brussels Sprouts, Broccoli, and French Beans; a deep cavity at base of the stem will all too plainly show the injury that accrues from lack of shelter, and which, perhaps, may serve as an incentive to the devising of ways and means to prevent a recurrence of the damage. Possibly, in many instances, this may be a difficult matter, and those who experience that difficulty will probably be all the more careful, if ever called upon to select a site for a kitchen garden, to secure shelter, which is hardly less important than good soil.

Brussels Sprouts sown in March under glass are now, I find, 3 feet high, and studded with sprouts, which are simply Cabbages in miniature. The frost has affected them severely, browning them as if fire

had passed over them; while in the self-same plot we have also Brussels Sprouts sown outside in the first week in May, green, fresh, and beautiful to the eye. Large knobs of Brussels Sprouts are by no means wanted; they should be about the size of an ordinary Walnut. The large size of the March-sown stock renders it simply uneatable, whilst the produce of those sown in May is at the present time passable. In order to have a few early Brussels Sprouts, they should certainly be sown in March, but for the main crop May, with me, is the proper month in which to sow.—R. GILBERT, *Burghley, Stamford*.

BOX EDGINGS IN KITCHEN GARDENS.

THERE is always a danger of anyone who suggests new or economical practices where extravagance has been the rule being taken to task for his interference, and those who have suggested that trim Box edgings, kept up at great expense round Potato and Cabbage quarters, &c., were an incongruity and a waste of money, seem to be regarded by some in this light. We are assured that Box edgings in kitchen gardens are the best, and that the labour of keeping them is not great. Now, here is an example that could be multiplied by the score. In the establishment in which I first learned, the kitchen garden was a mile from the house, and as the proprietor and his family only resided there for six weeks or two months in autumn, and did not see the kitchen garden above two or three times at the most during their stay, it could not be said that the Box edgings contributed greatly to his enjoyment, but there was no doubt of their cost to him.

In that kitchen garden there were 4 acres inside the walls and as many outside, and the extent of the Box edgings was about 8000 feet—getting on for 3000 yards! Imagine the cost of laying, keeping, and trimming such an extent of edgings of that kind, and all for what? for an idea; for practically nobody saw them but the workmen, who were being continually cautioned to be sure and clean out the Box edgings first when they were digging the plots inside or cleaning the walks outside, and never to go over them with a barrow except on the "bridges," of which a supply was kept for the purpose. In the next garden I went to it was the same. Owing to depressed times both gardens are now practically shut up or turned into market gardens, and I fancy the Box edgings will not be so trim as of yore. Is there, I ask, a good kitchen gardener anywhere who desires some reasonable balance to be preserved between his debtor and creditor account for vegetable crops, who would in these days recommend such a garden as I have described to be furnished with Box edgings or any other as expensive? Kitchen gardens, pure and simple, seem to be under discussion, and it is of these I speak. In the days when proprietors had to depend on their kitchen gardens for produce of all descriptions it was different, but now, when almost everything can be furnished cheaper than it can be grown at home, considering the uncertain and fluctuating nature of the demand in private places, our kitchen gardens must be managed on a different footing; and as reduction of expenses is the order of the day, and likely to be for a long time to come, it behoves those who offer counsel on such subjects to consider well the position of affairs, and offer such advice as can be generally accepted.—S. W.

I am sorry to see Mr. Wildsmith (p. 239, March 12) oblivious of the fact that the best and prettiest of all edgings for either kitchen or flower garden are pieces of thin stone, in their natural cleavage, so to say. They get nice in colour and often mossy; are easily set, never offensive, and never any trouble to keep or form.—A HATER OF CAST EDGINGS.

Coloured *versus* white-skinned Potatoes.—I was recently invited to send a collection of half a dozen kinds of Potatoes to Ireland that their usefulness for desiccating purposes might be tested, two of which were coloured. Although the white sorts were such as would have been regarded as of first-class quality here—flesh white and mealy or floury—yet they seemed to have been found lacking body when subjected to pressure. Thus, it is evident that many

of our whitest, most floury, and most fancied Potatoes lack solidity as compared with some others. The coloured sorts, however, gave satisfaction, and are to be grown for further trial in the north of Ireland during the coming year. Both have semi-yellow flesh, and it is worthy of remark that not only are such Potatoes invariably the best flavoured, but give the most satisfying food. The Victoria has that quality somewhat; hence its undoubted superiority to all other field Potatoes some years since. The two kinds which passed the desiccating ordeal are The Dean and Bedford Rose, and it is worthy of remark that both are products of Mr. Fenn's Woodstock Kidney, that kind being the pollen parent. In spite of adverse accounts I have always regarded Woodstock Kidney as being one of the very best flavoured and cooking Potatoes in cultivation. It has two demerits—it is handsome, and thus got abused, and it is liable, because of the thinness of the skin, to disease; still it is a first-class parent. The chief object of the desiccating or preserving process is to furnish a concentrated form of Potato food for export, and is largely used in the army and navy when on foreign service.—A. D.

Duke of Albany Potato.—This kind is really a white-skinned Beauty of Hebron, and is one of the very earliest ripeners we have. It is of the usual American quality, which improves somewhat under English cultivation. Like the Beauty of Hebron, Early Rose, and similar early sorts, it is a difficult Potato to keep through the winter as seed tubers in bulk, as growth is inevitable soon after Christmas, and by the planting time have required much dis-budding. All such kinds should be stored only in baskets, boxes, or on broad shelves where the tubers can obtain ample air. A market grower just planting a quantity of the Beauty mentioned [that his stock had grown a good deal, and therefore of necessity was much deteriorated as seed.—A. D.]

Broccoli, Penzance Early White.—Many who read about, or have an opportunity of seeing, some of the large consignments of Cornish Broccoli, notably those sent from the Penzance districts, and which reach various parts of the country, are naturally easily led to believe that this superior earliness and quality must partly result from sowing seed of an extra good variety. The consequence is, a trial is given to the Penzance Early White. They then discover that Cornwall is a highly favoured county and that what may be hardy and good there is delicate and useless in colder districts. I have received both seeds and plants in quantity direct from market gardeners in the neighbourhood of Penzance, and have also tried seed obtained from reliable London seedsmen, and in each instance a fair trial was given. It proved to be of very vigorous growth, forming long, easily crippled stems, a very moderate frost completely spoiling the breadth. It is not so hardy as Veitch's Autumn even, and if this proves to be the case in our comparatively warm county those farther north ought certainly not to waste either time or space in cultivating it. Not many Broccoli of any sort have survived the late winter, and only those planted on firm and rather high ground are alive in this district, but no method of culture could have saved the Penzance.—L. *Somerset*.

The Puritan Potato.—From Mr. Peter Henderson, of New York, has come per mail a single tuber of this new American Potato. As is so commonly the characteristic of the breed, it is long, narrow, and much beset with eyes, though shallow ones. Upon this tuber of about 3 ozs. weight I count some sixteen to eighteen eyes, all more or less showing growth. Of course this feature enables tubers to furnish numerous sets, but, on the other hand, it promotes early exhaustion, as, instead of but one or two shoots breaking only, as is the case with so many of our English kinds, when all the eyes break the absorption of the nutriment of the Potato is rapid. I think that characteristic has helped to render American Potatoes less popular with us than our own kinds are. The Puritan is a white-skinned kind, and shall have a fair trial.—A. D.

Triumph Pea.—This is, no doubt, one of the coming Peas. It is a wrinkled Marrow of moderate height, and pods wonderfully. The pods are long, large, and handsome, and full of Peas. I saw a quan-

tity of the best new Peas growing in the large, open kitchen garden at Glenhurst, Esher, last year, where all were staked, and did as well as Peas possibly could. I regarded Triumph, however, as one of the very best; it cropped grandly. It has also high Marrow flavour. In time I should expect to see this Pea popular amongst market gardeners, but it must be conceded that no such fair test of the merits of any Pea can be furnished in a field as when staked and grown in good garden soil. The advertised pictorial representations of Pea-pods are often amusing, especially when some are shown open with Peas so large in them, that they could not possibly have existed in the pod when closed. Illustrations of this kind rather tend to detract than otherwise from the merits of what may be really excellent things.—A. D.

KITCHEN GARDEN NOTES.

BEEF.—It is much too early to sow other than the smallest patch possible, by way of continuing the supply in cases where the store is getting low. As a matter of course, the risk of seeding instead of bulbing from such early sowing is great, and is much influenced by the weather, which if cool and moist throughout April and the first part of May, there will be very little disposition to premature seeding, but opposite weather conditions will have the contrary effect. We have a good store, and shall therefore not require to sow till the middle of next month, but the importance of the crop necessitates that foresight and the reservation of a suitable plot of ground should be exercised. Ours is destined to occupy part of the ground, that was—part still is—cropped with Celery, and which will be trenched deeply, but no admixture whatever added. We shall then get depth of soil and well enriched by the thorough incorporation of the manure that was used last year for Celery. Smooth, fangless roots of medium size are those that are most valued, hence rank or fresh manure is very unsuitable, but, on the other hand, if the soil be very poor—as we have practically tested—the produce is so hard that no manner of cooking can make it soft and palatable. From the foregoing it will be observed that a good deep, but not recently manured soil is that to be preferred, whether light or heavy—so long as the latter is well drained—it matters little, except that at sowing time a little lighter soil should be scattered in the drills of the heavy soil, and the seed be covered with the same. Sowing should be done in drills a foot apart, and the seedlings be thinned at to 9 inches as soon as it is safe to do it. The only variety that we grow is Dell's Crimson, a sure indication of its superiority being the numerous synonyms under which it is grown.

PEAS AND POTATOES.—Those raised in heat we have now planted out on a south border, and have effectually screened them with boughs from the cold north-easterly winds that never fail to annoy us by their prevalence at this season of the year. Birds are about as annoying and more destructive than the winds, and in self-defence we give them unappreciated condiments—to season the tender young Pea shoots that they are so partial to—in the form of tobacco powder, soot, and lime. We have to adopt the same measures with Peas now coming through the ground, as also with Radishes that are sown between the rows of Peas. The weather has tempted us to plant more Potatoes, but having visions of early May frosts, that in previous years have cut down the haulm to the ground line, we intend to resist all further temptation in that direction till April; but meantime, by way of advancing and keeping the work well in hand, the drills will be drawn, and on ground that needs additional stimulants we shall sow in the drills whatever artificial manure we can command. We have a large piece of gravelly land that force of circumstances compels us to crop with Potatoes year after year; and a few years back being driven as it were to desperation for want of manure, after the Potatoes were planted we gave the whole piece a dressing of salt, quite as much as is usually applied to Asparagus; results—as fine a crop of Potatoes as anyone could desire.

My theory in respect of the salt proving so beneficial is that the soil, though deep, is full of stones—in fact, nearly pure gravel—and burns up quickly in a hot season, but the moisture given off by the salt having a cooling effect on the stones, and through them on the whole ground, consequently in the hottest weather the soil remained cool and moist.

AUTUMN BROCCOLI AND SAVOY.—There is nothing like paying dearly for one's mistakes to make us the more careful in future; over-anxiety to have everything in its proper season sometimes ends in having nothing. Such has been our fate in respect to Broccoli by sowing too early, that the plants got stunted before we could find ground to plant them out, which, as a rule, cannot be had till early Peas, Potatoes, Spinach, and early salads are off the ground, and if one may use the expression, it is by taking the measure as to when that is likely to happen that shall determine the time of making the general sowing. At present only a very small sowing of Broccoli should be made for early autumn supplies, and the varieties we have found most constant at that season are Snow's, Veitch's Protecting, and Autumn Giant Cauliflower, the latter being in my opinion far superior to either of the Broccoli, but, unfortunately, it is not so hardy; if it were, there would be little need of growing any other variety, as by sowing at various times a continuous supply could be had all the year round. Sow in light soil and in drills on a sunny bank, and protection from birds with netting should be put over as soon as sown. To have Savoys in time for the grouse in August, which in some parts is considered the proper thing, a sowing of Early Dwarf Elm should be made now. There is a small early variety named Tom Thumb that hearts very early, and where ground is limited, that is a good variety to grow on any bit of spare border or under the shade of fruit trees. It need not be planted further apart than 9 inches each way. The general sowing of Savoys need not be made for another month or more.

BRUSSELS SPROUTS.—If these have not been raised in heat, no time should be lost in making the principal sowing on the best ground and most open spot that can be spared. To have stems of a less length than 30 inches is very poor cultivation indeed, for without length of stem neither quantity nor hard sprouts can be had. We always reckon on getting stems a yard long at least, but to do this the plants are raised in heat, and are now pricked out in cold frames and will be ready for planting out early next month. The ground is ready, except drawing the drills, which will be some 9 inches deep, which plan in part prevents the necessity of ridging up the stems higher than is usual for ordinary Cabbage. Reading Exhibition is our favourite variety, and is the most productive I have ever grown. The sprouts are always firm, of medium size, and the quality of the first order.

TRANSPLANTING AND SOWING ONIONS.—Those transplanted a few weeks since have felt the effects of the severe frost; we have had them re-firmed in the ground, and they may now be expected to make a renewed attempt at growth. Those now to be transplanted are stronger, and in the mellow, rich soil they are to be planted in we expect to have fine bulbs at a very early period. We allow a space of 14 inches between the rows, and of 9 inches from plant to plant. The ground has been consolidated by rolling, and the dibber will do for the final firm pressing of the roots into the soil. Though already rich, we have been extravagant enough to give the ground a dressing of bone dust, and soot will be dusted all over after the Onions are planted. Our main crop is sown, and if the present dry weather continues we shall run the roller over the ground before the seedlings emerge from the soil. This pressure we do to ensure immediate contact of every seed with the soil rather than from any benefit that Onions are supposed to derive by the ground being hard.

VEGETABLE FORCING.—These cold winds necessitate constant watchfulness in respect of renewal

of linings to frames and nightly covering up. Potatoes should have additional soil as roots are seen near the surface. Thin out Radish and transplant Lettuce and Cauliflowers that were sown with the Potatoes to other frames or warm borders; none of these temporary crops should ever be allowed to injure the principal ones. Other batches of Seakale and Asparagus should be put in according to the demand. The crowns of the former ought now to have heaps of ashes or Cocoa fibre placed over them; the Kale thus produced is, I think, sweeter than that which is forced. There will be no need to lift any more Rhubarb, as it will come right well if pots or boxes are placed over the roots without any other covering.

GENERAL WORK.—Lifting, replanting, and repairing Box edgings, turning gravel walks, adding a surfacing of new gravel, and rolling them till hard to the tread. There is just the same measure of satisfaction to be extracted from perfect kitchen garden walks as from those of the more ornamental parts of a garden, and all heavy wheeling being over for the season, now is the time for all that have not experienced that feeling to make a bid for it by setting about the work in earnest. Removing mulching from Globe Artichokes, and forking between the rows. The winter has caused some blanks, and there are no suckers, so we shall have to hasten on the seedlings that were sown in heat. W. W.

FERNS.

W. H. GOWER.

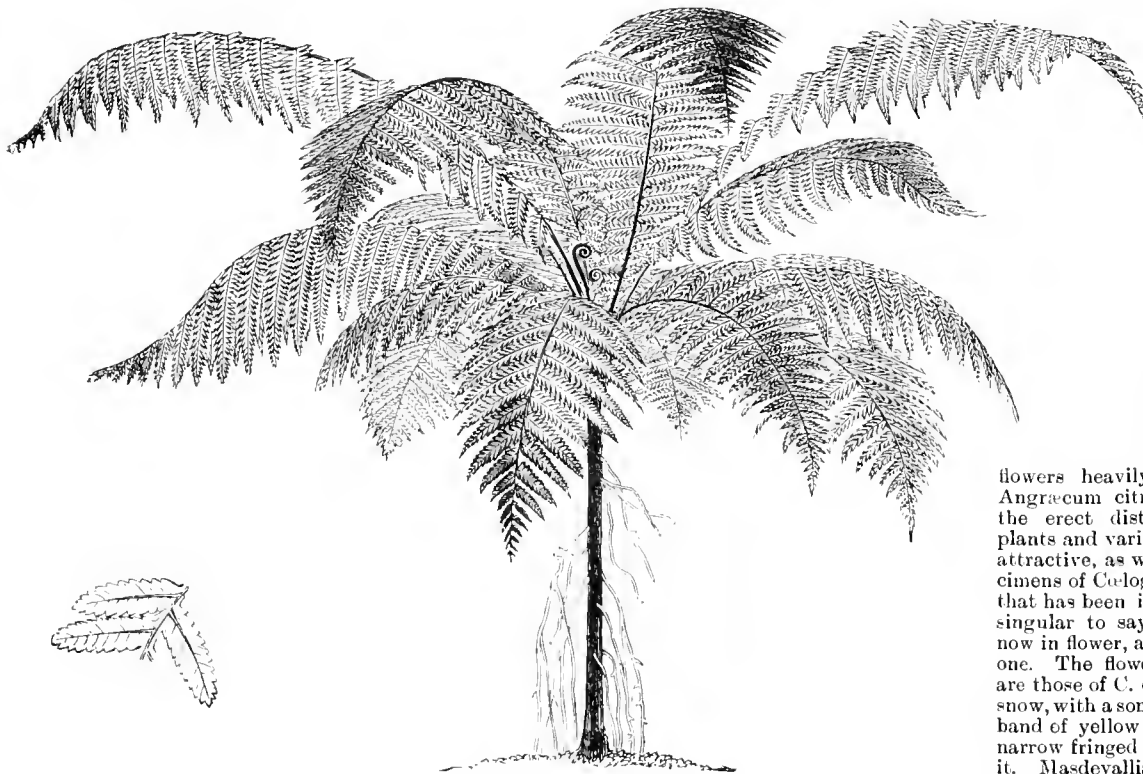
THE TODEAS.

This genus of Ferns comprises a few plants nearly allied to the Royal Fern (*Osmunda regalis*). They are found in South Africa, Australia, New Zealand, and in the Fiji Islands. They form two distinct groups, one having large and bold coriaceous fronds, the other having fronds thin and pellucid in texture; the latter are indeed placed by some authorities in a separate genus, that of *Leptopteris*, but there is nothing but the difference in texture to distinguish the two genera. *T. africana* is the plant upon which the genus was established. It was introduced into this country from the Cape of Good Hope about the year 1805. This plant had been previously named by Linnaeus *Acrostichum barbarum*, but as it does not exist in Barbary the specific name seems inapplicable; different authors have named it *Osmunda barbara*, *O. barbata*, and *Todea barbara*. The well-known Australian explorer, Allan Cunningham, sent home from that country a similar plant under the name of *T. australasica*, also known as *T. rivularis*, but the Australian and African plants are now considered to be identical. Notwithstanding this decision, however, under cultivation the African plant does not attain to anything near the proportions that the Australian plant assumes, nor is it such a vigorous grower; its fronds are more triangular in outline, and the plant altogether is more spreading in habit. The Australian plant produces fronds from 3 feet to 6 feet in length, or more, lanceolate in outline, twice-divided (bi-pinnate), the pinnae being thick and leathery in texture and some 9 inches long; the basal half of the segments (pinnules) bear a dense mass of chestnut-red sori, which form a broad central stripe of colour on the frond. In damp ravines in Victoria this plant attains gigantic proportions, masses of it having been sent to Europe by Baron Müller measuring some 6 feet in height, more than that in diameter, and over a ton in weight; some fine examples of it exist at Kew. This Fern is not, however, confined to Victoria, as some years ago we received specimens of it from Queensland, where it was collected by Mr. Walter Hill in, we believe, the vicinity of Rockingham Bay. The dimensions here given of this *Todea* need not deter amateurs from adding it to their collections, for such gigantic masses as those just alluded to must be of great age. Young plants, although they soon become handsome specimens, are many years before they outgrow the accommodation of an ordinary sized Fern house. *T. (Leptopteris) hymenophylloides*, also known by the name of *pellucidata*, produces fronds triangular in outline from

12 inches to 18 inches long, and from 6 inches to 9 inches wide in the broadest part; they are, however, more frequently of smaller dimensions; the fronds, which are twice divided, have elegantly cut segments, whilst the texture of the pinnae is thin and membranous, and the colour deep green. It comes from mountain ranges in New Zealand. *T. superba* is also a New Zealand plant, popularly known as the Ostrich-feather Fern from the resemblance of its fronds to the curled plumes of that bird. In outline it is vase-form; the fronds are some 18 inches or 24 inches in length, tapering at each end; the points of the segments curl upwards, giving the fronds a peculiarly beautiful crispate appearance; they are bright green when young, but become dark green when old. *T. intermedia*, originally introduced by Messrs. Rollisson, is a magnificent Fern, partaking as it does of the characters of both the two previously named kinds, but it does not possess the vase-like form of *superba*, although its fronds are somewhat recurved; they taper at both ends, like those of the last-named plant, and, like it, are slightly crispate, but in other respects its vivid green fronds possess the characters belonging to *hymenophylloides*. Some fine examples of the

moist spots in a tropical fernery, and are equally at home in a cool house; we have seen them growing vigorously in an unheated pit, with the protection of a mat in sharp, frosty weather; whilst as ornaments in a Wardian case in dwelling-rooms, the filmy-fronded kinds are unequalled. Wherever grown, however, the sun's rays should never reach them, but do not shade them with green glass, or the beauty of their elegant fronds will be destroyed. These plants enjoy moist air; their fronds like to be frequently bedewed with the syringe, whilst the roots must be kept wet, but water must never stagnate about them. The soil should be good, spongy peat, a little loam, and some sharp river sand.

Hemionitis Mulleri.—This rare plant, which belongs to the *Sericonitis* division of this genus, will prove extremely ornamental in small hanging baskets. It has pinnate fronds about a foot in length, the pinnae being oblong, and densely clothed beneath with silky, squamose scales, but less so on the upper side, which is deep green. The fronds bear some resemblance to those of *Notholena trichomanoides*, but the venation is reticulated. It is a native of the



Todea Wilkesiana.

three plants last named may be seen in the cool Fern house at Kew, where, however, their beautiful tints are completely ruined by being encased with green glass. *T. Fraseri* resembles the last in general outline; its pinnae are alternate, the segments more distant, and the lip finely divided. It comes from New South Wales. *T. Wilkesiana* is a very beautiful plant, as a glance at the annexed illustration will show. It appears to be common in wooded districts of the mountains of Somosomo, in the Fijis. It was discovered some years ago by a United States exploring expedition, and named in honour of its commander, Commodore Wilkes; whilst for its introduction to this country we are indebted to the Messrs. Veitch. It usually grows from 3 feet to 5 feet in height; the stem is very slender, not larger than an ordinary walking-cane, but they are occasionally stouter. The fronds, which are twice divided, are some 2 feet in length; the pinnae are alternate, and about 9 inches long, the segments being winged to the stem, membranous in texture, notched on the edges, and deep green.

Todeas are not difficult to cultivate; they thrive in

northern parts of Queensland, and is named in honour of Baron Müller, director of the Botanic Gardens, Melbourne. We recently noted this novelty under the name of *Gymnogramma Müllerii* in the Kew collection.

Ficus repens.—I quite agree with "W. I.'s" remarks as to the hardiness of *Ficus repens*. During the summer of 1881 I planted out two from 3-inch pots, one on each side of the front door of a mansion in Cornwall. Though the following winter was a severe one, and many plants were injured by frost and cutting winds, the *Ficus* passed through it and the three following safely, and I have no doubt but that they are still doing well. Cornish winters are mild as a rule, but these plants had no exceptional advantages, for they faced due east and had a bleak position. They were not protected in any way, being only planted for summer effect, and were not expected to live through the winter. A young *Ampelopsis sempervirens* growing on the same wall seemed to suffer more than the *Ficus*, though neither was injured to

any great extent, the tips of the shoots only being slightly browned. I think it must be hardy enough to pass through an ordinary winter in any part of England.—C. T.

ORCHIDS.

W. H. GOWER.

ORCHIDS IN BLOOM AT KEW.

THE houses devoted to Orchids at Kew are just now very gay, and the plants are in a fairly thriving condition. Amongst the best kinds now in bloom are some good examples of the fine old *Dendrobium fimbriatum oculatum*, with numerous pendent racemes of rich orange-yellow flowers, the lip being beautifully fringed and heavily blotched within with velvety-like black; some excellent forms of *D. nobile* (Pierardi), the ivory white *Jamesianum*, and the violet-scented *heterocarpum*. Amongst other species were some excellent varieties of *Wardianum*, which the authorities still consider a variety of *Falconeri*; the delicate and beautiful *crepidatum*, and a white-flowered form of the Australian *Kingianum* may likewise be seen here. The lovely, but very fugitive flowers of *Sebralia sessilis* were numerous, as were also many forms of *Lady's Slipper* (*Cypripedium*), the principal kinds being *C. villosum* and its near ally, *Boxalli*. Associated with these were also *C. porphyreum*, *Roezli*, and *Harrisianum*, and good varieties of *C. Leeanum*, *concolor*, and *venustum*. Moth Orchids (*Phalaenopsis*) were not numerous, but one plant, *P. Stuartiana*, was bearing a branched spike bearing between forty and fifty flowers, large in size and beautifully spotted. *Aerides vanderum*, with its pure white flowers, *Saccolabium giganteum* and *bellinum*, with large flowers heavily blotched, *Vanda tricolor*, and *Angraecum citratum* were the most noticeable of the erect distichous-leaved kinds. Numerous plants and varieties of *Lycaste Skinneri* were very attractive, as were likewise some well-grown specimens of *Celoglyne cristata*. *C. elata* is a species that has been in the collection many years, but, singular to say, has not become popular. It is now in flower, and should commend itself to every one. The flowers are not waved on the edge, as are those of *C. cristata*; they are white as driven snow, with a somewhat crescent-shaped, transverse band of yellow on the middle of the lip and two narrow fringed lines of crimson running through it. *Masdevallias* now in flower are *igneae*, *Lindeni*, *Chelsoni*, *triangularis*, and *cucullata*, the latter with large blackish purple blossoms; and the beautifully-spotted and dotted *melanopus*.

Amongst *Cattleyas* and *Laelias* were examples of *C. bogotensis* and *L. harpophylla*, which appears to be a wonderfully free bloomer, although we cannot believe it to be a variety of *L. cinnabarina*, whilst another similarly coloured flower is *Ada aurantiaca*, now in great beauty. *Odontoglossums* were represented by good varieties of *triumphans*, *Halli*, *Cervantesi*, *Erstedii majus*, *crispum*, *blandum*, and *luteo-purpureum*, whilst several other kinds of a somewhat inferior character need no comment. Miscellaneous and less well-known Orchids were represented by *Sarcophilus Hartmani*, a species from Australia with distichous, deeply channelled leaves some 6 inches long, and bearing a scape about a foot in length, with a raceme consisting of about two dozen flowers. The sepals and petals are waxy-white, the sepals being slightly the broadest, and transversely barred at the base with dotted lines of crimson. The lip is very small. *Oncidium aureum* is a distinct species with dull crimson sepals and petals, and a broad, deep orange-yellow

lip. *Ponthieva maculata* is a most elegant and distinct plant of terrestrial habit about a foot in height; the leaves are somewhat oblong-acuminate, pale green, and covered all over with long white hairs. The scape is terminal and erect. The flowers are not large, but numerous. When reversed the lateral sepals stand uppermost and form the chief attraction; these are joined at the edges for about half their length (connate), white, conspicuously marked with round, dark green dots, and fringed round the edges with white glandular hairs. *Eria obesa* is a small-growing plant suitable for a block. It is one of Parish's discoveries in Burmah some years ago; its pseudo-bulbs, which are short and much swollen, produce numerous trusses of white flowers. This and the curious *Mormodes Colossus* close the list. If this is the true *Colossus*, it certainly is not well named, as we have several others much larger, both in pseudo-bulb and flower.

Dendrobium nobile.—Just as a reminder of the usefulness of the old *Dendrobium nobile*, I send you a photograph of a small plant of it in flower here at present.—A. McDONALD, *Tayside Gardens, Perth.*

* * A photograph of a profuse-blooming specimen. We hope the art of photography will be more and more used in gardens to preserve souvenirs, so to say, of this and many other pretty plants in interesting states. Other things that men collect are always, or nearly always, the same, but we may never again see plants in the same condition of beauty owing to a variety of circumstances, and therefore the art of photography as a means of preserving some of our garden results is of the greatest value.—Ed.

Cypripediums at Studley House.—During the last twelve months a choice collection of Orchids has been brought together here by Mr. F. G. Tautz. The special favourites are the Ladies' Slippers, of which there are 160 species and varieties, forming in its way quite a unique group. This genus does not contain richly coloured or showy species like *Cattleyas* or *Dendrobiums*, but it nevertheless contains some interesting plants, many of which are beautiful, and the new hybrids recently raised and introduced by Messrs. Veitch and others have quite revolutionised the genus. One of the showiest species, and a recent introduction, is now in flower, viz., *C. callosum* from Siam. It is handsomer than *C. Lawrenceanum*, to which it bears considerable resemblance. The flowers, which are very large, are 5 inches across the lateral sepals; the latter are greenish with rosy tips and dark spots on the upper margin; the dorsal sepal is 3 inches wide, the upper portion being whitish and red veined. *C. Argus* is a well-known and striking species for flowering in winter, and varies considerably, some having the lateral sepals more densely blotched and spotted with reddish chocolate than others. *C. Peteri*, a Bornean species, was opening its flowers; it is allied to *Dayanum*. *C. concolor* was also in flower. *C. insigne biflorum* is a distinct and pretty form of this good old species; the greenish dorsal sepal has a white margin, and is very thickly blotched. *C. Dautleri* is merely a form of *C. Harrisianum*. *C. calurum*, one of the Chelsea hybrids, has been in flower all the winter, and a most useful species it is. *C. Sallieri*, which is pretty, is a recent hybrid between *C. insigne* and *C. villosum*; it seems to have caught the characteristics of both parents. *C. calophyllum* also bears evident traces of its parentage, viz., *C. barbatum* and *C. venustum*; the dorsal sepal is white with a rosy tinge, and is marked with greenish lines. *C. Williamsi*, recently alluded to in THE GARDEN, is also in flower. Many of the choicest species and varieties are not in flower, but the plants are in good health, and in a year or two will be very attractive.—J. D.

Dendrochilum glumaceum.—This is a member of a small genus of Orchids found growing upon the branches of forest trees in the Malay Islands. The generic title has recently been altered by Bentham to *Platyclinis*, which certainly has no more agree-

able sound than *Dendrochilum*, and we doubt if it will be readily accepted by Orchid growers. The *Dendrochilums* are all plants of dwarf habit; they have small pseudo-bulbs which support a solitary leaf, and the flowers individually are small and borne on long, slender, pendent racemes, arranged in a two-ranked fashion. *D. filiforme*, which blooms in summer, has long, slender racemes of golden yellow flowers, and is popularly known as the Golden Chain Orchid; those of *D. glumaceum* are greyish white, and yield a grateful perfume, somewhat resembling that of Hawthorn and Heliotrope mixed. This species is grown largely by Sir Trevor Lawrence, in whose collection we recently observed it in great perfection.

Orchids at Wimbledon House.—Flowers are largely grown in these gardens for the special purpose of cutting, as Sir Henry Peck delights to distribute them amongst the poor in the sick wards of the London hospitals, and a goodly stock of Orchid blooms now largely contributes to the supply. We observed at the time of our visit a houseful of *Cologne cristata*, the plants being literally covered with hundreds of their lovely pure white flowers. Numerous plants of *Lycaste Skinneri* are also now blooming profusely; and so are *Phaius grandifolius* and *Dendrobium nobile*. The last named, although an old variety, is eclipsed in point of beauty by but few, even in these days of great introductions. *Odonoglossum* are also largely grown, such kinds as *Alexandrae* (crispum), *Pescatorei*, *gloriosum*, and *Rossi majus* being now in flower, together with several of the bright-coloured *Masdevallias*, such as *ignea* and *Harryana*. *Cypripediums* are grown in quantity; several kinds have been cut, but there are still some fine forms of *villosum*, *venustum*, *Stonei*, and numbers of the beautiful white *niveum*. *Dendrochilum glumaceum*, although not a showy plant, yields a delicious perfume. The plants are grown in hanging baskets, and appear to be thoroughly at home in that position. We also noted a very fine form of the Duke of Devonshire's *Dendrobium* (*D. Devonianum*), which is perhaps the most exquisite member of the genus in cultivation. It has, however, to some extent lost popularity on account of its blooms being somewhat fugitive.

SHORT NOTES.—ORCHIDS.

Cattleya Trianae Vanneriana.—This variety, exhibited on the 5th inst. at South Kensington, deserves more than a passing notice. It flowered for the first time in Mr. Sanders' collection at St. Albans, and also in that of Mr. Vanner, in compliment to whom it is named. The sepals have each a distinct orange stain in the centre, and there are on all, or nearly all, the sepals marks of the rosy purple colour from the front of the lip.—J. D.

Cattleya Trianae and C. Percivaliana.—Many fine specimens of these two beautiful *Cattleyas* are now in great beauty in Mr. Jacomb's collection at Stamford Hill. They have been flowering since Christmas, and before their blooms fade other varieties of *Trianae* will be open. These will bridge over the time until specimens of *C. Skinneri* and *C. Mendelii* open their flowers. They are grown in a moderate and enjoyable temperature, and are not drenched with water, a state in which many keep their plants, though such treatment results in disappointment.

Cattleya Warszewiczii superbissima.—This variety, now in flower in the collection of Mr. De B. Crawshaw, at Sevenoaks, has also a slight stain of yellow on the sepals, but not to the extent of Mr. Vanner's plant. The sepals and petals are of a very soft rosy tint. The lip, too, is rose-coloured, with a yellow stain in the throat. The flowers, which are well formed, measure quite 8½ inches across. The petals are 2½ inches by 1½ inches. The true *C. Warszewiczii* delicate is also in flower in Mr. Crawshaw's collection. It is a very pretty form, but bears no comparison with the variety first named.—J. D.

Trichoglottis fasciata.—This rare and curious plant somewhat resembles in appearance and habit of growth *Benanthera coccinea*, but it is said to be nearly related to the genus *Phalenopsis*. Its racemes, which are lateral, each bear some four flowers, measuring about 2 inches in diameter. Their sepals and petals, which are nearly equal in size, are greenish yellow transversely banded with reddish brown. The three-lobed lip is white, tinged with mauve, and bears a few spots of brown near the edges; a pair of blunt, horn-like appendages stand out at right angles from the base of the front lobe. It is a native of the Malay Islands. We recently noticed this remarkable Orchid in flower in Sir Trevor Lawrence's garden at Dorking.

Rating nursery ground.—A short time ago the district in which I am located was, by an extension of the boundary, enclosed in the borough of Bury. This, of course, has put me under a different system of rating. I have just had a general rate sent in to me, in which the authorities seek to charge me on the full annual value; whereas, as I

understand, nursery grounds, market gardens, and agricultural land are all rated at only one-fourth their annual value. Before contesting the point, I should like, if possible, to ascertain whether my supposition is correct, and I should esteem it a favour if any of the readers of THE GARDEN can afford me any information on the point.—C. A.

NOTES OF THE WEEK.

We have received from the director of the Royal Gardens, Kew, a very comprehensive list of the seeds of hardy annual and perennial plants grown in that establishment.

Spring flowers from Cork.—We have received from Mr. Hartland two small bouquets from the outdoor garden, consisting of *Grape Ilya* both and *Capax Dafodilli*, backed by a few sprays of an *Azara*—a charming combination; also his first bloom of *Narcissus Horsfieldi* from the open border. *Capax* is quite a gem in the way of early *Dafodilli*—pale yellow and sufficiently double without being formal.

Clerodendron fragrans.—This stove plant is not remarkable for brightness of colour, but the fragrance of its clusters of white-pink-centred flowers renders it a desirable plant to grow for winter bloom. There is a double variety of it, but this is not more fragrant, though perhaps showier and more persistent in bloom. Both are in flower in the stoves at Kew.

Dichorisandra cuprea.—This is an ornamental-leaved member of the genus *Dichorisandra*, most of which have either blue or violet coloured flowers, and are natives of Brazil. They belong to the Spiderwort family (*Commelynaceae*), of which *Tradescantia* is a familiar example. The leaves are lanceolate-acuminate, buff-coloured, and ornamented with a broad central stripe of purplish black, which traverses the entire length from base to apex. It may now be seen in one of the stoves at Kew.

Restio subverticillata.—This is the name given to a very curious tree-rush-like plant of handsome appearance, which is now in flower in the Cactus house at Kew. It is some 4 feet in height, has dark green, much-branched, slender, rush-like stems, bearing upon the points racemes of flowers enclosed in long, dark brown bracts, which give the plant quite a unique and elegant appearance. It is a native of the Cape of Good Hope, where its stems are used for brooms, and it is also known by the name of *Willdenovia teres*.

Narcissus cyclamineus.—As noted by Mr. Englehart in last week's GARDEN, I find that seeds of *N. cyclamineus* planted the first week in July germinated the 1st of February, and all came up within a few days. I cannot understand why the desire is so great to find out its parentage. I cannot think either *triandrus* or pseudo-*Narcissus* have anything to do with it, as it has neither habit nor appearance of one or the other, and until some good reason is given let it remain what it professes to be—a long-lost species. It has been in flower now more than a month, and the blooms are as fresh as the day they first opened. I do not find the natural habitat of *pulchellus*. I have several kinds of *triandrus* of other than the type from Portugal, and possibly *pulchellus* may be amongst them, but they have not yet bloomed.—OCTAVIUS CORDER, *Norwich.*

Spring flowers at Kew.—The display of forced spring flowers and Cape and New Holland plants at Kew is just now very good, although we do not admire the system carried out there of grouping in families for effect. One of the great features in the greenhouse is the display of *Lachenalias*, which are admirably flowered, the principal kinds being *tricolor*, *pendula*, and *Nelsoni*, the latter having large tubes of a rich deep yellow. *Lachenalias* may be grown either in pots or in hanging baskets; they require a season of rest after the leaves are dead, and then they may be potted and started into growth from time to time as may be required. Their long spikes of tubular flowers are very conspicuous and last long in perfection, and, in addition to their blooms, the leaves of some of the kinds are beautifully variegated. The yellow *Primula floribunda* is neat and effective, whilst the bright yellow sprays of *Acacia linearis* and *leprosa* are very charming. Numerous well-bloomed plants of various sizes of *Azalea amoena* give a warmth of colour, which is toned down by various *Rhododendrons*, the most conspicuous amongst which are *præcox* and its variety *rubra* and *Countess of Haddington*. Of this latter kind, with its large bell-shaped blooms, one specimen alone bears several

hundred flowers. Intermixed with these were Cyclamens in endless shades of colour, numerous kinds of Eriostemons, Dentzias, Grevilleas, and Camellias. Amongst the latter we noticed a well-flowered specimen of the old-fashioned reticulata, a magnificent plant of which exists in a Thames-side garden close by at Ilam. Epaerises were plentiful, their waxy tubular flowers varying from pure white, through all shades of rose, pink, and red, up to brilliant scarlet. Cinerarias in various shades and well bloomed are always welcome at this season; as are also the bright colours and agreeable perfume of Hyacinths. With these were associated Tulips and such like plants; also various kinds of Indian Azaleas, Eupatoriums, Callas, and numbers of Rhododendrons of the jasminiflorum section.

Narcissus Ard-Bigh (Irish King).—I received bulbs of this last autumn from Mr. Hartland, Cork, and it is so distinct, that I offer a few remarks about it. Planted on the same day with pallidus præcox and kept in a cold house, it has bloomed a week earlier. It is a very fine form, quite as large as Emperor, but much more robust and taller; the trumpet and perianth are both of a deeper colour, the leaves very stiff, and of a rich glaucous green. Its early and very free flowering, robust habit and general appearance will command attention and appreciation wherever it is introduced.—OCTAVIUS CORDER, *Norwich*.

The proposed gardeners' orphanage.—I am desired to state that, as soon as arrangements can be made, a meeting of gardeners and others who have signified their interest and approval of the proposition to establish a gardeners' orphanage or fund for the orphan children of gardeners will be held in London, to discuss the matter generally, and to take what steps may seem necessary in furtherance of the objects in view. In the meantime, it would facilitate matters greatly if those who are disposed to support the proposition would kindly send in their names, with any suggestions on the subject they may be pleased to submit, either to Mr. C. Penny, The Gardens, Sandiogh, King's Lynn, or to Mr. A. F. Barron, Royal Horticultural Society, Chiswick, Secretary *pro tem*.

Bentham's Cypress.—There are not many tender Conifers worth growing in pots in cool green-houses, but *Cupressus Benthami* is certainly suitable for that treatment, as it is a most elegant pot plant, and at this season, when in flower, particularly attractive. There is now a plant of it in the temperate house at Kew about 5 feet high, bearing such a profusion of its tiny catkins, that it looks at a distance more like one of the Acacias. These cones of pollen-flowers are borne at the tips of the branchlets, and are of a pale fawn colour. The branches are long, very slender, and the twigs droop in a graceful way. It is a Mexican tree, growing on the mountains to as much as 60 feet high. It is quite a tender plant in this country, but for the sake of its elegance it is as worthy of pot culture as the Australian Araucarias.

Violets from Ireland.—In the last issue of THE GARDEN, mention of some fine Marie Louise and Comte de Brazza Violets being sent to you from the Cotswold Hills tempts me to send you some for comparison from the west of Ireland. I am also anxious you should see a kind I send, which is very like the Marie Louise, only a good many shades lighter in colour, and without the red in the centre. I had a few plants of Marie Louise left in a bed of Neapolitans, and after a year or so I found the plants in question, which I believe to be a cross between the two kinds. I took them up (the two or three plants) and kept them carefully apart, and they have remained quite true. I have a large frameful of them now, and they are to my mind more lovely than any other sort I have seen. I also send you some single Anemones, the seed of which I sowed last April. They flowered by the 1st of October, and have been in bloom ever since, frost and snow not seeming to dismay them in the least. I never had single Anemones do so well or blossom so constantly and profusely in mid-winter before. I may add that I have Marie Louise Violets blooming profusely on a north border without any protection. They have been in bloom since September last, but during frost and snow for about ten days they did not show much bloom. The Violets I send are all from cold frames, in rather an

exposed situation. Neapolitans bloom very well here planted under a south wall between fruit trees.—MRS. PERY, *Coolcronan, Ballina, Co. Mayo*.

* * A beautiful gathering of Violets, consisting of Neapolitan, Marie Louise, Comte de Brazza, and Coolcronan Hybrid, said to be a cross between Marie Louise and Neapolitan. The new variety is paler in colour than Marie Louise; the flowers are larger and better than those of the Neapolitan. There were also sent some very fine single Anemone flowers, showing that the climate suits them.—ED.

Isotoma hirsuta is a plant not without considerable value as a winter-flowering plant in a stove, and single blooms of it cut and arranged in the foliage make charming small bouquets, as the stalks are long and slender. It has a Gesneria-like flower, or rather like a small Foxglove; the colour is a glowing scarlet, and entirely covered with a velvety down. It is inclined to be straggling in growth, but this may be corrected by due attention to pinching and pruning. It is quite a stove plant, delighting in a warm and moist house, and it is in bloom now at Kew, and has been for several weeks past.

Corylopsis himalayana.—This extremely rare shrub is now in flower in the temperate house at Kew. It is a pretty and most interesting shrub, and a good deal like the commoner *C. spicata*, a Japanese species introduced about twenty years ago. *C. himalayana*, as its name implies, a native of Northern India, being found in the Khasya Hills and Bhotan, growing at from 4000 feet to 8000 feet above the sea-level. It may, therefore, prove as hardy as the Japanese species, though on account of its rarity it is not risked in the open-air collection at Kew. As in the rest of the species, it is leafless at flowering time. The flowers are produced in dense drooping spikes about 2 inches long. Their colour as well as the bracts is pale yellow and the flowers fragrant. The leaves are some 4 inches or more in length, roundish, and with prominent veins. There are but four species of *Corylopsis*, these being *C. spicata* and *pauciflora*, both from Japan, *C. multiflora*, a native of China, and *C. himalayana*. The genus *Corylopsis* is allied to *Hamamelis*, *Parrotia*, and *Fothergilla*, and the name was given on account of the resemblance in the growth of the shrub to the Hazel-nut (*Corylus*), but the similarity ends there.

Royal Horticultural Society.—At a meeting of the council of this society, held on the 8th inst., a draft memorial for submission to the Queen was read, and Sir Trevor Lawrence was requested to lay the same before Her Majesty at an early date. The memorial briefly reviews the history of the society since its foundation in 1804, and, after setting forth its intimate and influential connection with the progress of practical and scientific horticulture, refers to the beneficent influence which the late Prince Consort exerted over its fortunes, which have steadily declined since the removal by death of His Royal Highness from the presidency of the society, until in 1882, after years of continually increasing financial difficulties, the society, being unable to carry out the terms of its agreement with the 1851 exhibition commissioners, was compelled to give up possession of the gardens, and is now brought face to face with the grave problem, not only of how its future work is to be carried on, but even as to how its existence is to be maintained. The memorial, after alluding to the prestige of the society at home and abroad, prays Her Majesty to use her influence to obtain for the society a sufficient portion of ground on the South Kensington estate for a building to accommodate its committees, its valuable library, and its offices, together with the use of the conservatory and quadrants in which to hold its shows. The memorial, moreover, assures Her Majesty that the council of the society approach her with the hearty concurrence and support of the most eminent horticulturists of the kingdom, both amateur and professional, and in the firm conviction that force is added to their appeal, not only from the past history of the society, but also from the fact that the sphere and scope of its work are distinctly germane to the objects for which the land at South Kensington was bought.

Azaleas.—I am in trouble about my Azaleas, of which I have a fine collection. They have done well for some years past, and until lately. I am told that the cause of their look-

ing so badly is the water (given them during the drought of last summer), which is strongly impregnated with lime. The opinion and advice of some of your readers on the subject will oblige, as I fear I shall lose some valuable plants.—W. E. E.

Horticultural club.—At the last monthly meeting of this club, held on March 8, the usual discussion was opened by Dr. Masters, who alluded to the history and development of the Chinese Primrose as affording a remarkable illustration of the phenomena of variation independent of those produced by cross-breeding or hybridisation. The presumed causes and significance of variations were briefly alluded to. Some of the variations were apparently due to excessive or to diminished heat, light, or food supplies; others to reversion to a primitive ancestral state, presumptive evidence of which latter is derived from an examination of the course of development of the seedling plant. That hybridisation had played no part, in recent times at least, was shown by the fact that until lately the wild form of the plant was not known, and, moreover, that all attempts to cross-fertilise the Chinese Primroses with pollen from other species had hitherto failed. The plant as first introduced to this country was a cultivated form, which immediately manifested a tendency to vary, and in practice it was always grown as an annual. During the last few years, however, the true wild species had been found in the mountains of Y-Chang, in Central China, by several collectors, growing on bare limestone rocks, exposed to the sun, and with but a scanty supply of water. It is a perennial with a thick, woody, branching rootstock, covered with the remains of former leaves, and with an internal construction different from that of any known Primrose.

Daffodils.—Will anyone who has *Narcissus poeticus ornatus* now flowering in pots kindly send me a flower with pollen for hybridising?—G. H. ENGLEHART, *Applethorpe, Lincoln*.

Comte de Brazza Violet.—I send you two plants and a few flowers of Comte de Brazza Violet.—G. H. MORTONSON, *Lifton Park Gardens, Devonshire*.

* * Well-grown examples, healthy and bristling with flowers of large size.—ED.

MR. WILLIAM PAUL, of Waltham Cross, is announced to read a paper on "The Ancient and Modern Literature of Gardening" before the Royal Society of Literature, 21, Delfay Street, St. James's Park, on Wednesday, the 23rd of March, at 8 p.m.

Cyclamens.—From Messrs. Page and Sons, Teddington, we have received flowers of their strain of Cyclamens, the blooms of which are large and fine, and range from pure white to purple. In our notice of the last meeting at South Kensington, Messrs. Page and Sons were inadvertently alluded to as Messrs. Pope and Son, Twickenham.

Names of plants.—*Ancious*.—1, *Odontoglossum Edwardsii*; 2, *Hestrepia antennifera*; 3, *Laelia harpophylla*.—*Mascarene*.—1, *Angraecum Leonis*; 2, *Phajus irroratus*, pale variety; 3, *A. glaucum virens*.—*H. J.*, *Nottingham*.—1, *Lycaste piana*, typical form.—*J. C.*, *Try Bride*.—1, *Cornus* sp., cannot name without flowers; 2, *Jasminum revolutum*; *Camellia*, cannot identify; send again.—*G. S.*, *Scapularis*.—1, *Lachenalia glauca*.—*W. Sutton*.—*Myrsiphyllum asparagoides*.—*H. E.*—1, *Etonymus radicans*; 2, *Berberis stenophylla*.—*A. C.*—*Dendrobium bigibulum*, small flower, but very highly coloured.—*A. W.* (*Birmingham*).—Your flower is a very good form of the typical *Odontoglossum maculatum*.—*A. J.* (*Dunstable*).—The orchid flower is probably a form of *Maxillaria variabilis*; specimen insufficient.—*T. J.* (*Sunderich*).—1, *Trichomanes anceps*; 2, *Feca spicata*; 3, *Elaphoglossum Herminieri*; yes; all are found in Trinidad.—*Empireur*.—1, *Maxillaria grandiflora*; 2, *Oncidium cucullatum*; 3, *O. flexuosum*.—*Australia*.—1, *Eriostemon cuspidatum*; 2, *Epacris onomatocora*; 3, *Grevillea ericifolia*; 4, *Acacia lineata*.—*E. W. E.*—1, *Iris fimbriata*; 2, *Euphorbia Begeri*; 3, *Behnia reticulata*.—*H. W.* (*Southern*).—1, *Colax jugosus*; 2, *Oncidium sarcodeis*; 3, *Dendrobium luteolum*; 4, *Dendrobium nobile*, very dark form.—*A. J.* (*Manchester*).—From the second specimen of your Orchid, with imperfect description, we imagine it to be *Dendrobium speciosum*.—*T. H.* (*Norwich*).—1, *Correa speciosa*; 2, *Hemantthus natalensis*; 3, *Cyrtanthus Mackenii*.—*J. Simpkins*—*Steriphoma paradoxa*.—*J. W.* (*Manchester*).—1, *Odontoglossum Gerstadi majus*, very fine variety; 2, *Dendrobium crispatum*; 3, *Cymbidium Lowianum*, ordinary form; 4, *Celogene conferta*.—*Evany Form*.—1, *Aspidium Pica*; 2, *Pellaea cordata*; 3, *Adiantum folium*; 4, *Lindsea trapeziformis*.—*Dunstable*.—1, *Dendrobium fimbriatum*; 2, the variety called *oculatum*; 3, *Cypripedium coloratum*.

Names of fruits.—*W. H. W.* (*Abchurch Lane*)—Apple, Court Puddin Plat; Pear, Bezi de Quess i.—*W. C.*—Your morning Pippin is Bess-pool

BOOKS RECEIVED.

"English Tobacco Culture." E. J. Beale.
"Through the Fields with Limous." Mrs. F. Caddy, 2 vols.
Jarrod's "Norwich Almanac and Directory."

WOODS & FORESTS.

"YORKSHIREMAN."

FORESTRY NOTES.

TRENCHING FIR PLANTATIONS.—To anyone in the position of "S. N.," who inquires if this should be done, the answer is, most assuredly, "Don't," unless expense is no object. It will not pay to trench for timber in this country. Draining is needful in some cases, but that is all. We are aware that trenching has been adopted on some estates by foresters who do not appear to have calculated the loss which it entailed, but it is not justifiable, save under exceptional circumstances. The way trees will grow in apparently poor ground is wonderful, and ordinary trenching hardly affects them, because the roots penetrate the subsoil chiefly. We could name extensive tracts of shallow soil lying upon rock or poor, yellow brash that have produced good and large Oak for hundreds of years, as well as other trees, and yielded many thousands of pounds' worth of timber to the proprietor, and which at the present time promise to produce even better Sycamores and Firs, with which the Oaks are being superseded. Those who trench extensively will never get their money back. Whether trees will grow well in the natural soil or not can generally be easily ascertained, because there are sure to be some trees in the neighbourhood growing in the same soil, and the way they behave will always be a safe guide to any planter, only he must be careful to allow for exposure, prevailing winds, and other climatal conditions that have often far more to do with the quality of the timber produced than the soil. The best and deepest soils, of course, produce the finest trees, but good forestry in this country consists in producing timber in soils and situations that cannot be profitably put to any other use. This is really making two blades of Grass grow where one grew before, and there is plenty of scope for work of this kind.

CONFLICTING TESTIMONY ON THINNING PLANTATIONS.—Writing on thick and thin planting last week in a contemporary, Mr. A. D. Webster says, very rightly, that "where the production of timber is the main consideration, then, by all means, but particularly in Pine plantations, preserve an unbroken leaf canopy, for by so doing the tallest and cleanest timber will be produced." Mr. Webster has considerable experience, I believe, and I am sure he is right in this matter, but here is the testimony of another forester of over "forty years' experience" given in a paper read at the International Forestry Exhibition, Edinburgh, by Mr. Baty, of Netherby Hall, and distributed not long since in a pamphlet form among foresters: "Not much thinning," this writer says, "will be required the first ten years . . . but after that time the cutting out process must begin. It is now of the utmost importance to thin by carefully cutting out the worst trees, and allowing the free circulation of light and air to penetrate through the whole plantation. This should be continued at stated intervals of four or five years up till thirty years of age . . . and at intervals up till sixty years of age, when more cannot be done till they are finally cut down." To permit a free circulation of light and air to every part of the trees till they are sixty years of age or fit to fell is just the opposite of preserving an "unbroken leaf canopy," which means excluding the light and air from the trunks. Mr. Baty's way is the way to grow useless branches and knotty useless trunks, that render timber unsaleable, and Mr. Webster's method is the way to grow good timber. But it is the conflicting testimony on this subject by foresters of mature age that I would dwell upon, as showing how little the teachings of some writers of professed experience are to be relied upon. It would pay proprietors well, whose woods are thinned on Mr. Baty's principle, to have a score or two of Norway poles and Baltic logs set up on end on their estates as close together as they grew when alive just to show their woodmen of the

rule-of-thumb order how good timber is really produced. Mr. Baty's teachings corroborate all I have said lately of the extravagant extent to which thinning is carried in the north, and the utter waste it entails. It is safe to assert that on estates where the trees have been periodically thinned on the principle of allowing the air and light to penetrate every part, the wood cannot be of as good quality as it ought to be or might have been, because the principle is wrong to commence with, and the practice resulting from it wholly inimical to the production of good timber, and utterly opposed to those conditions of growth under which the fine, clean, straight timber is produced abroad that is imported so extensively to this country. In these countries Mr. Baty's periodical thinnings would be simply ignored, however they may have been received at the Forestry Exhibition, where, in my opinion, such recommendations could only do harm.

THE PRIVETS.—I see the oval-leaved Privet is highly praised by Mr. A. D. Webster, and it deserves praise. It is a wonder to me that neither the old nor the new variety, the narrow-leaved and the broad-leaved, have been used for hedges to any extent worth speaking of. I doubt if the oval-leaved be superior to the narrow-leaved for such a purpose. Branchy, spreading shrubs always make the best hedges, because they fill up from the bottom, and there can be no doubt about the narrow-leaved common Privet being the best in that respect. The oval-leaved kind grows very erect. In an extensive covert not far from here, planted almost exclusively with both sorts, the oval leaved variety is conspicuous by its habit, but the common Privet makes by far the best covert. We propagate both extensively, and for the last month we have been planting or filling up fences with both mixed. The taller oval-leaved kind gives height, and the common kind ensures density. But the last alone makes a tall, close hedge. A friend of mine has his garden fenced off from the road by a hedge of it that has been full grown for probably twenty years: it is about 9 feet high, and dense and close right to the ground at the present time—the best hedge I know of—but it has been regularly clipped. Visitors to Scarborough cannot fail being struck by the extensive plantations of the oval-leaved Privet everywhere in the suburbs of that town, and in some places close to the sea. I have never seen Privet so green and pretty as there; in fact, it seems to be about the only shrub that thrives well on that cold coast so destitute of vegetation compared with the west coast. As to the hardness of the Privet, our plantations in the open nursery always get severely singed by sharp frosts, but in woods it does not suffer so much.

Choice Hollies.—Mr. Coleman's list of choice Hollies (p. 246) does not include, I hope, all that he considers choice, and I presume he only includes the species as distinct from the many varieties of the common *Ilex Aquifolium*. I am pleased to see that the noble-leaved *I. latifolia* succeeds well at Eastnor, but it cannot be called satisfactory everywhere. Even about London, and the south of it, it is not a plant to be trusted away from a wall, yet, on the other hand, I have seen a large-headed tree of it in Gloucestershire. Has Mr. Coleman tried out of doors the other large-leaved Holly, *I. insignis*, which is even handsomer than *latifolia* on account of its gophered leaves? *I. cornuta* is another species I have always had the impression is not worth planting, but after the hints of Mr. Coleman I shall not give it up. The two names *I. balearica* and *maderiensis* appear to be mixed in nurseries. What is often labelled *maderiensis* is certainly only a variety of the common Holly, while the true *Minorca* Holly (*I. balearica*) is a very distinct plant, and is the same as the *I. maderiensis* of Willdenow, but the *I. maderiensis* of Lamarck as I know it is quite a tender plant. Mr. Coleman may like to know that there is a robust-growing variety of the pretty Japanese *I. crenata* which has broader leaves, and is altogether a larger-growing shrub; it is called *latifolia*. *I. Dahoon*, an American Holly, is good in some places, and *I. opaca*

is another. Perhaps Mr. Coleman will say if these are growing at Eastnor.—W. G.

BEST SEASONS TO PLANT.

We do not believe in planting Conifers in summer, as advised by "E. D." (p. 224), and when I read on that "every tree was moved with balls of earth varying from a quarter to one ton in weight," I thought his examples of little value and far from the point. It is very well known that, given a sufficient ball of soil to a tree, you may transplant it at any time during the year on any soil without much, if any, risk; but when it comes to planting young trees in great variety, probably roughly removed from a strange nursery and planted by contract, then the question of the best season to plant becomes an important one, and I know nothing that says so little for our forestry practice as the fact that planters should still be at sixes and sevens on a subject that people could determine for themselves if they were but to notice for one or two years the behaviour of trees planted at different seasons. I do not believe the character of the soil has much, if anything, to do with the season of planting, because, according to what is known of plants and their roots, a tree that transplants well on heavy soil, say in October, ought to transplant in any other at the same time, and *vice versa*. The philosophy of planting is put in a nutshell by Lindley in one or two of his 286 physiological aphorisms in his "Descriptive Botany and Vegetable Physiology," a book far too little read and known among foresters. He writes: "Transplantations may take place at all seasons of the year, and under all circumstances, provided the spongioses (root points) are uninjured. But as it is impossible to take plants out of the earth without destroying or injuring the spongioses, the evil consequences of such accidents must be remedied by the hindrance of evaporation. Transplantation should therefore take place either when plants are torpid and when their respiratory organs (leaves) are absent, or, if they never lose those organs, as in the case of Evergreens, at seasons when the atmosphere is periodically charged with humidity for a considerable time, or else in the early autumn when the warm earth promotes the rapid renewal of such roots as may have been destroyed." The main causes of success and failure are here put clearly, and the question is, at what season of the year is least injury likely to be done by evaporation to the roots and branches, or to the roots by mutilation? The answer is, Decidedly when both are most active and tender, and that is in spring and summer. In spring the days are keen, cold, and draughty, and the injury to young trees lying about and not too carefully handled by the average workman when planting by the piece is often so great as to kill the trees. The greatest mortality I have ever seen among young trees happened under these conditions. Last year I was asked to look at a mixed plantation, the greater portion of which was dead, the circumstance being a mystery to the proprietor, and I learned that the trees had been put in two years before, during April, in droughty weather that continued a good while after the planting was finished, and as the trees now dead had apparently never made a start, there could be no doubt about the cause. Planted so late under such conditions the Corsican Fir is almost certain to die, unless planted direct from the home nursery and well watered. Planting in summer is, if anything, still worse in the case of forest trees generally, for then the tender young roots are easily injured, and evaporation is active from the budding shoots. The most favourable conditions for planting exist in autumn, from September till the middle of November. Then the roots are ripe and tough, the foliage of evergreen Firs, &c., also ripe, and the evaporation less active, deciduous trees perfectly safe to move, the soil warm enough to excite growth, and the air moist and genial, the consequence being that the trees are partly established before winter, and make a much better start and better growth the following season than do those planted in

winter or spring. This is so apparent to all in the case of deciduous trees and Firs that one wonders to hear of any doubts on the subject. A Sycamore, for example, planted just when its leaves are fading in autumn will make fair growth the next season, but if planted in spring will only make a few poor leaves. A year, indeed, is sometimes gained by autumn planting.

Uprooted trees—Within the policy grounds at least few things in connection with forest management, it must be admitted, have a more neglected-looking appearance than upturned trees, broken and twisted branches, and fresh transplants half-cut with the wind. The former in particular should never be tolerated in well-kept grounds, for as soon as convenient after a storm a general clearance should be set about, and be prosecuted with all vigour until the work is completed. First, attention should in all cases be directed to such trees as have fallen on or over the most public roads, and after that those nearest to and visible from drives and walks may be grubbed up, the stems removed, and the roots at once buried or otherwise disposed of. In most cases the easiest and cheapest method of disposing of such roots is to dig a hole of sufficient size immediately behind them, and into which they will fall when severed from the trunk. The hole should be dug of sufficient depth to admit of at least 2 feet in depth of soil being placed atop of the root, although in the case of worthless ground, or where other trees are not to take the place of those upturned, 6 inches to a foot of covering will be quite sufficient. Frequently when tree roots are in such positions that burying of them is, whether from cost or other causes, out of the question, we employ a low, four-wheeled truck with which to convey them to some out-of-the-way place reserved for such rubbish. All branches should either be carted off or burned up at once, the soil turned over by the tree-root levelled down, and the trunk or stem removed to the timber yard. The branches of adjoining trees that got damaged or broken off by the fallen timber should be pruned off, and the wounds caused by amputation dressed over with tar, or failing this, some damp soil rubbed over their surfaces, as such are very unsightly where visible from the main drives and walks.—A.

The Mountain Ash at home.—To see the Rowan tree, or Mountain Ash, in all its grandeur, one must ascend among the rocks and rubble of our wild mountain-sides, for there alone is its true nature really revealed to us. To see it cropping out from some of the nooks and crevices where there is hardly a particle of soil and covering, though in a semi-procumbent manner, several square yards of the rocky surface with its fresh, green, Fern-like foliage and clusters of conspicuous berries, is, in truth, a treat that one could hardly think of enjoying at such an altitude. Not many days ago I, out of curiosity, took the measurement of what I then considered an unusually fine specimen of the Rowan tree growing from a rocky ledge in the pass of Nant-Francon (pass of the beavers). The height to which this specimen had attained was nothing remarkable, but the stem girthed fully 8 feet, and the large umbrageous head covered a surface of 27 feet in diameter. It looked cheery and happy in its mountain solitude, its companions alone being a few stunted Birches, a nice green carpet of the Crowberry (*Empetrum nigrum*), and a big tuft that quite filled up a fissure in the rock of that pretty and desirable Everlasting, the Mountain Cudweed (*Antennaria dioica*). Somehow, I fancy, but only in judging from my own observations in this district, that the tree in question attains to larger dimensions at a moderate elevation than when grown even at sea-level; and, moreover, that in high-lying districts it grows more rapidly until full maturity is attained, produces a nicer and cleaner stem, and wood of better quality and larger size, than at lower levels.—D.

Vegetation of a mountain woodland.—The great difference between the natural underwood of a seaside plantation and that of a wood at 1000 feet altitude was never more forcibly brought under my notice than whilst thinning a rocky plantation at the latter height during the past summer. The wood in question is situated on the flank of one of the Snowdon

spurs, fully exposed to our dread south-western blasts, the lower portion being 700 feet and the topmost peak fully 950 feet above sea-level. The soil is a free, sandy loam, resting at a few feet depth on slate rock, but the latter crops up here and there all over the woodland, in some cases to such an extent as to quite monopolise the surface and prevent tree-growth. The largest and most aspiring of this natural mountain underwood is the Bilberry or Whortleberry (*Vaccinium Myrtillus*), a most useful woodland plant for the great shelter it affords to game, and, what is not one whit behind this, the great amount of food afforded by the berries to bird-life at high elevations. In the wood in question, but particularly the more open and rocky parts of it, this plant grows stout and long, some portions of the ground being so thickly overrun with it as to almost impede one's course. It forms a nice dry covert, of which hares and rabbits would seem to be particularly fond. Damper portions of the wood afforded another *Vaccinium* in the much-sought-after Cranberry (*V. Oxycoccos*), a plant the fruit of which is eagerly sought after by birds. Its low, wiry stems afford but small protection, however, to game; but it is certainly a pretty sight, with irresistible temptations, to see a Sphagnum-covered pool or boggy marsh, away near the hilltop, studded with the bright red berries of the plant in question. Some of the more open portions of the wood, but only at the higher elevations, are literally carpeted with that pretty and distinct plant, the Crowberry (*Empetrum nigrum*). Here, again, we have a valuable acquisition to our woodland plants, both in the warm carpet it affords and abundance of fruit produced, and of which game in general are particularly fond. All of these three plants just referred to are a source of profit to the farmers and cottagers of these mountain districts, for the fruit is collected by the careful and brought down to the nearest village or town, where they always find a ready market for preserves, &c. So plentiful were they during the past year that more than once I saw them offered at the low price of 4d. per quart in the village here. Heather, however, forms a large part of the natural herbage of the wood in question, and a valuable part it is for the shelter it affords to animal life generally. The Bracken, Bramble, Thorn, and Creeping Willow (*Salix repens*) are abundant, and contribute in no small degree to the richness of the underwood and general green appearance of the ground surface. As well as the plants just referred to, upwards of thirty-three others are found abundantly, but being of minute size, and consequently out of the drift of the subject under notice, we will pass them unnamed.—W.

An ornamental covert plant (*Spiraea Douglasii*)—Having procured a stock of this plant, increase by root extension is so rapid that one is frequently at a loss to know how to dispose of superfluous stock other than by reducing it to ashes or committing wholesale extravagance by pitching the plants on the rubbish heap. It may seem rather incredible to say that a *Spiraea* could afford shelter for game, but in the plant in question such is really the case, for the roots become so matted and such a dense growth of under-shoots comes up annually, that in suitable situations a by no means second-rate covert is produced. Apart altogether from its use in this way, this *Spiraea* is about one of the most ornamental flowering shrubs with which I am acquainted, the long spikes of pinky flowers having a very imposing effect where a quantity of the plants is massed together. If young plants are placed at a couple of feet apart in a rather free soil and open situation—the margin of a woodland is perhaps the most suitable place—they soon unite, the roots running very freely about and sending up strong shoots as they advance. The plant usually attains to 4 feet or 5 feet in height, and although deciduous, the rank undergrowth forms a warm and shady covering for ground game generally. Big, irregular shaped patches of the plant are shown off to great advantage in open parts of the wood margins, and where they are visible from roads and paths, for it is a pity to hide such a desirable, pretty, and free-flowering shrub. We cultivate a white-flowered form of this *Spiraea*, which is of equally rapid growth, quite as ornamental, and offers a rich contrast to the normal or pink form. It is best for appearance sake to grow these different coloured forms in

separate masses, for not till then is their decided and diversely coloured flowers fully appreciated.—A. D. WEBSTER.

Toughened timber.—By a new process white wood, according to the *Anglo-American Times*, can be made so tough as to require a chisel to split it. This result is obtained by steaming the timber and submitting it to end pressure, thus compressing the cells and fibres into a compact mass. It is the opinion of those who have experimented with the new process that wood can be compressed seventy-five per cent., and that some timber which is now considered unfit for use in such work as carriage-building could be made valuable for that purpose by this means.

Barking Oak.—No time should now be lost in making arrangements for barking Oak. All tools used at the work should be examined, and, where necessary, repaired, so that they may be ready when wanted. As bark-stripping is an operation that requires great vigilance on the part of the forester, in order to save it early without injury, he should have the trees marked and ready as a preliminary step to further operations. As a general rule early-saved bark is the best, and, if possible, it should be stripped off without hammering, as this bruises and lessens its tannin matter. As a general rule the trees will be ready for barking when the young leaves are expanding from the bud, but it frequently happens that trees in the same plantation are not all ready for barking at the same time; such as have the advantage of shelter and warmth will often part with the bark a week earlier than such as are growing along the margin on cold, exposed situations. Under such circumstances the better plan is to leave these to the last, when the bark can then be secured without hammering, which will save something in the shape of labour and expense, and add considerably to the quality and value of the bark when brought to market.—J. B. W.

Propagating *Cryptomeria elegans*.—In attempting to strike cuttings of this Conifer, I was not very successful when they were made from the current year's shoots alone and put in just as they had attained maturity, which is the most satisfactory system for the generality of coniferous plants. The way in which I struck great numbers of this *Cryptomeria* with scarcely any loss was to take good-sized cuttings and put them in a frame under a north wall. There they remained from the end of one summer to a corresponding period of the next before they were fit for removal, but as the cuttings were 8 inches or 9 inches long, they were as soon as rooted fair-sized plants. A frame such as that here mentioned under the shelter of a north wall is very useful for striking many things that root only with difficulty. My practice is to take out about a couple of feet of the ordinary soil and place a good layer of drainage material, in the shape of broken bricks, on the bottom, then fill up to the level of the surrounding ground with light sandy soil, pressed down firmly, the whole being finished with a slight layer of sand on the top. The bottom of the frame is just bedded in the soil to ensure its being air-tight, and it is then ready for the insertion of the cuttings. They are put in firmly and a good watering given, which under ordinary conditions will not need to be repeated for some time, as from its position the frame does not get any sun, and as the lights are kept close drying winds have but little effect. As soon as the cuttings are rooted sufficiently they are removed and the space is thus available for something else. In this way there is generally room for the insertion of two or three cuttings which otherwise would probably never be put in. If any signs of damp or decay show themselves a little air is given to dry up superfluous moisture. The best time to put in cuttings of Conifers is about August, just as the young growth has partially acquired a woody texture, and the same may be said of most other Evergreens, while deciduous subjects do best when put in during winter or early spring.—T.

The air of forests in summer is of a much lower temperature, less dry, and contains more ozone than that in the open. In winter, too, forests afford a protection against violent and bleak winds, and, from a sanitary point of view, Professor Ebermeyer considers the fragrance of leaves, and, in particular, the strong resinous odour of coniferous trees (such as the Firs and Pines), as very invigorating and healthful.

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"This is an Art
Which does mend Nature; change it rather; but
THE ART ITSELF IS NATURE."—*Shakespeare.*

IN THE FORTUNATE ISLES.

FROM a gardening point of view, as well as from that which is termed picturesque, there are few places in the world that will so thoroughly repay a visit as these lovely islands. Placed almost on the verge of the Tropic, surrounded by sea, and bristling with mountains and forests in some cases, Nature has richly endowed them with flowers of unique interest and beauty. To begin with an island that has less charm at first sight than the rest, less us take the island of Grand Canary. The dry and hot breath of Africa that at times sweeps over the eastern shore of this island makes the coast near Las Palmas, its capital, look arid as an African shore; but once within the shelter of the first hills, what beauties of vegetation as well as surprises greet the wanderer!

All of us know the Date Palm (*Phoenix dactylifera*), with its grey-green foliage and generally sun-dried aspect, and some of us know in Rivieran gardens the young and vigorous plants of *Phoenix canariensis*, but no one, I think, can have any idea of the beauty of this island Palm until they have seen it here, where, of course, it can be found in all stages and sizes. Instead of a somewhat sparse head of leaves, more or less browned, the Canary Palm boasts an enormous crown of rich and glossy green leaves, that keep their verdure untarnished for years, so that on a well-grown specimen the size of head to that of the stem seems almost too big to withstand a storm; and yet these Palms perch themselves boldly on crags overlooking the sea, where every breeze must catch them. The rich groups of them in the valleys and by the roadsides are specially beautiful, though sometimes one sees a clump deprived of leaves or with heads tied up for blanching, as at Bordighera; but such is their vigour that they very soon push out new leaves and golden Dates. Here, however, comes a confession sad to relate—their fruit is dry and of no use for food, so the good folk of Canary no doubt some day will plant the useful instead of the beautiful Palm.

Climbing up the hillside, what quaint forms of vegetation greet the eye! First an Asparagus, with shrub-like growth and drooping branchlets covered with needle-shaped leaves and tiny white flower bells. Then comes a Dock, with woody stems that makes a handsome bush of 5 feet high or more, with bright green, oval leaves and creamy panicles of flower, which, in seed, turn to a bright red—a truly splendid relation of our Docks, surpassing even our giant, but coarse, *Rumex Hydrolapathum*. Surrounding the plots of Vines that are allowed to trail over the black volcanic ash, that in parts does duty for soil, are broad belts of common purple and white *Iris germanica* now in full flower, and here and everywhere the double *Pelargonium* is used as a hedge plant. It would be interesting to know where this plant really sprang from, because, though introduced if I mistake not to our gardens from Italy, it has been the common hedge plant here and at the Azores for many years. Perhaps, like other things, it has originated spontaneously in more than one spot. After these glowing colours, how quaint these gnarled *Euphorbia* bushes are, with their grey stems but thinly topped by bluish leaves and yellow-green

flowers, and, most of all, how absurd at first sight to see a whole field of Prickly Pear with each fat phyllode tied up carefully in white calico as if afraid of being sun-burnt. This delicate attention, however, is for the benefit of the cochineal insect, which is applied in this way to the Cactus leaves, as the eggs have been laid on these rags before they are tied on to the plants, when on hatching they at once fasten themselves on to the Cactus. This used to be a favourite industry, but the use of cheap aniline dyes has almost put a stop to the growth of cochineal, as the dried insect is now not worth much more than as many shillings an ounce as once it was worth pounds.

Climbing onwards and upwards on these volcanic slopes amid cinders and scorice, it is strange to observe the abundance of Hare's-foot Fern (*Davallia canariensis*), and a handsome but scentless *Cheilanthes* growing freely where any moisture may be found. On a steep slope facing north, where the dew lingers longest, vegetation becomes beautiful; the short turf is enamelled with the dainty white stars of two sorts of *Ronulea*, whose lilac and brown-tinted buds remind one of tiny Crocuses. Tall Canary Buttercups with pointed yellow petals, that lie flat out without any cup, are a very graceful variety of our homely *Ranunculus acris*, and in charming contrast appear fine masses of our cultivated *Cineraria vulgaris* here in its true home. No flower has gained less from cultivation than the *Cineraria*, for the growth and heads of bloom here are quite as large as those usually seen in pots, and the colouring of the blooms and their size vary extraordinarily from one place or island to another. It is really a beautiful sight to see these fine heads of flowers with such fresh leaves growing up among the bushes of white Broom (*Genista monosperma*), now covered with white blossom, or among the too ubiquitous scarlet *Geranium*. The Canarian form of the Butterfly Orchis is also abundant, but the flowers are rather greener and less sweet than the type; the two radical leaves also are pointed, while its habitat in the crevices or holes in the scorice is most remarkable, and makes one wonder if at home we give it sufficient drainage under cultivation. A curious Squill is very abundant, with lilac buds that open nearly white, but the petals are so short that this, at least, is not desirable as a garden plant. *Ferula tingitana* is abundant as we keep ascending, and its tall flower-stems crowned with rich yellow heads of flower are quite a feature on the mountain-side. *Briza maxima*, the big, trembling Grass, and an exceedingly pretty *Urtica* (?) with one-sided panicles, with pendent brush-like arms, predominate on the uppermost slopes, where purple Borage, yellow and white annual *Chrysanthemums* abound. But one solitary specimen of the Great Canarian Boragewort (*Echium simplex*) appears, and that as yet shows only its great rosette of silvery grey leaves, which presently will shoot up into a spike of white blossom 7 feet or 8 feet high. Just as the shrubby and perennial *Echium fastuosum*, with its sky-blue thyrses of bloom, is called Pride of Madeira, so may this giant white biennial form continue to be one of the many beauties of the Fortunate Isles.

The volcanic cinder crags are covered with various forms of *Sempervivums* and *Sedums*, whose fleshy rosettes of leaves or dainty rose and grey petals contrast very cheerfully with the black scorice, and *Cineraria maritima* and *Centaurea Clementei*, with silvery leaves and yellow flowers, overhang the very crater itself, where a yawning abyss, more than a thousand feet below, shows by its scorched rocks, still red, yellow, and

black, how violent must have been the eruption that excavated such a pit, and piled up on one rim of the crater such a mass of cinder that towers up 600 feet above that rim, and 1200 feet above the now level plain in the very centre of the crater.

Even in these latitudes the air is keen at this elevation, but as the Lentisk bushes and giant Fennel flowers are left behind us in our descent, so does the air feel less and less like the winter air of the Mediterranean shores; and ere we reach the glowing masses of *Bougainvillea* and *Cesalpinia* that overhang the garden walls of Las Palmas, we find ourselves again in summer.

E. H. WOODALL.

CHRYSANTHEMUMS.

E. MOLYNEUX.

IN all matters of detail in connection with *Chrysanthemums* it is wise to look ahead, and to push on little odd jobs whenever an opportunity occurs for so doing, in order that when the busy season sets in later on everything may be in readiness for it. Have, for instance, all pots clean and ready for use. Experience has taught me that, for convenience in housing, the size of the pot used is a consideration, because, where quantities of large blooms are required, large numbers of plants must be grown; therefore space in which to house such numbers has to be provided, and where room is limited it is a mistake to use large pots. Where one plant is grown in each pot, pots 9 inches in diameter answer admirably. This is large enough for any *Chrysanthemum*; for such pots, then, and for all other sizes, the plants must be prepared by previously keeping them in suitable pots, so that when the time comes round for the final shift the ball of soil may not be too large to be transferred to the pots in which the plants are to bloom without considerable reduction. This, of course, should not take place, as mangling the roots causes a serious check to the plants. The first shift out of the cutting pots should be into pots $3\frac{1}{2}$ inches wide; the next into $5\frac{1}{2}$ -inch pots, and from these the plants will go nicely into the 9-inch ones, which should be their last shift. Where pots of larger size are required, say 10-inch ones, the first shift may be into $4\frac{1}{2}$ -inch pots, next into $6\frac{1}{2}$, and then into the 10-inch ones. Again, it sometimes occurs that pots of a larger size are in stock, and must of necessity be used. If these are 11-inch ones, I prefer to place in each two plants, consisting of the weaker-growing kinds, and both should be of one sort, as if different one may outgrow its neighbour, and this may prove to be awkward at housing time, not only as regards appearance, but as respects the welfare of the dwaffer sort. By this mode of culture a great gain is effected, as nearly double the quantity of plants can be grown in the same space.

Chrysanthemum sports.—"G. H. E.'s" note (p. 212) on the simultaneous appearance of *Chrysanthemum* sports in different parts of the country opens up a very interesting subject, to which I have frequently directed attention. So prolific is the *Chrysanthemum* in the way of sports, that out of the first twelve in the selection of forty incurred exhibition varieties mentioned in Mr. Molyneux's book, five only are original seedlings. This is mainly due to the sportive character of *The Queen* family, one of the best types in the section to which it belongs. Many will doubtless recollect the confusion caused some sixteen or more years ago by the kinds named *White Queen*, *Empress of India*, *Lady St. Clare*, *Mrs. Cunningham*, *Snowball*, &c.—all no doubt sports from *Queen of England*, but not distinct from each other. Our leading trade growers and the National *Chrysanthemum* Society have set the matter right by making it more generally known that these are synonymous. In 1873, when Mr. C. Waters, of Forest Hill, fixed the Primrose sport of *Mrs. G. Rundle*, now named *George Glenny*, I saw it the same year in the gardens of Sir H. Peck at Wimbledon House.

Mr. Henderson, who was then gardener there, had a small specimen plant of Mrs. G. Rundle with half of the head of bloom primrose and the other half white. Two or three years later the same variety sported in two places to a deeper yellow, and the result was Mrs. Dixon and Golden George Glenny, which are synonymous. I think the variety Madame Martha sported in two places in the same season, and produced the golden variety. When Lady Slade produced Angelina I had the same sport on a plant the same season, but only very slightly, and consequently could not fix it. Madame C. Desgrange showed the same character, and produced the two yellow varieties named Golden Madame Desgrange and G. Wormig, which are identical. My sport from Prince Alfred, Lord Wolseley, showed itself in two places in the same season, but happily in close proximity to each other, and so by a little rearrangement, confusion in the names was saved. Baron de Prailly last season produced Carew Underwood in two places, and Ethel showed the yellowsport Mrs. Jones in three places to my knowledge. Last season I saw a streak of yellow in a bloom of Hero of Stoke Newington in one of the prize groups at Putney exhibition; therefore, I was quite prepared to see a yellow Princess Teck, from which the Hero is a sport, although I must acknowledge not so soon and so abundant as was demonstrated at the National Exhibition by blooms of Mrs. Norman Davis. I have had Barbara assume a chocolate colour, but could not fix it, and last year a bloom of Princess of Wales was brought to the Kingston exhibition partly yellow. These I am prepared to see established soon, and I have no doubt before long we shall have a deep yellow Empress of India. To what influences, it may be asked, are these changes attributable? We call them "freaks of Nature," but they appear to be produced by some natural law, which is well worth investigating.—C. ORCHARD, *Coombe Warren, Kingston-on-Thames.*

PROPAGATING.

GLOXINIAS.—Many cultivators now raise these plants from seed, and when it is saved from the finest varieties, the plants as a rule produce a good and varied lot of blooms. Still, this method cannot be employed for the increase of any particular varieties, and therefore, in order to multiply the many named kinds, other means have to be resorted to. The principal way of propagating Gloxinias, apart from seeds, is by means of leaf cuttings, as they succeed very well if placed under favourable conditions. The best mode of procedure is as follows: When the plants are growing freely (but as early in the season as possible) they may be looked over, and generally a leaf or two, or even more, can be spared from the base of the plant. The leaf should be separated as near the base of the stalk as possible, as, by so doing, the stalk is available for insertion in the soil. If the leaves are small, they can be allowed to remain entire, but in the case of large ones, they may be cut in two. Pots of 4 inches or 5 inches in diameter are a very convenient size for the cuttings, and are prepared for the reception thereof by draining them thoroughly with broken crocks, and filling them with light, sandy soil, sifted fine, leaving just enough space for a thin layer of silver sand on the top. The leaves are then dibbled in precisely as is done with cuttings of the shoots, and after being watered are placed, but not plunged, in bottom heat in a stove propagating case. So treated they soon root, and form a callus at the base of the leaf, from whence a shoot originates. As soon as any signs of this are visible, the cuttings must be potted off and grown on freely, in order to obtain as large tubers as possible before winter. Occasionally a tuber, instead of pushing up one stout shoot, will produce several small ones, and if they are taken off and inserted as cuttings, they soon strike and form plants. Seeds, from their minute character, should be sown very carefully, but, generally speaking, they germinate readily, and are not so delicate during their earlier stages as those of many other plants. Before sowing, the surface of the soil should be well moistened, as the seed then adheres readily thereto, when the covering may consist of the merest sprinkle of fine sand; or, instead of this, a pane of glass may be laid over the pot in order to prevent too rapid an

evaporation. In a general way the seedlings will soon need pricking off after they make their appearance above ground, and this is rather a delicate operation. The pots must be well drained, and the soil sifted fine and well watered before pricking off commences. To avoid handling the young plants, which are very fragile, a small piece of wood about the size of an ordinary penholder, with a cleft at one end, is very useful, as it can be worked with the left hand, and the young plants, being picked up with it, can be dropped into the hole, made by a dibber held in the right hand.

Other Gesneraceous plants, such as Achimenes, Tydas, and Gesneras, can be increased, when the plants are dormant, by division of the underground rhizomes. Besides this, should it be necessary to push on the propagation of any particular variety as fast as possible, the tops of the young plants may be taken off and put in as cuttings, when at this time of the year they root readily, and after flowering throughout the summer, will form good sized rhizomes by the winter.

CLEMATIS.—Stock plants of these that were taken into a slight warmth a few weeks ago will be by this time full of young shoots, and where it is intended to graft them, the present time is very suitable. The many beautiful garden varieties of this flower are generally increased by grafting the young growing shoots on pieces of the roots of the common Traveller's Joy, with which they readily unite. A shoot some inches in length may be cut up into several grafts for each scion need only consist of a single joint, with the piece of naked wood at the base thereof. This portion of the shoot below the buds is fashioned into the form of a wedge, and the selected root having been split for a short distance, the two are fitted together as accurately as possible, and tied securely, but gently, in position, with soft grafting cotton. After this is done the plants must be potted, using small pots for the purpose, and twisting the roots around in such a manner that the point of union is just covered with the soil. This being completed, the small plants must be placed in a close frame in the propagating house, kept at an intermediate temperature, when they soon form a union, and may then be gradually hardened off. If a number of them are grafted at the same time it is more than probable that some will be ready for removal much earlier than others, and, on that account, when they begin to grow (a proof that a union is effected) the whole of them had better be examined, and only those that are unmistakably united removed into more airy quarters. The string-like pieces of root intended as stocks should, if possible, have a few attendant fibres. This mode of increase is by no means the only one available for the different kinds of Clematis, as of the species seeds of many are often available, while all the garden varieties can be increased by cuttings as well as grafts. To strike the Clematis from cuttings, the young shoots should be drawn out in a gentle heat, as above recommended, for grafting, and being cut into convenient lengths, dibbled in around the edge of a 4-inch pot. The soil should be of a very sandy nature, and passed through a fine sieve, while the pots must be well drained. When watered the cuttings must be kept close till rooted, after the manner recommended for grafts, and so treated they will soon strike. Though it is quite as well to leave a joint at the base of the cutting, such a course is by no means absolutely necessary, and in the case of any choice kind as many cuttings may be made as there are joints on the shoot. In keeping cuttings close it does not imply that they are to be absolutely kept from contact with the air, for however delicate they may be, it is generally possible to take off the lights for an hour or so in the morning without causing even the most tender plants to droop. Of course this will to a great extent depend upon the mode of heating the propagating house and other conditions, as if the atmosphere be very dry the cuttings are soon liable to flag if exposed to it, while if very moist, mildew and decay are apt to follow. Shading, which can be dispensed with during the winter months, even for cuttings, will now need careful attention, as an hour's exposure to sunshine will often cause them to flag to such an extent that they do not quickly recover.

CANTUA DEPENDENS and the other members of the genus have the reputation of being not only difficult plants to grow and flower well, but also to increase by means of cuttings. Propagation of them is easily effected, provided a certain mode of procedure is carried out. In my case, having a few plants in 4-inch pots that had been wintered with the stock plants of Fuchsias and similar things, I took them into heat in the same manner as their associates, in order to draw out the young, soft shoots. These, when taken off, formed into cuttings, and, after insertion, kept close till rooted, soon commenced to grow, and in a month were ready to pot off. The principal care needed when in heat is to see that red spider does not effect a lodgment on the leaves.

ARAUCARIAS of the greenhouse class are generally propagated from cuttings, for even if seeds are available, plants raised in this manner are apt to be thin and naked at the bottom. In the case of cuttings, it is evident that as the beauty of a plant depends upon its symmetrical character the only cutting on a specimen that is of any use is the top. This should be taken off and potted in a mixture of loam, peat, and silver sand, with a little powdered charcoal mixed with the soil. The pot should not be too large, while the depth at which the cutting must be inserted to hold it in position will prevent the use of many crocks. Large cuttings cannot be depended upon to root; indeed, the weaker the cutting is the greater are the chances in favour of its rooting. After the head of a plant has been removed two or three leading shoots are generally pushed up, and when large enough they are all available for cuttings. If these shoots are taken off others will in time be produced, which in their turn can be removed; indeed, in nurseries where Araucarias are propagated largely these old stock plants are kept year after year and yield a great number of cuttings. These remarks apply more particularly to Araucaria excelsa, which is the easiest to strike and the most commonly grown of the greenhouse kinds. When seeds are obtained they do well sown singly in small pots, and shifted on as required. The seeds should be covered with about half an inch of soil. T.

PROPAGATING DOUBLE WHITE PRIMULAS.

EVERYONE conversant with market plants must be aware of the value of the old double white Primula in a cut state. Of all the new double forms raised during the past twenty-five years nothing produced can equal this variety for cut purposes, as with proper management it can be had in flower nine and ten months in the year. Some growers who make a speciality of this Primula grow large quantities, from 3000 to 5000 plants, and the propagation of this number is a work requiring considerable time and care. Mr. W. Elphinstone, of Shipley Hall Gardens, near Derby, who is a successful grower and exhibitor of double Chinese Primroses, sprinkles fine charcoal on the surface soil in which his plants grow, doing this when the plants have just gone out of bloom, and when they can be dried off for propagating purposes. He then cuts half-way through the stem of the shoot, causing it to fall down upon the charcoal; gradually the severed parts become callused, and they put forth roots, and when this latter takes place they are removed from the plants, potted, and grown on into size. Calling upon Mr. George Stevens, the St. John's Nursery, Putney, the other day, I saw that this grower, who produces some 3000 plants annually, had hit upon an excellent method of propagation which saves an immense deal of trouble. He grows his plants mainly in 4½-inch pots, a few being in 6-inch pots, and about April the surface is filled up with fine Cocoa-nut fibre, piled up in a little heap, and so covering the stems of the plants. The fibre is kept moist by being occasionally sprinkled with water. In a short time every stem puts forth roots into the fibre, and when this has taken place a sharp knife separates them from the main stem close to the soil. Having masses of little fibrous roots, they are then potted into large 3 inch or 4½-inch pots, and soon become established, and scarcely cease flowering, and as in Mr. Elphinstone's case there is but very little check. There is another point; the method of propagation as adopted at Putney does not need any sacrifice of the head of bloom, which goes on, and it

may be said with much truth that the plants bear flowers nine or ten months in the year.

Here, then, is a method of propagation that many gardeners might follow with advantage. I know that some of them, through lack of proper accommodation, find considerable difficulty in propagating the double *Primula* when following upon the old lines, but in the case of the newer and not less successful method it can be pursued under much less difficulty and with greater certainty of success. R. D.

LETTER FROM BURGHEY. TO THE EDITOR OF THE GARDEN.

SIR,—I have just had a charming walk round our garden this glorious morning. The sun is shining brilliantly, and the air is sharp, serene, and most enjoyable. I first came to our house of Tomatoes, which we struck last September and wintered in 3-inch pots; they are full of fine healthy spikes of flowers, setting admirably close to the pot. We grow them in 8-inch pots; some growers prefer 11-inch and 12-inch ones, but we have more faith in a potful of roots than soil: we therefore use small pots. Walking on, I come to our Carnation house, and here I look with admiration on my good friend, Miss Jollif, now in all her beauty, thinking to myself, if my practice is faulty, I at least am satisfied. No 8-inch pots are used in this case—only half-a-dozen by way of trial; but the least said about them the better. Depend upon it, all forced garden produce should have the roots restricted. "A wee drop of the cratur," in the shape of manure water, beats big pots, saves a deal of space and much heavy labour. Five-inch pots are my favourite ones; still, we have numbers of Carnations growing in 4½-inch pots, and very nice little plants they are. Extending my walk, I come to what may be justly called the kitchen garden conservatory, a whole range of Peach houses, with the trees one sheet of pretty pink blossoms—a sight indeed to behold. The bees are busy among them, doubtless thanking us for an early treat of nectar. And now I enter that part of our garden that lies nearest to my heart, viz., the kitchen garden. Oh, how bare and dejected it looks! The severe winter has killed my Spinach, which I never remember its doing before. We want a hardy Spinach badly. Last autumn I planted a large plot of Old King Henry; but his majesty is still sleeping—not an eye can be seen showing through the soil. How different, how pleasing, when I came to my good support, the Jubilee Green, which absolutely enjoys these frosty nights. It stands erect before me, peaceful and happy. What a comparison between my own Jubilee and the Queen's Jubilee! The latter takes up columns of the newspapers with perplexed ideas—newly-born crotchets that, I fear, will never be realised; but the former bides its time and will make its own way. Standing yet still, I hear one of my little olive branches announce that dinner is ready, and that mother has cooked The Dean Potato, which I hope to tell about next week. R. GILBERT.

The Rose of Sharon.—My attention has been drawn to an interesting article in your paper on the Rose of Sharon, which recently appeared from the pen of Mr. Newberry. I fear that the identification of the scriptural Rose of Sharon must ever remain a matter of speculation. But of one thing I feel certain, that it could never have been the *Nelumbium speciosum*. Theophrastus states that the *Nelumbium* grew in Syria. But Palestine is not Syria, only a small portion of that region, and there are districts in Northern Syria, e.g., the neighbourhood of the Bahr el Abiad and Antioch, well suited for this plant, though it is not now found there. But in Palestine there are only one or two small and secluded spots where it could ever have existed, viz., the little marsh at the head of the Zerka under the S.E. corner of Carmel, and the marshes of Huleh (Merom) under Mount Hermon. The course of the Jordan south of Huleh has no marshes. It is a deep, rapidly flowing stream, with frequent periodical floods and lofty banks everywhere. All the other streams, except the Kishon, are mere mountain torrents dashing through rocky gorges, and along the Kishon there are no suitable localities. It is impossible to believe that a plant which could only exist in one or two distant habitats could ever have been familiar to the Jews, nor is it likely that it should have become exterminated. As to Egypt, it would be difficult to find two neighbouring countries more utterly distinct in their physical character and botany than the valley of the Nile and Palestine. As to the other claimants, the Daisy (*Bellis perennis*) is not found in Palestine; the wild Rose is confined to the hilly north, and then only occa-

sional. The autumn Crocus is not characteristic, but the *Polyanthus Narcissus* is common and universal, and is still the favourite flower for its perfume, both of the town-people and the fellahin, who habitually during the season wear it in their head-dress.—H. B. TRISTRAM, *Colley, Durham*.

NOTES OF THE WEEK.

We have received from Mr. Moore, Curator, Botanic Gardens, Glasnevin, a comprehensive list of the seeds which they have there available for exchange.

We have received from the Secretary of the Royal Horticultural Society a copy of the report compiled by the Rev. G. Henslow, giving details of the effects of the severe frosts on vegetation during the winters of 1879-80 and 1880-81.

Lonicera sempervirens minor.—Mr. Chapman, gardener to Mr. A. Holford, Westcliff, writes to say that the above trained to the roof of a cool conservatory is now bearing hundreds of its beautiful flowers.

Narcissi from Ireland.—Mr. W. B. Hurland, Cork, sends us a very pretty gathering from the open air of the above, consisting of the following varieties, viz.: Ard-Kigh, from bulbs planted the first week in December; Golden Princess, fine; Tunist, similar to the last-named, but with shorter trumpet and perianth; and Leda.

Beaumontia grandiflora.—This beautiful plant is now in fine condition in the gardens of Earl Cowper, at Panshanger House, Hertford, where it covers the greater part of a greenhouse, and is now bearing nearly 200 of its beautiful trusses of bell-shaped flowers. Some of the trusses have as many as fifty expanded blooms.

Thyracanthus Schomburgkianus.—This old inhabitant of our plant stoves is one of the most graceful and attractive of soft-wooded, winter-flowering plants. It is an erect, slender-growing plant which attains a height of several feet, and bears ample oblong-lanceolate dark green leaves. The scarlet, tubular flowers are borne in long, pendent racemes from 2 feet to 3 feet in length, and produced in great profusion. It is also known by the name of *T. rutilans*. This plant is at present in grand condition in the gardens at Burford Lodge.

Cochliostema Jacobianum.—This is a handsome, but somewhat large-growing member of the Spider-wort family. It produces large oblong-lanceolate leaves, from 1 foot to 3 feet in length and some 6 inches in breadth. They are bright green edged with purple, sheathing at the base, and arranged in a vase-like manner; panicles lateral, much-branched, and ornamented with numerous large, deep, mauve-coloured bracts, the flowers themselves being blue and violet. We recently saw fine examples of it in Sir Trevor Lawrence's garden at Dorking, and also in Mr. Williams' nursery at Holloway.

M. Bergman.—It is proposed by a number of the friends of M. Bergman, of Ferrières, to make a pleasant manifestation on the fiftieth anniversary of his entry into the employ of the house of Rothschild at Ferrières. Many who are interested in the finer class of gardens will remember well M. Bergman's kindness and courtesy to all visitors. His friends intend to open a subscription in order to offer him a pleasant souvenir of their goodwill, and to call to mind, at the same time, the many services rendered to horticulture by this able and modest gentleman. It is proposed to offer a work of art on which will be engraved the date and object of the donation—an album containing the portraits of those who subscribe, and another containing their signatures.

Bougainvillea speciosa.—I forward a spray of this plant for your inspection. We generally read that it is difficult to flower, and this is the first season that our plant has bloomed. It is growing in an intermediate house, and is planted out in a box 3 feet long, 18 inches deep, and 10 inches wide, well drained in turfy loam, and has been there three years. It has had but little water during the winter. The young growth is kept pinched in, and it is on the short spurs of last year's growth, and not on the young wood, that it is flowering.—ROBERT SMITH, *Presdals, Hare, Herts.*

* * A remarkably fine spray of this beautiful greenhouse climber.—Ed.

Toxicophlæa Thunbergi.—This fragrant stove Evergreen, which is grown in some gardens under the name of *T. spectabilis*, is now in great beauty at the Botanical Gardens, Edgbaston, Birmingham, where Mr. W. B. Latham has a fine specimen of it fully 5 feet in height and profusely flowered. The plant was sent here from a private garden in which it did not bloom, and Mr. Latham tried the experiment of cutting it back hard, and then allowed

it to make a vigorous growth, with the result that it is now in full bloom, the shoots being densely crowded with corymbs of white, sweet-scented, Ixora-like flowers, which issue from the leaf axils. It would appear to be blooming a little earlier than usual at Edgbaston than is generally the case, but this is probably owing to the treatment it has received. In addition to its free-flowering quality, its exquisite fragrance deserves especially to be noticed. When I first saw this plant eighteen years ago in one of the stoves at Farnleigh, Dublin, it was in bloom in August, but on two and three-year-old wood, and some of the flowering branches were 2 feet to 2½ feet long. Now it would appear as if it blooms most abundantly upon the young matured wood. It is a most useful and attractive early spring flowering stove shrub.—R. D.

Hovea elliptica is the correct name for a beautiful little Australian shrub, known better in English gardens under the name of *H. Celsi*. It is a small bush with long slender shoots which some would call straggly, but these are wreathed with myriads of small flowers of the richest purple-blue imaginable. It is one of the multitude of Australian shrubs that once were the pride of many English gardens, but even now it is insufficiently known, for one may go in twenty good gardens at this season and not see it in bloom. Those who want bright and uncommon looking flowers should grow this *Hovea*. It is not a difficult plant to grow if treated rationally. It wants sandy peat to grow in, and careful attention as to watering. It is in bloom at Kew.

New Roses.—In their beautiful group of pot Roses at South Kensington on the 22nd inst., Messrs. Paul and Son, of Cheshunt, had fine examples of two of Guillot's recent novelties. It often happens that Roses flowered under glass vary much in colour from the same varieties when flowered out of doors; but in the present instance both *Gloire Lyonnaise* and *Souvenir de Gabrielle Drevet* were thoroughly in character. The pretty white flowers of the former, with their lemon-tinted base, are now becoming well known; but the latter promises to be a most valuable addition to the Tea Roses, having large deep flowers of a charming rosy tint on a creamy white ground, the high centre being surrounded by large petals whose margins are gracefully reflexed. It is unquestionably the best of the 1885 novelties, as it blooms out of doors exactly as shown by Messrs. Paul.

Mr. Penny's orphanage scheme seems to be progressing vigorously, if we may judge by the first list of subscribers which to-day appears in our advertisement columns. It contains the names of some of our best gardeners, a good guarantee that the project will succeed. Mr. A. F. Barron, Royal Horticultural Gardens, Chiswick, Mr. Wynne, and Mr. Wright have been appointed secretaries, and suggestions and subscriptions may be sent to them, or to Mr. Penny, Sandringham. An Orphan Boy says: "What he would like to see, and would be willing to subscribe to, would be a fund invested safely and managed cheaply that would afford a substantial reward or prize to as many young gardeners as possible every year who passed an examination for proficiency in their business and received a certificate from of the same from some properly constituted body." The better education of gardeners has, he says, been everybody's cry since he remembers; it is more needed now than ever, and would benefit both the parents and the children, and now is the opportunity.

Eucharis mite.—It seems to me that the injury caused to many plants by this insect is not so fully known as it should be. Having had to deal with it in its native country, I know well how difficult it is to eradicate. It would surprise some of the readers of THE GARDEN to know how long it will live and, at times, even multiply on a few dried leaves in a tin box. Its ravages are not confined wholly to the *Eucharis*, but extend to many other genera. In some of the large plant-growing establishments throughout the kingdom thousands of valuable plants die annually from the effects of this mite. It enjoys a dry, hot atmosphere and bright sunshine. Fumigation and dipping in tobacco juice may, to some extent, keep it down, but the French method of evaporating tobacco juice, some time ago advocated

in THE GARDEN, will not kill it. Its introduction to this country is of comparatively recent date, but no doubt millions come home yearly with importations of plants, Palm seeds, &c.—ROBERT CROSS, *Corston-phine, near Edinburgh.*

Lime for Cyclamens.—Having read the note on hardy Cyclamens by "Olotir," page 248, and these plants being especial favourites of mine, makes me write to suggest that where lime is not naturally present in the soil, when hardy Cyclamens are planted, a little old mortar or other spent lime should be added to it. We have, at Wisley, hardy Cyclamens in different soils and situations all growing fairly well, but not so fine as I saw long ago at Mr. James Atkins's garden at Painswick; so having one rock bed, in which a good deal of old mortar had been mixed with the soil, that we might test whether plants liked lime or not, we planted some Cyclamen Coum in this. The increased size both of the flowers and leaves shows that lime increases the vigour of the plant. I am, therefore, trying other species in the bed.—GEORGE F. WILSON, *Heatherbank, Weybridge Heath.*

ORCHIDS.

W. H. GOWER.

ORCHIDS AT BURFORD LODGE.

AMONGST Dendrobiums many hundreds are now in bloom here, or promise to be so ere long. The most noteworthy now in flower are *D. Ainsworthi*, its varieties, and its near relative *splendidissimum*; these are hybrids obtained in different ways between *D. nobile* and *D. heterocarpum*; their colours are those of the parents, beautifully blended, and they also retain the grateful odour of Violets which is such a distinctive character in *D. heterocarpum*. *D. Wardianum* in many forms is also now in great beauty, from the slender-stemmed Assam form to those with thick stems and knotted joints, varieties of *giganteum* largely imported by Messrs. Low, of Clapton, from Borneo; also the rare white form called *candidum*, in which the waxy sepals and petals are pure white throughout, and entirely devoid of the richly-coloured tips which occur in the normal plant. The lip is white, with a stain of pale orange-yellow at the base and a faint spot of pale brown on either side. This form still keeps extremely rare. *D. Jamesianum* is another white-flowered species, and one of the most beautiful of its class; it belongs to the *nigro-hirsute* section, of which *formosum giganteum* is a familiar example; this section is characterised by stout, erect growths and stem-like pseudo-bulbs more or less densely clothed with short, jet-black hairs. The flowers of *Jamesianum* are large and spreading, pure white, with the exception of the base of the lip, which is stained with cinnamon. These last many weeks in full beauty. In direct contrast to the purity of the last-named kind stands *D. nobile nobilium*, the beauties of which seem every year to become better developed. Of *D. nobile* itself, innumerable forms are now in bloom, some having intensely dark flowers, passing through paler shades to almost white, but *nobilium* is undoubtedly both the largest and darkest-flowered variety belonging to this type yet introduced. Its blooms measure upwards of 4 in. across; the sepals and petals are broad, thick, and fleshy in texture, and rosy purple, becoming slightly paler at the base; the lip is white with a broad marginal band in front, of deep rosy purple, whilst the large eye-like spot at the base of the lip is intense purplish crimson or maroon. *D. Hardyanum*, a curious and distinct species, has not yet been seen in the form of large specimens, but it gives good promise of becoming a general favourite; the flowers are deep rich yellow, the lip being stained on either side with a blotch of orange-yellow and fringed, as are also the petals. Those acquainted with *D. Brymerianum* will readily glean some idea of the appearance of this novelty. *D. Findlyanum* and its rose-coloured variety are both charming plants, which produce numerous large lovely flowers upon short spikes which proceed from knotted joints. In the typical plant the sepals and petals are white suffused with pink or pinkish rose; the lip, which is orange-yellow at the base, becomes paler towards the front. In the variety *roseum*, the whole flower is suffused with rosy pink.

D. crassinode is a mass of beauty, its large, waxy-white flowers tipped with magenta of various shades being strikingly effective. Species belonging to the *densiflorum* section are numerous, conspicuous amongst which being such kinds as *chrysoxum*, with pendulous, somewhat lax, bunches of golden flowers, and *Farmeri*, with its drooping trusses of pinkish white and yellow flowers. Of kinds with pendulous growths, the most noteworthy are fine examples of *D. primulinum* and *D. primulinum giganteum*, bearing long racemes of large blossoms, the sepals and petals of which are creamy white flushed with pink, and stained with pale yellow in the lip. *D. cretaceum*, a smaller kind, and one rarely grown, is nevertheless extremely beautiful; its flowers are creamy white, the lip being pale yellow in the centre, and faintly streaked with crimson; other species are *D. album*, many varieties of the violet-scented *D. heterocarpum*, and the curious Australian *D. tetragonum*, which, although not particularly showy, is extremely curious and almost a perpetual bloomer. Large specimens of the typical *D. limbratum* are also bearing numbers of pendulous trusses of rich golden flowers, the lips of which are beautifully and heavily fringed.

Of the Lady's Slippers (Cypripediums), fine examples, such as *hirsutissimum*, *Haynaldianum*, *Harrisianum*, *villosum*, and *Schlimi*, are blooming freely. *C. barbatum Warneri* is a most conspicuous and charming form, although compared with other varieties its blooms are small; its brilliant dorsal sepal is specially attractive; moreover, it appears to be constantly growing and sending up fresh flowers nearly all the year round. Here are also grand specimens of the Philippine Island *C. argus*, with beautifully marbled foliage and much spotted flowers, together with the best form of *C. Dayanum* and *Lawrenceanum*, all of which are beautiful and showy plants, even in the absence of flowers; in *C. vernixium*, *C. argus* and *C. villosum* are fairly blended; it is remarkable that the peculiar varnished-like appearance of the flowers of the latter species is invariably transmitted to its progeny.

PHALANOPSIS are well represented by the two fine old species *P. grandifolius* and *P. Wallichi*, their ample bright green plaited leaves showing off to advantage their countless numbers of bold, erect, many-flowered spikes; the more recent introduction from Madagascar, *P. tuberosus*, is also represented, and although a somewhat difficult plant to cultivate, it appears to thrive and bloom here in the freest possible manner; one plant of it is particularly notable, being much shorter jointed and closer in its growth than the others; the sepals and petals are pure white, whilst the peculiar somewhat funnel-shaped lip, instead of being yellow at the sides, dotted with brownish crimson, is profusely spotted and blotched with rich crimson-maroon. The front lobe is white, spotted with magenta-purple, the crests being deep orange-yellow.

Conspicuous amongst Angraecums is *A. Ellisii*, the Cockatoo Flower, a species which bear long racemes of pure white, long-spurred flowers, which have the additional recommendation of being fragrant. *A. Kotschyi* is somewhat similar to the last named kind, but smaller, and the spur is twisted, also the rare *A. fastuosum*, which promises to become a dangerous rival to the West African *A. caudatum*. The free-blooming *A. citratum*, with long racemes of closely set creamy white flowers, with just a tinge of sulphur-yellow in them, is also specially noticeable, as is likewise the curious and minute-flowered *A. hyaloides*.

AERIDES are represented by the rare and seldom seen *A. vandarium*, which is sometimes (but erroneously) named *A. cylindricum*. It resembles somewhat in growth *Vanda Hookeriana*, and produces pure white flowers in pairs on short spikes; these last a considerable time in perfection; the specimen in question has produced upwards of thirty flowers this season. Another plant with somewhat the habit of the Fox-brush *Aerides* bears two long racemes of pure white flowers. It is at present unnamed, and quite a novelty in the genus. *Vandas* are represented by good varieties of *V. carulescens*, the beautiful blue flowers of which contrast admirably with those with which they are associated. *Cattleyas* were over; sufficient, however, remained to show that *C. Trianae* had been very fine, whilst *C. Percivaliana*, in the shape of a large and very richly coloured variety, still lingered in flower.

ODONTOGLOSSUMS—such kinds as *triumphans*, *Pescatorei*, *Wilckeanum*, *nevadense*, *Sanderianum*, *Rossi*, and *Cervantesi*, and numerous fine forms of *crispum*—may be seen here in abundance. In the *Odontoglossum* house are two fine examples of *O. Edwardi*, bearing large branching panicles laden with flowers, which, although small, are totally different in colour from that of any other known member of the family, the sepals and petals being violet-mauve, and the lip purple with a yellow crest. This is surely a plant that will be turned to account by the hybridist. The allied genus *Oncidium* is at present represented by *O. bifolium*, a dwarf, compact-growing species from Monte Video, which may be described as a miniature form of *O. varicosum*, the Rush-leaved *O. Cebolleta*, *O. Phalenopsis*, and some highly marked forms of *O. sarcodes*. Amongst the somewhat despised family of *Epidendrum*s, *E. Wallisi* is both conspicuous and handsome. It belongs to the erect-growing section, with Reed-like stems, and bears large flowers both on terminal and lateral racemes, the whole forming a dense panicle of sweet-smelling blooms. The sepals and petals are golden yellow dotted with red; the lip is broad in front with a cuneate base, white, ornamented with numerous radiating feathery lines of bright purple. *E. radicans* is also now very finely in bloom, its corymbiform racemes being bright orange-scarlet, whilst several forms of the old and new seldom seen *E. Stamfordianum* are bright and attractive.

MANDEVALLIAS are most vigorous, and numbers of scapes just rising bid fair to produce a grand display. We noted, however, the rare *M. Crossi*, with good-sized flowers of an intense crimson-scarlet, and produced in quantity. *M. ignea aurantiaca* is a large form, with a very distinct shade of orange in its flowers. The charming *M. Shuttleworthi*, which appears to be always in flower, has here as an associate a species resembling it in shape, but not so large, called *Indibunda*; in this the sepals are yellow, the basal half of the upper one being stained with purple. *M. Schlimi* is a curious form, producing a raceme of flowers somewhat crowded; the sepals, which are light purple, are freckled all over with dark purple dots, the long tails being yellow. There are also still numerous examples of *M. tovarensis*, with their snowy flowers; whilst the section to which *M. polysticta* belongs is only just opening. *M. Fraseri* is a very handsome kind, with rosy purple flowers, which suggest the idea of its being probably a hybrid between *M. ignea* and *M. Harryana*. One of the most curious members of this family is *M. culex*, which has tiny white flowers, profusely freckled with maroon-coloured dots.

Angraecum sesquipedale.—Hundreds of this remarkable plant may be seen in Mr. Low's nursery at Clapton. The flowers are of gigantic size, ivory-white or creamy white in colour, and have a fragrance like that of our common white Lily. They are thick and fleshy in texture, the lip being furnished with a very long spur, which, to accord with its name, should measure 18 inches in length, but it seldom attains more than 12 inches or 15 inches in this country, although upon one or two occasions we have seen it sufficiently long to merit the name. This plant, although known to science for many years, was not added to our collections until Ellis, on his last return from Madagascar, brought it, and in whose collection it bloomed for the first time in 1857. Ellis sets a good example to plant collectors, for in describing its habitats he gives valuable information to the cultivator. He says:—

It does not grow in the moist and thickly wooded parts of the island, but generally on straggling trees along the edges of the forests or in parts where the trees are only sparingly spread over the country. It seems to grow most frequently on the driest parts of the trunks and branches of thinly-leaved trees, and, though occasionally, was seldom found near the ground. The largest plants grow about 12 feet or 20 feet up, and smaller ones were often seen higher amongst the smaller branches. In these situations the leaves were neither numerous nor large, and in its native state the plant most frequently presented a starved appearance and straggling habit, but it produced a profusion of bloom of a pure ivory-white. Where found growing in constant shade and moisture, the plants were better furnished with leaves, but produced fewer flowers, and these were creamy white (not ivory-white).

Under cultivation this is very handsome, even when not flowering. The leaves are arranged in a distichous manner, tightly clasping the stem at the base,

recurved at the tips and of a deep bluish-green, whilst the large white flowers produced at this season are very persistent and render it most attractive.—G.

MOTH ORCHIDS.

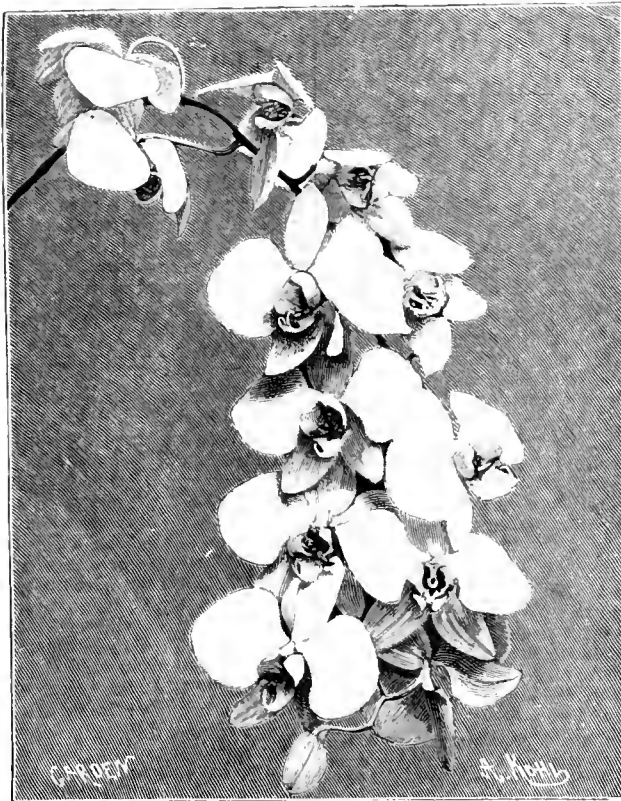
(PHALANOPSIS.)

THE first species of *Phalaenopsis* with which Orchid growers were made acquainted was *P. amabilis*, introduced from the island of Luzon in 1836 by the Messrs. Rollisson, of Tooting. A few years afterwards came *P. grandiflora* from Java. After these, *P. rosea* and *P. Lobbi* were sent home by Lobb, then collecting in the Philippine Islands. It was some years afterwards before *P. Schilleriana* was introduced—in the first place to Belgium by M. Linden, of Brussels, and immediately afterwards to England by Mr. Williams, of Holloway. Since then many forms have been introduced, and others are said to be on their way to this country. *P. amabilis*, like all its congeners, is destitute of pseudo-bulbs; it forms a short stem, from which

over, are bright, light green on both surfaces. The scape bears a raceme of lovely flowers. These scapes should not be removed from the plants when the flowers decay, as in the succeeding year they produce lateral shoots, which bear quantities of blooms. We have seen plants thus treated bearing from sixty to eighty flowers, each measuring about 4 inches across. The flowers of *P. grandiflora* are pure white, with the exception of the side lobes of the lip, which are yellow, as also are the recurved tendrils, which proceed from the tip of the middle lobe. The variety *aurea* is a native of Borneo, and is chiefly remarkable for having the base of the lip stained with deep orange-yellow. *P. Sanderiana* is a lovely flower introduced by Mr. Sander, of St. Albans, and named by Professor Reichenbach. It is considered by some to be a natural hybrid between *P. amabilis* and *P. Schilleriana*, but Mr. Sander says it comes from a total different locality from that of any of the other known kinds: indeed, we look upon it as a form of *amabilis*, with rose-coloured sepals and

between *P. rosea* and *P. amabilis*; the flowers are medium sized, the sepals and petals pure white, the latter much the largest, lozenge-shaped, and freckled near the base with rose-coloured dots. The middle lobe of the lip is ovate, furnished at the apex with two short recurved tendrils, rich crimson in colour, the side lobes being wedge-shaped, rosy violet dotted with crimson. *P. intermedia* Portei, introduced from the Philippine Islands, upon first flowering was supposed to be a hybrid having the same origin as the last (*i.e.*, *rosea* crossed with *amabilis*), and this conjecture has been verified by Messrs. Veitch, who have obtained the same form at Chelsea from seeds the result of a cross. The sepals and petals are white, slightly tinged near the base with rose. The middle lobe of lip is ovate, and furnished with two short tendrils at the apex, which stand forward; they are deep purplish rose colour tinged with yellow at the base, while the side lobes are rose-coloured. *P. intermedia* Brymeriana appears to be a natural hybrid between *intermedia* and *Schilleriana*; the flowers are almost identical in shape and size with those of the first-named plant, whilst the foliage is faintly marbled after the manner of that of the latter. The sepals and petals are white, tinged with soft rose, the lateral sepals sometimes faintly flushed with purple; the front lobe of the lip is violet or amethyst, stained at the base with bronzy yellow, a colour which also pervades the side lobes, which, in addition, are streaked and dotted with magenta. The apex of the lip is furnished with two short tendrils.

P. SCHILLERIANA differs materially from all the other known kinds in having its foliage beautifully marbled and banded with silvery grey upon a dark green ground, the underside being purple; on different plants these markings vary much in brilliancy. The scape branches the first season, and when the plants are strong produces numerous flowers (sometimes upwards of a hundred); these flowers vary from light mauve to rosy lilac, fading away to white on the edges; the lip is rosy lilac on the ovate front lobe, furnished with two diverging points, resembling somewhat in shape the tail of the black grouse. The side lobes are white dotted with red and bear a yellow fleshy mass at the base. The variety *vestalis* has white flowers; *delicata* is also a white-flowered form suffused with a faint tinge of flesh colour, whilst the variety *splendens* is a form with large blooms of a deep, rich rose colour. *P. Stuartiana*, introduced by and named in honour of Mr. Stuart Low, of Clapton, where we recently saw many hundreds in flower, evidently belongs to the *Schilleriana* section; its foliage, however, is not so conspicuously banded with grey as that of *Schilleriana*, and the bands become almost obliterated when the leaf is mature. The flowers are similar in shape to those of *Schilleriana*; the sepals and petals are pure white with the exception of the lower half of the lateral sepals, which have a yellow ground colour, profusely dotted and spotted with cinnamon; the side lobes of the lip are furnished with similar colours, and have an orange-coloured callus at the base; the front lobe is pale yellow, dotted and spotted with red; the apex is furnished with two fluke-like appendages. The variety *nobilis* has larger flowers, and the spots, though less numerous, are larger in size. In *punctatissima* the sepals and petals are profusely freckled with red dots. *P. leucorrhoda* is also one of the hybrids which are supposed to have originated between *Schilleriana* and *amabilis*; the foliage is similar to that of the first-named plant, but much less distinctly mottled, whilst in some forms it is wholly absent; the sepals and petals are white, the latter flushed with rose at the base, whilst the lateral sepals are dotted with purple, the lip being streaked with purple with yellow on the disc. *P. casta* is another form supposed to have had the same parentage as the last; the leaves are slightly marbled when young, but the markings usually disappear by the time they reach full size; the flowers in a great measure resemble those of *amabilis*, being white faintly flushed with rosy purple; the lateral sepals are spotted with the same colour.



Phalaenopsis amabilis. Engraved for THE GARDEN from a photograph.

issue numerous vermicular roots, by which it adheres firmly to the stems of the forest trees or the rocks upon which it is found. The leaves are arranged in a distichous manner; they are somewhat oblong obtuse in shape, thick and fleshy in texture: on the upper side they are deep, shining green, and dull purple or slate coloured beneath. The scape is long and drooping, becomes branched when old, and bears many large, moth-like flowers arranged in a two-ranked manner. The individual flowers are round and full, some 3 inches across, pure white, with the exception of the lip, which has the base of the side lobes streaked and flushed with rosy red, and slightly tinged with yellow. In the variety *Dayana*, which is a highly-coloured form, the lower sepals are profusely dotted with carmine, the base of the middle lobe of the lip being suffused with soft crimson, whilst the side lobes are deep yellow on their front edges, and streaked with crimson near the base. *P. grandiflora* is at once distinguishable from *amabilis* by its longer and more pointed leaves, which, more-

petals; the slender tendrils at the end of the lip are somewhat short. *P. rosea* resembles *grandiflora* in growth, but it is altogether a smaller plant; its scape is erect, and bears a panicle furnished with many flowers. The sepals and petals are white, suffused with rose, the front lobe of the lip being rosy purple and quite destitute of cirrhi, whilst the colour in the side lobes is much paler. This species varies greatly in colour, some being very bright, especially the variety *aurantiaca*, in which the flowers are not only larger than those of the type, but the base and side lobes of the lip are rich orange-yellow. *P. Veitchiana* is supposed to have had for its parents *rosea* and *Schilleriana*. The scape resembles that of the first-named kind, but the flowers are more in the way of those of *Schilleriana*, but smaller. These are soft purple in colour, passing into white at the margin. The lip is purple, edged with lilac; there are several forms which differ somewhat in colour. *P. intermedia*, the *P. Lobbi* of Messrs. Veitch, is supposed to be a natural hybrid

P. Lowi is altogether a distinct species; it grows naturally upon exposed rocks near Moulmein at about 250 feet elevation. It loses its leaves during winter, and has a provoking habit of never making any more, unless great care is exercised in its management. The scape, which is branched, bears numerous, somewhat small flowers, which, however, are round and full; the sepals and petals are white, faintly tinged with rose, the front lobe of the lip being purplish violet. It has not hitherto yielded any hybrid forms or special variations. *P. Luddemanniana* resembles *rosea* somewhat in habit, but the flowers are very distinct; the flowers, which are produced freely, are creamy white, flushed with pale violet, and transversely banded with streaks of amethyst; the lip is deep violet in front, faintly blotched on the side lobes with yellow. *Ochracea* differs in having the sepals and petals dull yellow, flushed with rose, the transverse bands being reddish brown. *P. violacea* comes from the neighbourhood of Singapore, and is a sturdy plant, producing broad, deep green, deflexed leaves, strongly ribbed. The scape bears a few flowers only, which are medium-sized, the dorsal sepal and petal being creamy white; the lateral sepals are somewhat falcate in shape, deep purple, bordered with creamy white; the column and front lobe of the lip are deep purplish magenta, the small side lobes being yellow, as is also the callus. The variety *Bowringiana* differs from the others in having a light yellow ground; the sepals and petals are freckled with rosy purple, the inner halves of the lateral sepals being of the same colour; whilst in *Baron Schroederi* variety (*Schroederi*) the sepals and petals are faintly banded with purplish streaks.

P. SUMATRANA, sometimes called *zebrina*, is a rare and handsome form, from the island of Sumatra, with somewhat the habit of *Luddemanniana*. The sepals and petals are rather narrow, yellowish white, broadly barred and blotched with reddish brown; the lip is white, spotted with orange, and sparingly streaked with violet. *P. speciosa* is a small-growing plant, discovered in the Andaman Islands. It has flowers of a deep crimson-purple, indistinctly barred with white lines. *P. Mariei*, from Bornco, is quite a gem. It has somewhat the habit of *sumatrana*; the sepals and petals are white, transversely barred with deep red; the lip is magenta-rose, the front lobe being narrowly bordered with white. *P. Reichenbachiana* also belongs to this section. It has cream-coloured sepals and petals, marbled with purplish red or crimson blotches; the lip is rosy mauve, stained with orange on the side lobes. It is one of Mr. Sander's recent introductions from the Indian Archipelago. Other kinds of less beauty are *P. tetraspis*, *Cornu-cervi*, *Parishi*, *antenniferi*, *amethystina*, *Manni*, *Corningiana*, *Valentini*, and *fasciata*.

Where a large collection of *Phalenopsis* is maintained, it will be found most convenient to devote a house specially to them, but in the case of a few specimens only they should be placed together in one part of the East Indian house. These plants enjoy abundance of moisture at all seasons, especially when making their growth. At whatever time of the year young leaves appear, the plants should be encouraged to grow, as checking them by withholding water at such times is sure to prove disastrous. *Phalenopsis* require considerable heat, yet they will not long survive if subjected to too high a temperature. During winter, by which we mean from about November to March, 65° to 68° in the daytime, and 60° to 65° at night, will be sufficiently high. During the remaining portion of the season 70° by night, rising to 80° by day or more with sun heat, will suit them admirably. The temperatures should be maintained together with a free circulation of air, and the atmosphere should be sufficiently charged with moisture to prevent aridity. They may be grown in pots, or baskets, or upon blocks of wood, according to fancy, but avoid burying their roots in the potting material; indeed, the less *Sphagnum* used about their roots the better. The sun should not be allowed to shine full upon

them during mid-day, nor, indeed, at any time when their leaves are wet, and a thin shading material must be provided for their protection at such times; it should be so fixed as to be about 1 foot above the roof, by which means a current of air passes over the glass, and thus maintains a genial atmosphere in the house. *Phalenopsis* are not easily increased, except from seed, or by means of occasional offshoots which sometimes are found upon their flower-spikes or roots; when this occurs they should be encouraged to establish themselves upon a small block before they are detached from the parent plant. *P. Luddemanniana* is perhaps the freest of all the known kinds to increase in the above-mentioned manner. *Portei* and one or two other kinds produce young plants upon their flower-spikes, and several instances of *Stuartiana* forming young plants upon its roots are also recorded, but the chief source of increase in numbers must arise from importations, or from seeds raised at home, this latter system being both a long and tedious one. In the early days of our experience with *Phalenopsis*, the treatment accorded them was most uncongenial, and although they appeared to grow vigorously for a time, they eventually sickened and died, but, nevertheless, their cultivation is not difficult. W. H. G.

ORCHIDS IN BLOOM AT KENWOOD, ALBANY, N.Y.

THE Orchid houses here are now well furnished with bloom, there being not less than 130 varieties open at present, these including some of the very choicest kinds, a few of them being unique specimens. As an English nurseryman remarked the other day, pointing to three *Phalenopsis*, "These varieties we have to cross the ocean to see." I think we are fully a month earlier in this country, as all our *Lælia anceps* and its varieties (of which we had about 400 spikes) have been out of flower more than a month; the *Cattleyas* are past their best, and the *Odontoglossums*, which usually bloom in the spring in England, are now beautiful. Among the hundreds of *Cattleya Trianae* in flower may be seen an immense number of varieties, but these may all be grouped under half-a-dozen named kinds; among the most distinct are *Barkhouseana*, conspicuous for its crimson-tipped petals—this peculiarity in one variety is extended to the sepals; *Osmani* has large rosy sepals and petals, with a brilliant coloured lip; *nivea* and *alba* are types of the delicate section; *Bonnyana*, *Victorie*, *excellens*, *Russelliana* all good, but one name is sufficient; *Rougieri* and *quadricolor* represent the dark varieties. The *Phalenopsis* are particularly rich in variety at this season; the albino form of *Schilleriana*, called *advena*, is very attractive; *leucorrhoda* and *Veitchi* have also their albinos in *alba* and *brachyodon*; the marbled and dark rose forms of *Sanderiana* are improvements on the type. Two grand forms of *speciosa* are *Christyana* and *Imperatrix*. The first cultivated seedling of *Phalenopsis Portei* is doing well and flowers continually; *Brymeriana* is a brighter variety with green leaves; the new *Reichenbachiana* is in flower, and proves to be a distinct variety; *Luddemanniana*, *Stuartiana*, and varieties are in profusion. By the way, young plants forming on the roots of this species are now of common occurrence, and these are better taken off as soon as the first leaf is formed, and potted, when they will soon make nice plants. There is a wealth of bloom in the *Dendrobium* house, more particularly in the *Wardianum* section; both the white and yellow forms are conspicuous; the latter, *ochroleucum*, is a particularly showy variety, and should be in every collection, as also is the nobiliss form of *Dendrobium nobile*. This is probably the dullest season of the year for *Cypripediums*. The collection includes every known variety of this fascinating genus. The hybrids of *Sedeni* are plentiful and in flower nearly all the season; among them in bloom are *Sedeni variety candidulum*; *cardinale*, so much resembling our *Moccasin* flower of the swamps; *calurum*, a somewhat coarse variety compared to *albo-purpureum*,

and *Schroederæ*; the old *Phaius grandifolius* and *Wallichi* are in fine flower, with over seventy-five spikes; *Phaius irroratus* is a lovely Orchid, but not so showy as *Phaius irroratus purpureus*, which more nearly resembles *Phaius grandifolius* in its growth. The cream of the *Odontoglossums* at present are the two unique varieties *Shuttleworthi* and *Shuttleworthæ*, the last is probably the prettiest of all the *Odontoglossums*, and is evidently a natural hybrid from *triumphans* and *Pescatorei*. The *Hystrix* type shows great variation, and among the heavily blotched varieties are *lycoglossum*, *Wilckeanum*, *guttatum*, &c. *Pescatorei* is a much later flowering species, but promises well for flower. *Cooksoni* is an extremely free spotted form of *crispum*. *Mulus*, which is now getting very plentiful, is represented by several specimens. *Gloriosum* is in innumerable variety, including such distinct forms as *Andersonianum*, *baphicanthum*, *Ruckerianum*, *hebraicum*, *deltoglossum*, *odoratum*, *Sanderianum*, and *constrictum*. F. GOLDING.

Masdevallia Ehippium.—This interesting species is not often seen in cultivation. In the *Botanical Magazine*, where it is figured under this name, it is stated that it was first discovered at Loxa by the late Dr. Krause. Mr. Gustavus Wallis, who discovered it in New Granada, says he found it growing on the frosty heights of the Sonson district. It succeeds, it is said, quite as well in a loose compost as on the bark of trees, and even in a common heavy soil; in its native home it grows in highly elevated regions, as cold as any in which *Masdevallias* can exist. This species has been cultivated under the names of *M. Colibri* and *M. Trochilus*. It is useful to know that it can be cultivated in the coolest house. *M. Chimera*, on the other hand, is a native of deep valleys in the same country. This species and its allied forms succeed best in a warm temperature. We grow them in the Mexican house during the six coldest months in the year.—J. D.

Lælia harpophylla.—This is at once a most distinct and peculiar plant, the colours of its flowers being both rare and showy. Its habit suggests the idea that it may be a natural hybrid. If, however, such is the case, it has been produced in quantity and not in single plants only, which appears to be the case with *Odontoglossum mulus*. It belongs to the *L. cinnabarina* section, but differs from that species in having quite slender, stem-like pseudo-bulbs, which vary in height from 6 inches to 12 inches, and bear single strap shaped, pointed, coriaceous dark green leaves. The scape springs from the top of the pseudo-bulb at the base of the leaf, and bears six or seven rich, bright orange-vermillion flowers, the sepals and petals of which are lanceolate and acute, and nearly equal in size. The middle lobe of the lip is long and narrow, recurved at the point and white, both edges being beautifully frilled. A fine form of this brilliantly-coloured species, measuring upwards of 3 in. across, comes to us from Mr. Laing, of Forest Hill, in whose nursery this plant is just now flowering profusely.—G.

Orchids at Oakwood.—A remarkably well-grown and select collection of Orchids may be seen at Oakwood, Troy, N.Y. Mr. Smith, the owner, is a great lover of these, and attends personally to their wants. He strongly advocates outdoor treatment in summer for a great many species, including all the so-called cool Orchids. After many years of experience, he has been enabled to weed out all that are not amenable to this treatment, reserving only *Phalenopsis*, a few *Cattleyas* and *Dendrobies*. He has constructed a large platform (the supports of which are placed in pans of lime as a preventive against slugs) under some shady trees, which have been thinned so as to allow abundance of light. The plants (of which there are several hundreds) are brought here early in June, and remain until the latter part of September. There is no protection afforded them from extremes of weather, but every dry day they are holed overhead twice. That they enjoy this treatment is evident by their healthy appearance for more robust and vigorous plants I have never seen. Among those particularly noteworthy are *Cologyna cristata* and *C. ocellata*, of which there is

an immense number. A fine specimen of *C. Massangeana* is growing very freely, and is constantly in flower. *Cymbidium eburneum*, Mastersi, and Lowi are in quantity, and represent the most robust plants I have yet seen, not an imperfect leaf being on them, and they flower as freely as Geraniums. One fine specimen of *C. Lowi* at the time of my visit had 16 spikes and 320 flowers. A large plant of *Odontoglossum citrosimum* was particularly striking. I saw this plant last year with seventeen large branching spikes. All the *Odontoglossums* are in fine health and developing large sturdy spikes. A batch of *Cypripedium insigne* was flowering for the second time since last winter. I noted a fine variety of *Laelia anceps Hilli* with flowers as well formed as Dawsoni, and larger than usual. Among the varieties of *C. Trianae* were two fine forms of *C. Trianae alba*. Altogether the collection is very noteworthy, particularly to Orchid growers, as demonstrating the value of outdoor treatment during our hot summer months, especially to those whose houses are not fitted for summer work, or have not the time to give them the attention they need.—F. GOLDRING.

Coelogyne cristata.—Mr. Douglas's remarks respecting the cultivation of this *Coelogyne* have prompted me to say a few words respecting it. Previous to coming here I was second gardener at Mr. Peacock's, Sudbury House, Hammersmith. The *Coelogyne*s there were removed to a cool house in which *Masdevallias* were grown, *etc.*, after some remarks had appeared in one of the papers on cool house culture, but they only made small bulbs and flowered but poorly. There were upwards of fifty plants, and I can safely say that I have this season had more flowers on four in 22-inch pans than we had annually there on the number just stated. Our plants here, after growth had commenced last season, were potted and placed in the warmest house, and there they remained until they had finished their growth. Last season many of the spikes had only five flowers on them, but this season many have carried six and seven, and in one pan there have been thirty spikes.—F. A. PAGE, *Mount View, Sheffield.*

ROSE GARDEN.

T. W. GIRDLESTONE.

ROSE-PRUNING.

WITH the advent of March, and lambs, and Daffodils, and east winds, and other genial indications of that period which pastoral poets, with the license too readily granted them by an indulgent public, have been apt to describe as "balmy spring" (?), the rosarian mind adverts to Rose-pruning. At the same time it should not be considered necessary because that which is generally considered the pruning month has come that pruning should be forthwith proceeded with, regardless of any other considerations, and as long as frosty nights continue, especially while followed by bright sunny days, the postponement of pruning until there is a prospect of more genial weather will probably involve no real loss of time. Nothing is more aggravating than when plants which have been pruned, say in the middle of March, have their 2 inches or 3 inches of young growth cut off by a spring frost late in April, or even, as in 1886, on the 1st of May, and plants which meet with such a fate are really in a worse position, and will probably be later in flowering than if they had not been pruned at all until the middle of April. In a large collection, of course, pruning will be done at various times, but in small gardens where every plant is of importance, it is better that pruning should be done late rather than too early. The objection generally urged against late pruning is that the plants bleed so much more than when pruned before any material growth has been made at the ends of the shoots, but it has not yet been conclusively demonstrated that this bleeding is particularly deleterious to the Rose trees. The first impression would naturally be that so large a loss of sap must be injurious, but when it is considered how greatly the area to be supplied has been reduced by the removal of branches in pruning, it will be seen that it may not be impossible

that the supply for what is left of the plant is amply sufficient in spite of the apparent waste.

A few years ago an attempt was made to obtain more or less exact evidence on this point, namely, whether or not the bleeding consequent upon pruning after growth had actively commenced was injurious to Rose trees. The season was a mild and early one, and by the third week in March most of the Hybrid Perpetuals had the ends of their shoots covered with young leaves; a certain number of rows was selected, each containing from twenty to thirty strong established dwarf plants of one variety. A stake was inserted in the middle of each row, and all the plants were then pruned pretty hard, those to the north of the stake being allowed to bleed unchecked, while those to the south of it were prevented from so doing by the immediate application of painter's knotting as a styptic. Here, then, were considerable numbers of plants of the same age and in the same situation all similarly pruned at the same time by the same hand, and whereof half the plants of each variety was prevented, and the other half not prevented from bleeding. The latter certainly did bleed copiously, in many cases palpably moistening the soil at the base of the plant, but for the former the painter's knotting proved a very effectual styptic. The plants were carefully watched throughout the ensuing season, but neither in the starting of the eyes, nor in the quantity or quality of the flowers, nor yet in the subsequent growth of the plants, was any appreciable difference discernible between those that had been stypticed and those that had not; beyond that, in a few cases, the styptic appeared to have killed back the shoot a little way beyond the eye to which it had been pruned. It was concluded therefore that it was not worth while for the prevention of evil results which were so little observable to expend the considerable labour involved in the tedious operation of stopping every shoot as pruned, nor to risk the real danger of having the plants badly injured by spring frosts from being pruned before any growth commenced for the avoidance of imaginary injury from bleeding, and consequently no attempt has since been made to check the copious bleeding, in spite of which satisfactory results have been obtained in regard to both plants and flowers.

Pruning is to a great extent a matter of convenience. There is no doubt that fine flowers may be grown from any of the numerous eyes of a long shoot, say, of a Hybrid Perpetual, provided the young growth can be preserved from spring frosts; but the topmost eyes being the most precocious, are consequently most exposed to danger from this source, and as it would be very awkward to have to manage a number of plants with a bunch of Roses at the end of each long shoot (for it is not as if the buds broke evenly along the whole length of the stem—there generally start but four or five eyes at most), it is found more convenient to cut back these long shoots to a greater or less extent, in order to compel the breaking of those eyes that are best situated for the subsequent formation of the plant and to delay their growth until the chief danger from late frosts is over. In addition, the young flower-bearing growths are thus produced upon shoots sufficiently shortened and stout enough not to be liable to be much blown about by the wind, an important consideration where many Roses are grown together, and where, as is often the case, strong south-westerly winds are frequent during the Rose season.

Among the most difficult Roses to prune are some of the older summer Roses of the Charles Lawson type, which are very precocious, and consequently liable to subsequent damage by late frosts; while, if to avoid this they are pruned hard, there results an immense growth and little or no flower. There are two courses of treatment open in these cases; one, to plant such varieties in sheltered situations where they may be thoroughly protected; the other, to plant them in thoroughly exposed positions where their first growth may be rather retarded than unduly encouraged.

With the Hybrid Perpetuals that are at all worthy of the name, and with the Tea-scented varieties there is no such difficulty, because however hard they may be pruned, they are sure to bloom; the weaker-growing sorts settle the question for themselves as to how far they are to be cut down; and of the stronger varieties generally from two-thirds to three-quarters of the length of the vigorous shoots may advantageously be removed. Of all Roses, the Teas are the easiest to prune; if they have not been damaged by the winter, but little pruning is required beyond the removal of weak and twiggy growth, and where they have stood in the open through a severe winter, the frost will have reduced the work of the pruning knife to the excision of the dead shoots just below the lowest point of injury. Many growers have had great success with Teas, cutting the plants right down to the ground whether the shoots have been frost-killed or not, and though this treatment sounds at variance with the above statement that where uninjured by frost the Teas need not be much pruned, the hard pruning may be justified by considerations of situation and convenience. The fact is, that Teas will flower freely, however pruned; and consequently, those who grow them in the open and require unblemished flowers, prune hard, whereby strong shoots spring from the base of the plant capable of carrying more or less erect the flowers, which otherwise from their somewhat pendulous habit on a branching plant, might hang down against the foliage and chafe, or even become splashed with mud from the soil during heavy rain. Where, however, Teas are grown as climbers, the main object is the furnishing of the wall or fence against which they are planted, and in such a position the tendency of the blooms to be pendulous is an additional attraction; consequently, as almost every shoot will flower if allowed to remain, it is only needful to remove the twiggy branches which might interfere with the proper development of the best-ripened shoots. It may appear from this that the Teas may be pruned almost anyhow, and this is really the fact; so that anyone who is likely to be puzzled about how to prune Roses, had better devote himself assiduously to the culture of the Tea-scented varieties.

Persian Yellow and Harrison's Yellow.—

In reference to the remarks of "Hortus" on the Austrian Briers, Harrison's and Persian Yellow, I have been measuring a number of shoots of both varieties, and I find that the average height of all my plants of the former is a good 2 feet in excess of that of the latter, some of the shoots of Harrison's Yellow being over 8 feet long. I have frequently observed this difference among both maiden and cut-back plants, and, judging from its constant maintenance among plants obtained from time to time from various sources, it would seem to be pretty general. At the same time the plants of the Persian have been generally better furnished with flowers than those of the American variety, and it was for this reason, as well as on account of its more bushy habit of growth, that the Persian Yellow was recommended for the special purpose in view, and not with any idea of disparaging the attractiveness of the individual flowers of Harrison's Yellow.—T. W. G.

Hybrid Teas.—I was in hopes that the writer of the interesting article on Hybrid Teas (p. 225) would have given us the benefit of his experience as to the growing properties of this section of Roses. With me with but few exceptions they refuse to grow. I commenced with a dozen of what are called pedigree Roses when they were first distributed, but at the end of two years they were all dead except two. These were Beauty of Stapleford and the Hon. George Bancroft. Since then I have added others, amongst which Lady Mary Fitzwilliam is the only one that makes satisfactory growth. It would be useful to many if we could get information as to their behaviour in different soils and situations.—J. C. C.

Bottoming lakes.—Will some reader of THE GARDEN kindly furnish me with instructions as to the best way of forming a bottom for an artificial piece of water? The soil is

sunny, and it is therefore rather a difficult matter. Is there any better or less expensive way than making a concrete bottom, say 6 inches thick, with stones and cement?—W. H. T.

FLOWER GARDEN.

PRUNING HARDY CLIMBERS.

WHEN hardy climbers are neglected they soon become unsightly, this being especially the case with those planted against the walls of dwelling houses and other somewhat similar positions. Not only is it necessary to give good attention to climbers growing in such conspicuous sites, neatness being usually in keeping with the surroundings, but, unless periodical pruning and training are resorted to, the chances are that the climbers will be extremely disappointing as regards their habit of flowering. When all are allowed to grow at random, or merely receive a touch over with the shears, and only re-nailed or otherwise secured whenever they break away from the walls or pillars, thickets of rubbishy growth soon result, which sooner or later have of necessity to be cut clean away. Mixtures of certain climbers if judiciously carried out may be effective enough for a time, but, as a rule, the more vigorous soon overgrow their less robust neighbours, and in very many instances, when the kinds are somewhat evenly matched as regards vigour, what was at first a pleasing combination soon degenerates into hopeless confusion. I hold that it is the wisest course to keep all separated, and in most cases I find a free use of the knife at the present time to be most beneficial. As all do not require similar treatment, I propose to take a few of the best-known in detail.

CLEMATISES.—These, being particularly liable to run wild, must be attended to, even if planted in the wild garden. We usually divide them into sections, viz., early and late flowering. The former, which includes *C. cerulea*, *azorea grandiflora*, *Lady Londesborough*, *Miss Bateman*, *Albert Victor*, and *montana*, produces bloom principally or solely from the young ripened growths, and this should be freely thinned out and all dead wood cut away. This section is best adapted for training up pillars or stakes, as well as for rambling over common shrubs. It is the later flowering sorts we prefer for training against walls, in masses over windows, on the fronts of balconies, and over prominent archways. They are also admirably adapted for massing on lawns, where they may be roughly trained up stakes or over fanciful trellises, should these be preferred. It is this section that suffers soonest from neglect, as where unpruned the principal part of the flowering growth soon collects in a mass on the portion of the old wood farthest from the roots. It must be understood that the flowers are produced on the current year's growth, and in order to have this as strong and near the ground as possible, all the last season's wood should now be cut back to near where it last started. Strong, thinly trained growths, which require support as they advance, develop the finest flowers, and give a longer succession of bloom than do neglected plants. I should add that this later flowering section includes the popular *C. Jackmanni*, as well as *lanuginosa*, *Lady C. Nevill*, *Mrs. G. Jackman*, *Gipsy Queen*, *velutina purpurea*, *Tunbridgenis*, *Lady Bovill*, *rubella*, *Robert Hanbury*, and *Star of India*. All Clematises are generally supplied from the nurseries in pots, and now is a good time to plant in good loamy soil.

ROSES.—Although very generally planted, climbing Roses are not often seen in good condition, especially when they have to struggle against other climbers. Pruning is frequently neglected, and this, coupled with starvation treatment at the roots, soon renders them comparatively useless. The first to fail, or to become unsightly, are the Hybrid Perpetuals, and I am of opinion that these are unsuitable for wall culture. Teas and Noisettes are much the best, these being of lighter and freer branching growth, as well as the most continuous flowering. *Gloire de Dijon* and *Madame Berard*, which much resembles it,

Climbing Devoniensis, *Safrano*, *Adam*, *Souvenir d'un Ami*, *Catherine Mormet*, *alba rosea*, *Niphotos*, *Celine Forestier*, *Triomphe de Rennes* (extra strong), *Brennus*, and *Maréchal Niel* are all good wall Roses, and to these may be added the white and yellow Banksians and *Cheshunt Hybrid*. The latter is classed as a Hybrid Perpetual, but, as its name implies, it is an hybrid, and with us succeeds admirably against a terrace wall. As the *Maréchal Niel* flowers at every joint on well-ripened strong shoots, these should as much as possible be laid in to their full length, and if cut back directly after flowering plenty of similarly profitable growths may be secured for next season. Freely cutting away much of the weakly growth also induces the formation of the desirable stronger shoots. The Banksians flower principally on the smaller shoots or spray, and these must, therefore, be reserved, and the coarser or long straggling growths be either laid in to their full length where space remains, or else be cut away. Well ripened growths about the size of the stem of a clay pipe will frequently produce a truss of bloom at every joint, and all such should therefore be nailed or tied in, unless the situation admits of their being allowed to hang down naturally. The yellow variety with us proves to be the hardiest and freest to flower, but the white Banksian is the choicest, being sweet scented. It is also advisable to lay in well ripened lengths of *Gloire de Dijon*, but the weakly growths should be freely shortened. All the other sorts named are improved by judicious thinning out and shortening back, especially if it is thought desirable to have plenty of bloom where it can easily be reached. Roses in the open frequently receive liberal supplies of solid manure, but these growing at the foot of sunny walls stand in much greater need, and very rarely get it. An exhausted soil and little or no moisture will not long keep Roses or any other climber in good health, and ought not to be depended upon by those who wish to succeed. Solid manure being considered unsightly in such positions should be placed on the previously bared roots and then be covered with the old surface soil. In some instances a mixture of loam and rotten manure would be sufficient. Either dressing, being further supplemented with liberal soakings of water, will serve to keep the Roses in good health, and the stronger Teas are grown the finer and more plentiful will be the blooms. These also may be planted during this or the following month.

JASMINE NUDIFLORUM.—This is a general favourite, and is particularly gay at this season. Directly after flowering it may be freely shortened back. All spray and medium-sized shoots thus treated will flower at every joint the following winter or spring. Where space has yet to be filled, the leading branches may be laid in thickly to their full length. This plant is of free growth and soon neatly clothes a wall, pillar, or rockwork, against which it may be planted. The common white *Jessamine*, a very sweet-scented and charming summer flowering variety, we cut back to the main branches about this time, and the walls are soon re-clothed with abundance of flowering spray. It grows strongly when first planted, and after the walls are thinly covered with main branches, occasional re-nailing and close winter or spring pruning is all that is needed. The *Loniceras* or *Honeysuckles* we treat in much the same manner, and these always flower abundantly. The prettily variegated *Lonicera aurea reticulata*, if neglected for a time, soon loses much of its beauty. It requires to be freely cut back, and the young growths following will be much more ornamental than thickets of old wood. If cut down to the ground, it will break away strongly again and be much improved by the process.

MAGNOLIAS.—Neither the evergreen nor deciduous varieties need much pruning. All straggling shoots, if not required to furnish wall space, may be cut away, and the leading shoots be laid in till such time as the limit is reached. Winds are very destructive to the evergreen *Magnolia grandiflora*, and extra strong fastenings are required for

it; the bloom being formed at the tips of the short lateral branches, these must not be cut back in any way. All the varieties grow strongly, and are much more hardy than at one time thought to be. Our trees, rooting in a clayey loam, are very vigorous and free growing, but in order to give them a good start, it is advisable to add plenty of peat, or, failing this, leaf soil to the compost. These *Magnolias* are supplied in pots, and may be planted during the spring months.

WISTARIA SINENSIS.—According to my experience, this grand climber is not much in favour just now, very few young plants being observable. The finest specimens I have seen are in Kent, and the *Wistaria* would appear to be most popular in that county. One plant is capable of covering the front of a house of almost any size, and that, too, in a very few years. A peaty soil suits it, and may be necessary at the outset, but the roots soon spread far and wide into almost any kind of soil, including a heavy clayey loam. It may be trained somewhat similar to a Grape Vine, the main branches being laid in in a horizontal direction, and about 12 inches apart. The flower racemes will be already showing, principally on the short spurs, and all that is necessary is to cut hard back all straggling lateral growths and make good all fastenings requiring it. *Bignonia capreolata*, another extra strong grower, may be pruned similarly to the *Wistaria*.

CHIMONANTHUS FRAGRANS.—There are few plants so sweetly scented as this, and but for this fragrance it would be but little grown, the flower being small and dull in colour. It requires to be planted against a sunny wall and given plenty of head room, otherwise the result will be an abundance of rank growth and but little bloom. All the spray on our plant is well covered with bloom at the present time, and there is some bloom at the base of the stronger shoots. After the flowering period is passed, all strong shoots not required for furnishing the wall ought to be cut back freely, and during the summer any extra strong shoots are cut out, the aim being to secure as much well ripened spray as possible. A rather poor soil ought to be given this rank-growing deciduous shrub, or it will be a long time before it flowers freely.

PYRUS JAPONICA.—Both the red and white varieties of this well-known early spring-flowering plant are very attractive, and they are admirably adapted for covering house fronts and rockwork. The bloom is formed principally on short spurs, and all straggling growths should therefore be freely shortened back. Long ugly branches are most abundant on neglected plants, and their removal soon improves them in every way. *Crataegus Pyracantha* unpruned soon becomes equally unsightly; whereas if freely spurred back and young shoots laid in where possible, abundance of white trusses of bloom are produced, these in time being followed by attractive bunches of coral-red berries. Any that have been long neglected may with advantage be cut down to the ground, and it will then soon become as attractive as it most probably was before it had assumed its bushy habit.

VARIOUS.—Ivies ought never to be allowed to form much lateral growth. Better far to severely trim off both laterals and most of the old leaves; this may give the walls a rather unsightly appearance for a short time, but they will soon be re-clothed with fine healthy foliage, and thus be effective without forming a harbour for birds and vermin. Besides, unless Ivies are thus treated they are liable to break away from the walls wholesale, thus frequently necessitating a fresh start from the base. *Virginian Creepers* should also have all straggling growths cut back, and beyond this they are quite capable of taking care of themselves. Young plants of *Veitch's* variety are singularly beautiful, especially in the autumn, and strong pot plants put out at the present time, in fairly good soil, will soon cover a large area of wall-space, no training whatever being required. It is only in the more favourable southern counties where the common *Passion Flower* survives a severe

winter. This should have all loose growth cut hard back to the main branches, the bloom being produced on the young growths following this pruning. Forsythia viridissima is somewhat similar to Jasminum nudiflorum, but is of stiffer or more erect growth, and is later in flowering. Whatever pruning is necessary in order to preserve neatness should be done immediately after the flowering period. With us it grows strongly in a heavy loam, but was given plenty of leaf-soil at the commencement. Where shrubby Hibiscuses are grown against a wall, these should have all lateral growths cut back to near the main branches. Escallonia macrantha should also be kept within bounds, but the young shoots must not be generally shortened. Ceanothus azureus, a strong-growing plant suitable for clothing walls, we prune in severely, abundance of bloom being formed on the strong-branching shoots thus produced.

W. I. M.

TUBEROUS BEGONIAS FOR BEDDING.

THOSE who have a stock of these Begonias intended for the decoration of the flower garden during the coming summer and early autumn months should now set about their preparation for that purpose. Most people keep the tubers during the winter in boxes in sand. When removed therefrom they should be started in shallow boxes sufficiently deep to allow a small layer of soil to be placed over the bottom and another layer over the tubers. If the latter are one-year-old seedlings, boxes about 3 inches deep will answer well for them, but if the plants are older they will require deeper boxes. Boxes are preferable to pots, as they allow more space for the roots, which when they reach the sides of the pots turn round and become matted, a condition in which they do not take freely to the new soil when placed in the beds. The soil used should consist, say, of two parts loam, one part rotted leaves, a sprinkling of finely ground bones, and a dash of silver or coarse river sand. Place the tubers about 2 inches apart and cover them lightly with the soil. If the latter is moist when used no water will be needed for several days; water indeed would have under such circumstances a tendency to rot the tubers. Ainery or Peach house just started is a good place in which to start them into growth, but, failing these, an ordinary greenhouse answers fairly well. After a few days the soil may be gently sprinkled to prevent it from becoming dust-dry. As soon as the roots run into the soil and growths begin to push from the crowns of the tubers, remove the boxes to cooler quarters and give abundance of air to prevent the plants from being drawn up weakly. Get them into cold frames as soon as the weather will permit, and keep them covered at nights to prevent frost from reaching them, as it would quickly destroy the growth when young and succulent. When it is seen that the roots are becoming matted, transfer the plants to other boxes in which they will have more space both for root and branch, using the same kind of soil as before, but with the addition of a little more bone-dust. When re-established in the new soil water freely. Give air, too, freely, drawing off the lights whenever the weather is favourable. Plants prepared in this manner are sure to succeed provided the after-treatment is right. Very different are plants grown into a large size in heat and hardened off all at once. These when planted out decline and die. Such a manner of preparing them for outdoor work as that last named is still very common, but Begonias never thrive under such treatment.

A. B.

Seedling Polyantheses.—I have recently seen special proof of the value of sowing Polyanthus seed as soon as ripe, so as to have strong plants to go out early in the spring in preference to planting in the autumn. A quantity of seedlings raised last summer were not, because of the dryness of the soil, necessarily planted out until the autumn. Naturally, no great amount of growth could be made, and the roots

did not strike deeply. As a result, very many of the smaller plants were found to have been much lifted and required replanting. The soil also had become hard. In contrast to the above, a large quantity of seedlings, raised from last year's seed sown in July, were dibbled into frames early in the winter, and so housed. These have since been dibbled out into clean, light, well-prepared soil, and are already rooting well. These plants will suffer in no way and will strike root deeply, because spring is the proper rooting season for Polyantheses and Primroses. Plants sown in the same way a year since are now wonderfully robust, and the Primroses are already blooming profusely; whilst the Polyantheses promise a grand show of bloom later on. The plants so treated receive no check, and within twenty months of the time of sowing are very strong and carrying remarkably fine heads of bloom. Still more, I find that such plants will endure longer than if summer-planted, and thus compelled to endure the checks incidental to drought, followed perhaps by a severe winter, ere they have become fully established.—A. D.

EDRAIANTHUS DALMATICUS.

AMONG true alpine plants this must take rank in the first class. Its clustered flowers are of a strong purple colour, and the narrow leaves beset with tiny bristles are of a rich deep green. The stems are prostrate, radiating from the centre, giving the plant a close, neat habit. It



An Alpine flower (Edraianthus dalmaticus). Engraved for THE GARDEN from a photograph.

is best grown from seed sown on the spot, as it transplants badly, but the seed sometimes takes more than a year to germinate; but when well established in a congenial place it will sow itself.

Lobelia cardinalis.—Now is a good time to increase the stock of this plant, the value of which in the flower garden early in autumn, where a mass of rich colour is required, can scarcely be exaggerated. Seedlings of the Victoria type are easily raised and grow quickly into good sized plants, but for evenness of growth and colour they are not to be depended upon. If recourse has to be had to raising seedlings in order to secure a stock of plants to start with, the best habited and deepest coloured should be selected after the first year's bloom is over. If wintered in cold frames in boxes, or packed in soil, kept nearly dry during winter, they will now be starting into growth; therefore pull them into pieces, and each crown to which roots are attached will develop into a sturdy plant; in fact, it is better to use small rather than large plants, as the former make a more uniform bed. After dividing the roots place them again in boxes filled with rich sandy soil, or in a cold frame about 3 inches apart; water carefully until they have fairly taken possession of the new soil when more will be required, and also abundance of air to keep the spikes sturdy. They may be planted in their summer quarters early in May; the best position for them is in a bed by themselves where

they present a mass of rich colour. If the soil be fairly rich and water be applied to the roots should the weather be dry the flower-spikes will in most cases grow from 2 feet to 3 feet high, and if carpeted with Antennaria tomentosa the effect will be all that can be desired.—E. M.

Hollyhocks.—Sown a month since in a cool house, Hollyhock seed is now coming through freely, and I shall have plenty of strong plants to put out in a few weeks. It is well to be able to recommend sowing of Hollyhock seed in a cool temperature so early as the month of February. Very many may be induced to do the same thing, but are, as a rule, deterred when told that such seeds need bottom-heat to induce full germination. Of course this recommendation applies chiefly to seed sown the preceding year—rather too late, perhaps, in the autumn, but it would be even preferable, if possible, to sow seed in the month of August, and then keep the seedling plants dibbled up in a frame all the winter. Such plants would bloom and produce fine spikes during July and August; whilst spring-sown plants raised under glass and put out early should bloom during September and October. The quicker the plants make growth, the less liable are they to injury from the fungus which still haunts them. Hollyhocks thrive best in deeply worked soil, because they root deep, and need ample moisture. Plants left to grow in poor, shallow soils will produce but poor spikes or flowers, and if attacked by the fungus, soon wither up. As the best of quality, with great variety in colour in the flowers, can now be had in seedlings, it is obvious that for a trifle in money and trouble, a fine show of this old favourite hardy flower may be readily had.—A. D.

Lilies and their culture.—In the interesting notes on this subject (p. 230) allusion is made to the enormous quantities of *Lilium auratum* that are imported every year from Japan, and yet, says the writer, they are not to be found in our gardens in any quantity except in pots. And the question is asked, Why is this? From my own observations I am fully satisfied that it is owing in most cases to the Eucharis mite, as it is called, followed by fungi. This bulb mite is imported in the bulbs, a fact the truth of which anyone may verify by examining the bulbs on their arrival with a microscope. Those accustomed to look for this mite will have but little difficulty in finding it and eggs in abundance, and if the same bulbs are examined again after twelve months' culture, the cause of their break up and decay will no longer be a mystery. The question, however, naturally arises, How is it that *auratum* succumbs more quickly to the attack of this mite than other Lilies from the same country?—a question more easily asked than answered. *L. auratum* is grown successfully in Japan, though undoubtedly the mite exists there as the newly imported bulbs show. How, therefore, is that? Probably the vigour with which it grows in its native country enables it to keep ahead of the mite up to a certain age, and also obviates the attacks of fungi. Even in Japan after the bulbs have become old they may be liable to succumb to the mite. One thing is certain, viz., that the largest bulbs are those which break up and decay first; the smaller ones frequently go on for a second year.—T. KEETLEY, *Darby Abbey*.

Double Primroses.—These are now just bursting into bloom and a few pots dotted here and there amongst other things have a pretty and novel appearance. I should very much like to get the names of all the varieties that are at once fairly vigorous in habit and free-flowering, for the three sorts already tried, viz., the double sulphur, white and crimson, all do remarkably well and the collection might be extended with advantage. Two points to be guarded against in their cultivation are over-potting and coddling. With these borne in mind there is very little difficulty in working up some good plants, and the result is certainly very gratifying, for to the lover of old-fashioned plants there is nothing much prettier at this season than a few pots of double Primroses in different shades of colour, and with three or four dozen expanded blooms to each plant they make quite a nice display. To secure some good plants for an-

other season the old stock should be shaken out as soon as the flowers are over, divided, and the pieces potted rather firmly in small 3-inch pots. I find they do well in a compost taken from a heap of road-scrappings that have been once or twice turned. A mixture of light loam with the scrapings from the roads is a very suitable compost for them to grow in. When these pots are well filled with roots they should be shifted into 4½-inch pots, using the same compost. The best place for them all through summer and early autumn is a frame with a north-west aspect; the pots should be placed well up to the glass on a cool bottom and plenty of air should be admitted. On the approach of hard frost they may be shifted to a shelf in ainery or Peach house, where they may remain until required for the greenhouse.—E. M.

SHADED AND UNSHADED ALPINE AURICULAS.

THE season of the flowering of the Auricula is at hand, but keen frosts at night and hot, sunny days cause such extremes of temperature, that it is very trying to the plants that are in cool houses, and they make headway very slowly. Happy are they who can give their plants a little fire-heat by night, as most of our leading Auriculas want it now-a-days. It is not much warmth that is required, only just enough to keep the frost from laying hold upon the soil. So retarding are our springs now that it is almost impossible, without the aid of artificial heat, to have the plants in flower by the Auricula show at South Kensington the third week in April. Those who grow and flower only in a cold house or a cold frame are, of course, placed at a great disadvantage on a show day.

The later developments in the form of alpine Auriculas always hit the popular taste, and it is not to be wondered at, for they are very striking, especially those which have a golden centre. The contrast between the rich gold and the marginal colour, which is of various shades, is decidedly striking. In the north, among the older Auricula growers, the alpine Auricula, in order to be admitted to competition, must have a shaded margin, whether the centre be white, cream, sulphur, yellow, or gold. This is in contrast to the self-show Auricula, which, with its mealed centre or paste, must have an unshaded edge. Such a flower as Phoenix, for instance, one of Mr. Turner's most brilliant unshaded or self alpines, would not be admitted for competition at the National Auricula Society's show at Manchester. It is not so in the case of the exhibition in London, for there shaded and unshaded flowers are permitted to compete together, but a self Auricula, however good in tube and paste, if it had a shaded instead of a self-coloured margin, however beautiful it might be, is relegated to that singular and somewhat eccentric group termed "fancies." There is some inconsistency in this, and it is rather hard on those small growers who may have raised three or four fancy varieties of great merit, but who cannot exhibit them because in the class for fancies twelve dissimilar varieties must be produced.

The weakest class in the section of alpine Auriculas is the white-centred flowers. I do not know of a white centred alpine Auricula that has an unshaded margin. With a white centre is mostly associated shades of lilac, mauve, purple, and blue, and a perfect flower is among the fairest of the alpine Auriculas. We have very few perfect white-centred flowers, because the centre will be white or creamy white when the pip first expands, but it will either become a pale colour without a particle of the warmth of life and beauty in it, or else change to sulphur or some such shade, so that the flowers vary in the centre and have a confused appearance on the truss. But new additions are constantly being made to this attractive class, and slowly but surely permanent improvements are being effected.

The best of the white-centred alpines are Agnes, Duchess of Connaught, George Lightbody, one of the best; Lillian, Mrs. Dodwell, Mrs. Phipps, Princess Beatrice, Philip Frost, Queen Victoria, very pretty; Slough Rival, Selina, and Tennial, a lovely alpine when obtained in good condition. All the white-centred alpines are best when shown before the pips are fully matured, and ere they begin to show signs of

weakness in the centre. Conspicua, an old variety with large, bold flowers, is, when produced in refined character, a beautiful alpine, and is often seen in good character at Manchester. Some eight or ten years ago Mr. R. Gorton, of Manchester, raised a charming white-centred variety named Mauve Beauty, so named because of the delicate mauve shading in the margin; but the flowers were thin in texture and of delicate habit, and it was only occasionally it could be caught in the best character. I have raised seedlings from it, but up to the present have not reached to anything ranging much beyond the parental type.

The best dozen forms with golden centres and shaded margins will be found in Amelia Hartwidge, Brilliant, Diadem, a flower that is almost perfect in the margin when caught in its best form, but the centre, which is always weak in its gold, changes to a dull and dead-looking cream; Evening Star, King of the Belgians, one of the best shaded alpines with a golden centre Mr. Turner has raised, the rich, lustrous gold scarcely becomes dimmed with age; Lustre, Mrs. Ball, probably a seedling from Diadem, and having something of its weakness of centre—still, a beautiful alpine and worthy a place in any collection; Mariner, Mrs. Llewellyn, Sydney, Sailor Prince, Sensation, and Unique, the latter a beautiful flower, and a telling one in a collection, having large, bold, and finely-rounded pips.

Then of unshaded alpines, all with golden centres, there are Bright Star, Colonel Scott, John Ball, King of Crimson, Mercury, Mrs. Thomson, Phoenix, Spangle, Troubadour, Thomas Moore, Vesuvius, and Victorious. These include fine and striking varieties that are well worthy of cultivation, and among the freest growing of the alpine varieties.

Do not let anyone suppose that the varieties named in the foregoing lists are not hardy. They are perfectly hardy, but at the same time of such fulness of beauty that if planted in the open ground their qualities would be sadly disfigured by the storms and frosts of early spring, and yet I have seen alpine Auriculas planted out in the open on a raised border very beautiful indeed in spring when fine weather admitted of their charms being displayed. But a house or frame of Auriculas—the former is to be preferred because the grower can attend to the plants better in bad weather—is an object of great interest from the time the plants begin to be active in February until the time when they go out of bloom. And in such a house with the Auriculas can be grown many other species of spring flowering plants which can be tended in such a building, and their wants ministered to when it would be practically impossible in bad weather to open an ordinary garden frame and give the occupants the attention they need.

R. D.

Notes from Shirehampton.—The successful growing of *Lilium auratum* is so important a question, that I am anxious to know if anyone has tried growing it out of doors on the surface of the soil. Mr. Perry, gardener at Pen Pole House, grow some magnificent plants of it last year in pots in which the bulbs were half out of the soil. On the day I saw them every bulb had several fine strong shoots on it, and in some cases small bulbs around were throwing up leaves; they were in a cold frame. I should very much like to see this experiment tried in the open with a protection of ashes. *Camellia G. H. Hovey* sent here last year from America is in fine bloom—a dark red, also a large single pink-red with very flat centre of stamens, mostly pink. *Crocus imperati albus* is coming into bloom. Could you say if *Schubertia grandiflora* would bloom in a cool greenhouse? I see it is called a stove climber in a former number of THE GARDEN. We have had 18 in. of snow here. The Hepaticas, some 500 plants, were in fine bloom on Sunday last and I shall be glad to see them again. These were all raised from seed ten years ago by Mr. Frank Miles. *Iris stylosa alba* bloomed here in the open last month; the two blue varieties I have in abundance, but the heavy snow and slugs did them much injury.—C. O. MILES, *Sunnyhill, Shirehampton.*

Chionodoxa Luciliae.—We send a few spikes of *Chionodoxa Luciliae* from out of doors. These are from established plants. Considering the ground is covered with snow, we

think they are very good and the effect against the surrounding snow is most beautiful.—COLLINS BROS. & GABRIEL.

A beautiful gathering of this lovely spring flower. The blooms were quite fresh and not at all hurt by the recent severe weather.—Ee.

STOVE AND GREENHOUSE.

T. BAINES.

LAGERSTREEMIA INDICA.

AMONGST the different species of *Lagerstrœmia*, this is the only one that has come into general cultivation. It is an Evergreen, and blooms in summer, the flowers being produced in terminal panicles; they are different from those of any other plant with which I am acquainted; the petals, six in number, are twisted in a peculiar manner. There are two forms of *L. indica*; one bears flesh-coloured flowers, while those of the other are light rose when they first open, and afterwards they assume a light purple tint.

Cuttings treated in the usual way strike freely. They may be put in at any time when obtainable in right condition—that is, whilst the wood is young and soft; as early in spring as shoots can be had in this state is the best time at which to propagate, as then there is time for the plants to attain some size before the growing season is over. As soon as roots are emitted, dispense with the propagating glass, and after they have got sufficient hold, move them singly into small pots. Good fibrous peat that is calculated to last well, with some sand added, answers for this plant. For a short time after potting keep it in a growing temperature, shade when the weather is bright, but keep the little plants well up to the glass, and directly they have begun to move freely, pinch out the points of the shoots. It is necessary to attend to this in good time, as this *Lagerstrœmia* is somewhat inclined to spire up for a time without branching out enough to furnish the bottom sufficiently. Syringe freely overhead in the afternoon at the time of shutting up the house, and encourage growth by keeping the atmosphere sufficiently moist. In the course of the summer it will be necessary to give larger pots. The size of these must be regulated by the progress that has been made. If the plants have grown away freely, 7-inch or 8-inch pots will not be too large. Some rotten manure may now be added to the soil; pot moderately firm, keeping the atmosphere a little confined until the roots have begun to lay hold of the soil, when more air must be given. No fire-heat will be requisite from this time, but continue to make the best use of the sun's warmth by closing the lights in good time in the afternoon. Most likely it will be necessary to again stop the shoots, or at least the strongest portion of them, for on getting the heads well proportioned now depends the appearance of the specimens in after time. As autumn comes on discontinue shading and syringing, giving more air so as gradually to induce a state of rest; a temperature of about 45° will be enough in winter.

In March, cut the shoots in moderately; it is necessary to do this each spring, as the plant is a free grower, naturally attaining a height of something like 10 feet, which size, if the specimens are as they should be, proportionate in the spread of their branches, is much larger than is desirable for an ordinary greenhouse or conservatory. It is not needful that the plants should be allowed to attain inconvenient dimensions, as their character can be seen sufficiently when their size is restricted by cutting the shoots well in annually. After the branches have been thus shortened, it will be an advantage if a little more warmth can be given, as in a genial temperature the new growth will move more freely. When the plants have broken fairly, give pots 3 inches or 4 inches

larger, using soil of a like character to that advised for the last potting; afterwards, treat so as to encourage growth, affording plenty of light, and giving more air as the season advances. This summer, if all goes well, the plants will make a fine display; when in bloom they should have a thin shade, which will help to prolong the duration of the flowers. This *Lagerstrœmia* is very effective in a conservatory when in flower, differing, as it does, in appearance from everything else associated with it. It is a telling plant on the exhibition stage; why it is not more frequently used in this way seems strange, as it comes into flower in summer after most of the spring bloomers are over, which makes it more valuable.

Not the least of the desirable properties which the plant possesses is, that with anything like fair treatment it will go on for a number of years maintaining a healthy condition and flowering freely and regularly. As the specimens get older they naturally require larger pots. At the time of repotting a portion of the old soil should be got away, being careful not to carry this so far as to interfere much with the roots. Manure water applied during the season of active growth is an assistance. By giving it regularly at this time smaller pots will suffice.

To anyone who grows a dozen large specimen Fuchsias, and who has no more room to spare in his houses, I would say discard two or three of the Fuchsias and substitute two or three specimens of this *Lagerstrœmia*. Though they will not keep on giving a succession of bloom to the extent that the Fuchsias will, still the mass of flowers which they produce and the whole appearance of the plants are such as to make the change an advantage.

Azalea Mrs Carmichael.—This is one of the many varieties raised by intercrossing the hardy Japanese *Azalea amœna* with the large-flowered greenhouse section, and to a certain extent it partakes of the characters of both parents. It is of a close, free-branching habit, with moderate-sized flowers of a rich lilac-purple colour. From its affinity to *A. amœna* it is hardier than the members of that section known as Indian Azaleas, and on that account may be wintered in situations where the more tender kinds might be injured. For cut purposes it is well adapted, as it can be employed in the minor arrangements, where the large blooms of the other kinds would be inadmissible, and it bears cutting back remarkably well.—T.

Guelder Rose forced.—This may be successfully bloomed under glass, and very showy it is when treated in this way. Good-sized bushes, lifted from the open ground and potted carefully, will bloom well, but the best time of the year to lift them for this purpose is in the autumn, just as the leaves are about to fall. Standards are sometimes grown, and they may be employed with advantage for arranging with other subjects. It is not a plant that will stand hard forcing, but, brought on in a genial temperature, good blooms may be had by the end of March. Apart from its merits as a highly ornamental flowering shrub, this *Viburnum* will do well in almost any soil and situation, and can be readily increased by detaching rooted suckers, which after a year or two will form flowering plants.—H. P.

Rhododendron Daviesi.—This is a very showy greenhouse *Rhododendron*, and interesting as being the result of a cross between the rarely seen *R. retusum* and *R. javanicum*. There was a variety put into commerce some years ago claiming the same parentage under the name of Prince of Wales, but, judging by our plants, *R. Daviesi* is superior to it in brightness of colouring, and more particularly in the freedom with which it flowers. The variety under notice is very free-growing, but liable to run up naked during its earlier stages, to prevent which it should, when young, be pinched back pretty freely. The leaves are of a dark green tint, and the colour of the flower is a bright orange-red. The individual blooms are

not large, but, being borne in good-sized clusters, form a very attractive feature when fully expanded. Like all hybrids that claim parentage from *R. javanicum*, this succeeds best in a temperature rather above that of an ordinary greenhouse. It is now, and has been for some weeks, in full flower.—H. P.

Centropogon Lucyanus.—This is a quick-growing stove plant of easy culture, whose great recommendation is the fact that it will flower continuously throughout the winter months. The blooms are claw-like in shape, and of a bright crimson-scarlet colour. They are borne in considerable numbers, and yield a goodly display during the dull days of winter. Cuttings of it strike root easily enough, and to ensure a good crop of bloom they should be grown on liberally throughout the summer months, and by autumn will be full of flower-buds. Being a liberal feeder, a dose of liquid manure occasionally will be of service.—T.

CROSSING AMARYLLIDS.

MR. H. NEHLING asks whether or not *Amaryllis* and *Crinum* cross with each other. This I have tried, but never got any pods of seeds to form. Different species of *Crinum* cross with each other, as do different species of *Amaryllis* and *Hippeastrum*, but the two genera seem to be totally distinct from each other. Dean Herbert cultivated numerous species and varieties of both, and raised hybrids from both of them, but he does not give any instance of a cross having been obtained. There is no other book so useful in its way, nor more carefully written than that of Herbert. He enumerates about 225 species of *Amaryllis*, *Hippeastrum*, and *Crinum* alone. The hybrid Mrs. Garfield, figured in THE GARDEN, is not included amongst spring flowering varieties. It is an autumn-flowering kind, and is a cross between two distinct species, one parent being *A. reticulata*, with the whitish band in the centre of the leaf. No coloured plate of the best garden varieties of the spring-flowering *Amaryllis* has as yet appeared in THE GARDEN. A monograph of the *Amaryllis* would doubtless be popular with growers, but if illustrated with coloured plates the expense would be too great. Recent improvements in the genus have been so great, that even the varieties named by Mr. Nehling have been surpassed. *Madonna* is superior to *Enechantress*, which is lacking in form. *Empress of India* has been greatly improved by seedlings raised from it. It ought to be generally known that seedling *Hippeastrums* are as easily raised as those of *Pelargoniums* or *Cinerarias*, and it does not take long to get them up to the flowering stage. It is difficult to obtain seeds of the choicest kinds. They will neither cross with other varieties, nor can they be fertilised with their own pollen, varieties raised by crossing distinct species being the most difficult to manage. Of these I might mention *H. Chelsoni*, a fine variety raised by crossing *H. pardinum* with another species, and *John Heal*, a hybrid doubtless from *H. Leopoldi*, which it resembles, but is greatly superior to it. *Empress of India* is one of the best of seed and pollen-bearers. I saved sufficient seeds from one plant of this variety in one season to produce 700 plants, and the bulb was none the worse for it; it even flowered stronger the next and following seasons. J. DOUGLAS.

Violet failures.—Why should one man succeed and another fail in getting plenty of Violets in winter, both having the same convenience, the same sorts, and residing within a score of miles of each other? This is a question to which a satisfactory answer would be instructive. Not a few growers of Violets incur displeasure because they cannot manage them so well as someone else in the neighbourhood. I am only what I may call fairly successful with Violets; we have had them all winter, but not in such abundance as some growers would lead us to believe they have had them. We have been able to pick several bunches two and three times a week, but I should imagine from what I have read that this is an insignificant quantity, although continuous since last October.

I am therefore anxious to learn what the conditions are which secure such success. Here in Somerset, such varieties as *Marie Louise*, *Comte de Brazza*, and *Neapolitan* can only be kept in flower in substantial brick pits under efficient external coverings during frosty weather. It is not unusual for us to lose a few plants during winter, and after damp, foggy weather a good many leaves damp off, but I have never heard of any great amount of mortality amongst Violets. I have known them, however, to run to leaf and to produce but few flowers. It is desirable in writing about Violets to state whether they are growing under glass or in the open.—J. C. C.

Double flowering Rhododendrons.—A few of these are now in flower in Messrs. Veitch's nursery at Chelsea. A double white variety with flowers like a *Tuberosa* is very noteworthy, as well as a double yellow. The interesting part of these crosses, all of which have been effected by Mr. Heal, who has done so much for the *Amaryllis*, is the fact that out of the same pod of seed, plants have been raised which, on flowering, produced white, yellow, salmon, rose, and other coloured flowers.

Waterer's Cherry forced.—*Cerasus Watereri* is not what one would call an uncommon shrub, yet there may be many readers ignorant of the fact that it is one of the loveliest shrubs imaginable when forced into bloom about this season. Its flowers are produced so thickly on the long spreading shoots, that they make these look like wreaths of delicate pink rosettes, for the flowers are double and as large as a crown piece. There is no shrub that can be forced that has such a lovely delicate colour, which may be said to be a compromise between *Peach blossom* and *white Cherry blossom*. It is not too late to get plants of it now, which are kept in pots at nurseries for the convenience of forcing. They must be gradually inured to the heat, and in a few weeks every strong shoot will be covered with bloom. The beauty of this *Cherry* out of doors is fully recognised in some places, but for every *Waterer's Cherry* one sees there are a score of *Almonds* and *Peaches* in shrubberies and on lawns.

Begonia Princess Beatrice.—This *Begonia* as a bedding variety is not only the best of its class for that purpose, but has the double merit of being a winter flowering kind. A small bed, consisting of about a dozen plants, bloomed profusely during last summer until the middle of October. They were then taken up, carefully potted, and placed in a Muscatinery, where in the *Grapes* were hanging, and which was kept a little warmer than an ordinaryinery. Thus treated, they flagged but little, sufficient water being given to prevent them from becoming quite dry. By Christmas new growth was made, and early in January the plants commenced to flower, which they have done abundantly ever since, and from their appearance at present they seem likely to go on blossoming for some time longer. As the flowers are quite white, having lost that delicate blush shade which they have outside in the summer, they are very useful. Lately they have had a temperature of 50° by night and a rise of 10° by day.—E. MOLINEUX.

Cyclamens at Twickenham.—It was a specially interesting sight which I met with in Mr. Richard Clarke's Twickenham garden the other day. Here, where *Cyclamens* are grown in vast quantities and of the finest quality, I found a truly grand lot of crimson in such quantity that it was quite a surprise, for in days past deep colour, although general, has not been found in appreciable quantity and allied to robustness. Mr. Clarke seems to have developed rich colour specially, and how telling a body of well-bloomed plants at this time of the year is when the flowers are of a deep rich crimson, the Twickenham plants show. Presently we shall find seed of this rich strain plentiful, and then we may hope to see plants plentiful also. Mr. Clarke's very fine *giganteum compactum* strains have been so often referred to, that nothing new can be said about them. The entire strain, including all forms and colours, is a very fine one, and every year, as out of so many plants the range of selecting the best for seed is very great, through constant selection the strains

are being improved. The Cyclamen is now so good, that progress in improvement must be but slow. It was exceedingly interesting to note in the larger houses thousands of fine plants ready for market, and many exceptionally fine; whilst in low houses were vast quantities of seedling plants yet in bulk in pots fast becoming ready for single shifting; the seedlings of to-day become the flowering crop literally of to-morrow.—A. D.

SEASONABLE WORK IN PLANT HOUSES.

RHOPALAS AND ARALIAS.—These plants are useful for associating with large-flowering specimens of any kind in greenhouses and conservatories. Not the least of their merits is that the texture of their leaves is such as to offer little inducement to some of the most troublesome insects to attack them, the juices of the Rhopalas especially appear to be too acrid to suit the tastes of these pests. Their leaves are of an enduring nature, but in time the lower part of the stems get naked, in which case they have an unsightly appearance that can only be rectified by heading them down. This is best done at this time of the year, as they at once break and begin the formation of new heads. If the stools can be accommodated for a time in a house or pit where a moderate amount of heat is kept up, this will accelerate the growth. To give the future heads of the plants the requisite appearance, the young growth must spring from not more than some 6 inches or 8 inches above the collar. In heading in any plant the roots suffer a check proportionate to the extent to which the leaves, branches, and stem are removed; consequently, instead of heading down to the bottom at first, if 2 feet or 3 feet of the old stem are left until the young growth has begun to move freely, the progress made during the season will be greater. To force the stools when so treated to break as low down as required, it is necessary to cut out all eyes from the upper part of the old stem thus left for a time. These and similar habited plants look best when confined to a single stem; consequently the shoots that appear should at once be reduced to one, retaining that which is the strongest; after it has attained a height of 12 inches or 15 inches the old stem may be cut down to where the young shoot springs from. This way of treating the plants in question and others of a like character will effect a gain that overbalances the little extra attention which it entails. The larger the plants are the more heading down affects them when the whole of the head and stem is removed at once; in the case of such they often come away both slowly and weakly.

CLIANTHUS DAMPIERI.—This is one of the most telling plants in cultivation, but, nevertheless, it is seldom met with. This no doubt arises from the fact of many who attempt its cultivation not succeeding with it. It is easily raised from seed, which, treated in the ordinary way, usually germinates readily, and generally afterwards makes fair progress until the time for shifting the seedlings into larger pots arrives, when it not unfrequently happens that the plants will not move further. So far as my experience goes with this, the finest of all the Clianthus, the cause of its refusing to move is through the objection it has to its roots being disturbed. In place of sowing a number of the seeds together in a pot or pan in the ordinary way, they should be put singly into 3-inch or 4-inch pots, and before the plants get too much cramped they ought to be moved to others two or three sizes larger, placing the ball intact in the new pot, not even removing the drainage material, and following a similar course when the shift is given into the pots the plants are intended to flower in. I have known this Clianthus do well when the seed was sown in a bed, allowing the plants to remain and flower where sown; but this method would not answer in the plant houses usually met with in private gardens, where, if a bed exists that plants can be grown in, it is generally much too far from the glass for this or anything that requires from the first to have plenty of light. The same objection, only in a less

degree, exists against turning plants out in beds that have been raised in pots. Seeds of this Clianthus may now be sown in moderate warmth, keeping the plants on in such until the weather is hot. Plants raised from seed last year should now be moved into the pots in which they are to bloom. After the weather gets warm the syringe ought to be used freely to keep down red spider, which is sometimes troublesome, and if left to go on unchecked soon injures the leaves.

GREENHOUSE CLIMBERS.—It often happens that climbers of an over-strong, coarse habit of growth are planted in conservatories and greenhouses with the result that unless their tops are allowed to extend so that they smother or injure everything that is grown under them, it becomes necessary to keep them cut in to an extent that gives little chance of their flowering much, and in the case of such things as *Cobaea scandens*, some of the *Kennedias*, *Bignonias*, and others of a like description, the character of their flowers is such that not much can be said in their favour, especially when there are so many fine kinds to choose from. When a large, roomy conservatory is first built it is often desirable to plant something in the way of climbers that will take off the naked appearance of the roof in the least possible time; but when for the sake of immediate effect such a course is taken, other climbers of a better character that are less rampant in their growth should be introduced at the same time to take the place of the inferior sorts, gradually reducing the heads of the latter as the better kinds require more room. For small, or comparatively small houses, such sorts as the following are much more suitable than larger growers, *Rhynchospermum jasminoides*, *Sollya Drummondii*, *S. heterophylla*, *Solanum jasminoides*, *Passiflora Imperatrice Eugénie*, *P. Constance Elliotti*, *Lapageria alba*, *L. rosea*, *Acacia verticillata*, *Clianthus magnificus*, *Hibbertia volubilis*, *Jasminum grandiflorum*, *Habrothamnus Newelli*, *H. aurantiacus* (*Cestrum aurantiacum*), and *Asparagus plumosus*. Several of these will cover a considerable space if their roots are not somewhat confined, but with judicious treatment in this matter and a moderate use of the knife, they can easily be kept within due bounds without their ability to flower well being interfered with. For a medium-sized structure may be mentioned *Acacia pubescens*, *A. longiflora magnifica*, *Clematis indivisa*, *Habrothamnus Newelli*, *Lapageria alba*, *L. rosea*, *Mandevilla suaveolens*, *Tacsonia Van Volxemi* or *T. exoniensis*, *Tecoma jasminoides*, *Bignonia capensis*, *Mutisia decurrens*, *Passiflora Newmanni*, *P. Constance Elliotti*, and *Asparagus plumosus*. Several of these are included amongst the kinds recommended for a small house, but under liberal treatment they attain size enough for larger structures, and, moreover, their merits are such, that they deserve a place wherever climbing plants are wanted. In large conservatories, such sorts as the following are suitable: *Bignonia Chamberlaini*, *B. Tweediana*, *Clematis indivisa*, *Lapageria rosea*, *L. alba*, *Kennedyia macrophylla*, *K. coccinea*, *Mandevilla suaveolens*, *Tacsonia Van Volxemi*, *T. manicata*, *T. mollissima*, and *Habrothamnus Newelli*. The latter is a finer kind than the better known *H. elegans*, being much brighter in colour. The climbers here named are not given as an exhaustive list of all that are worth growing, but, collectively and individually, they are much superior to many one meets with, some of which have little to recommend them, except that they serve to take off the bareness of the roof or wall. In preparing beds or borders wherein to plant climbers, it is necessary to keep in view the more or less vigorous habit of the plants to be used, restricting the root-room somewhat where the intention is not to encourage more growth than will suffice to keep the plants in a healthy condition; and in all cases it is well to partition off the border, so that the roots of each will be confined to the space that they are meant to occupy. If this is not done, the strong growers naturally monopolise the whole of the material, so that the weaker ones are starved. Wherever alterations of the kind here intimated are to be carried out,

the work should be done at once, so that a full season's growth may be secured.

MAGNOLIA CAMPBELLI AND M. FUSCATA.—Where there happens to be a high back wall in a conservatory or greenhouse, these two species may be used to clothe it with good effect. They bear fine distinct-looking flowers, white in the first-named kind, and brown in the latter; and the presence of the plants does something to lessen the monotony too often met with in plant houses of an all but endless repetition of the same things. These *Magnolias* are both natives of China, and do not require anything more than a greenhouse temperature. *M. Campbelli* is deciduous, whilst *M. fuscata* is evergreen. All they require is a border of moderate extent, sufficiently drained to keep the soil in a healthy condition, and their principal shoots secured to the wall, so as to cover the space to be occupied, leaving the lateral growths as much freedom as can be done without their encroaching upon the other occupants of the house. T. B.

GARDEN FLORA.

PLATE 589.

DAY LILIES.

(WITH A COLOURED PLATE OF *HEMEROCALLIS DUMORTIERI**)

THE *Hemerocallis*, or Day Lily, as it is called from the fugacious character of its flowers, in some of the species lasting generally only one day, is nearly allied to the *Funkias*, a well-known class of plants largely used for naturalising in woods, &c. The Day Lilies, though numbering not more than five distinct species, are varied enough, both in their habit of growth and flower colouring, to be useful alike in the mixed border, the rockery, and the wild garden. In a situation such as the last in all its natural wildness few sights equal a strong, well-flowered clump of *Hemerocallis fulva*, as we have seen it in all its native luxuriance judiciously mixed with a group of male Fern in close vicinity to a small brook. The leaves of this Lily were overhanging the banks of the stream, intermingled with the Fern fronds, while the flower-heads, tall and straight, were towering well upwards. If the ground is well broken up and some good lasting manure supplied at planting time, they may be left undisturbed for years. The forms of *H. disticha*, both single and double, are also useful for this purpose, either in isolated clumps or intermixed with other robust or bold-foliated plants; indeed, there seems no reason why all the members of this genus could not be treated in this natural way, the trouble entailed being small, and that chiefly at planting time only. For cutting purposes, *H. flava*, minor, and *Dumortieri* are especially useful, the flowers lasting a few days and the buds opening well in water. The fragrance of these flowers is most delightful, and on this account alone they should find a place in every garden. They are readily increased by division of the roots in autumn; indeed, they grow with such rapidity, that in the course of a few years they may be increased to almost any extent.

The following are the species as they are now recognised with the principal varieties:—

H. DUMORTIERI (*Dumortieri's Day Lily*).—This rare and valuable garden species, of which a good figure is given in the accompanying coloured plate, is the first to flower of all the Day Lilies yet introduced to cultivation, and when it becomes better known is likely to prove a great acquisition, even in company with the already much admired *H. flava*. Coming as it does from Japan and Western Siberia, it proves perfectly hardy in the open air in this country, besides having a great advantage over most

* Drawn for THE GARDEN by H. G. Moon in Mr. Herbst's nursery at Richmond, and printed by G. Severeys.



of the other showery Liliaceous genera, inasmuch as fair success can be attained even in ordinary garden soil without any special preparation. It does not require protection of any kind during the winter season, and we have never known it to fail to produce an abundant display of its charming and fragrant flowers, which are not unlike many of the other Lilies in these respects. The individual blooms are unfortunately short-lived, but this is fully compensated for, as the reserves are so numerous as to keep up the succession for a considerable time after they begin. Like most other allied plants, the Day Lilies seem to dwindle both in the vigour of the plants and size of the flowers if allowed to remain too long in one place. If the plants are examined, the centres will be found to be firmly matted together, the stronger shoots appearing on the outside. If the whole plant is divided and spread out it will amply repay the trouble by increased vigour and display of bloom. It is closely allied to *H. minor*, also known as *H. graminea*, but it is a much stronger plant, however, with leaves twice as broad, the flower-stems short, and the divisions of the perianth divided almost or entirely to their base. The leaves are about five or six to a growth, about 18 inches long and half an inch broad, narrowed to a point, bright green above and pale, but not glaucous on the under surface; flower-stem 1 foot to 2 feet in height, bearing a corymb of few or many large orange-yellow flowers; introduced about 1870. *H. rutilans* and Sieboldi of gardens belong to it.

H. FLAVA (the yellow Day Lily).—Few plants that we are acquainted with, and that can be so successfully grown with so little trouble in the ordinary mixed border or flower-bed, give such a valuable return as this one. Not only are the flowers large and delicate in tint, but they are produced in such quantities, emitting such an agreeable fragrance, as to earn the title of *yellow Tuberosa*. It appears from the older writers that this plant was considered only as a variety of *H. fulva*; and Parkinson observes that "it agrees with *fulva* so nearly, as that it might seem to be the same; but the leaves are not fully so large nor the flower so great or spread open; the colour is a fair yellow wholly; it is very sweet, and it abideth blown many days before it fades." The length of time the individual flowers remain before fading considerably enhances its value as a border plant; indeed, we consider it so choice that we would strongly advise its being planted out in large conservatories, and even as a pot plant its delightful perfume would amply recompense the grower. In the open air, however, it is perfectly hardy, and though not so robust in habit as the following species, it increases with average rapidity, and where the soil is good might even be naturalised in the wild garden. On the rockery it has a natural appearance, the beautiful light green curving leaves hanging gracefully over the boulders, surmounted by bunches of large yellow heads of flower in June and July. It is a native of Siberia, Hungary, Istria, &c., and was cultivated by Gerard. *H. Thunbergi* and *japonica* are forms of this species.

H. FULVA (the copper-coloured Day Lily) is a more robust and much larger plant in all its parts than *H. flava*, and consequently more suitable for extensive planting in semi-wild or neglected portions of the garden or woodland. It seems to be variable under cultivation, and the numerous forms now grown, many without names, are all worthy of attention for the above purpose. Though variable, none of the forms with which I am acquainted would suggest any relation to *H. flava*, as the following is intended to imply: Professor Martyn, editor of Miller's Dictionary, relates the following rather curious experience of a lady near Aylesbury—"In the year 1788 she removed several plants from Hampstead to a new garden she was then making in Buckinghamshire. The soil was a stiff clay manured with pond mud, sand, and manure in some parts; in others it consisted of the ruins of buildings and limestone, mixed with a soil produced from a variety of animal and vegetable substances. The plants were first placed in the clayey soil, among them being a plant of *H. fulva*. The succeeding year she divided this plant, and put part of it in a shallow bed formed of the limestone compost. It grew very freely, so that she

was able to take off another part of the plant, and the same summer set it in the same bed. When the last plant flowered she was agreeably surprised with the sight of an *Hemerocallis flava*, which she is positive she was not possessed of till it was thus produced by accident. The year after she had plants varying in size and colour, large, and of a deep tawny hue, small and absolutely yellow, and also of a pale tawny and of a size between *fulva* and *flava*." This, if it be true, would seem to favour the idea of their being varieties; but it is just a little suspicious that nothing of the kind has been noticed in our own day, the two plants being perfectly distinct even when grown side by side, as we have seen them for a great number of years. *H. disticha* is a well-known garden variety of this species, notable for the fan-like form of its growths. The flower-stem is forked near the summit, and carries two or three heads of flowers, six to eight blooms on each, of a brown-orange colour. There is also a double-flowered variety of this. *H. Kwanso* is a variety with variegated or striated leaves. It is a handsome plant for edgings or for the rockery. Of this there is also a double-flowered form. *H. f. var. angustifolia*, narrow-leaved; *longituba*, *crocea*, &c., natives of China, flowering in July and August, belong to this section.

H. MIDDENDORFIANA is a comparatively new species from Amurland, and has not yet found its way into general cultivation. In general appearance it nearly resembles *H. Dumortieri*; the leaves are, however broader, the flowers about the same size, closer, and paler in colour, and with a distinct cylindrical tube half an inch or so long. It is of easy cultivation, and the gracefully curving bright green leaves and pretty delicate flowers give it a unique place even among its fellows.

H. MINOR, also known in many gardens under the highly characteristic name of *H. graminea*, from its Grass-like foliage, was formerly classed by the older botanists as a variety of *H. flava*, though now considered distinct enough to warrant a separate place amongst the others of this genus. It is the smallest, though by no means the least showy, and, like *flava*, sweetly scented, the individual flowers lasting two or three days before decaying. They are large, yellow, and produced in much the same way as the others. It makes a handsome subject for rockery decoration, and even when flowers are absent the pretty Grass-like leaves recurving from about the middle give it a distinctness quite its own. It was known to Gerard and Parkinson, and said to be one of the many plants introduced to gardens by Dr. Sibthorp. It flowers during June and July, and is a native of Siberia, &c. It is also known under the names *graminifolia* and *pumila*. D. K.

FRUIT GARDEN.

W. COLEMAN.

SHADING FRUIT HOUSES.

THE rapid progress made by the present generation of growers of exotic fruits in a great measure is due to improved ventilation, full command of top and bottom heat, and a profusion of sunlight. The transition from the old to the modern systems of building and glazing, when immense squares of inferior sheet glass took the place of small panes, whose every lap let in a stream of fresh air, was not only extremely trying, but it brought into general operation the baneful practice of systematic shading. At that time gardeners could not well avoid the use of clumsy materials for breaking the fierce heat of the sun, as almost every square was thickly studded with inequalities, which formed as many lenses capable of burning the stoutest foliage, and not infrequently the stems and branches of fruit trees. Down to this period but little progress was made, as the loss of the fine percolations of air over every part of the roof, and the absolute necessity for shading, rendered sound, healthy culture difficult, high-coloured and richly-flavoured fruit being exceptional qualities. Intelligent fruit growers then, as now, knew that the

important changes which take place in the secretions of fruit are due to heat, light, and the free admission of fresh air, but until the tariff was entirely removed, the element which costs us nothing could not be allowed full play upon our hothouses. This burning or scorching period, whilst covering the sheet-glass manufacturers with ignominy, was not, however, an unmixed evil, as it was the lesson thus taught which brought about our present perfect system—I may say systems—of ventilation. Good sheet glass, free from inequalities, fit for picture-glazing, can now be obtained at ridiculously low prices, and this, it is hardly necessary to say, has rendered one of the gardener's greatest nuisances—daily shading—a bugbear of the past. Slight shade at certain times and under extraordinary conditions is, of course, necessary, and always will be, but, given a forcing house well glazed with the best British sheet, and ventilated upon the most approved principles, there must indeed be something radically wrong in the mode of culture where systematic shading is still resorted to.

At one time within my own memory a blink of sunshine caused a rush to the Pines, the Cucumbers, and even the heat-loving Melons, and so deeply were the results of five minutes' neglect impressed upon young gardeners' minds, that it is by no means surprising a remnant of the system is occasionally met with. Hartley's patent rough plate-glass, which is said to destroy transparency without diminishing translucency, was ushered in as a remedy for every ill, and notwithstanding the fact that it has made considerable headway amongst plant-growers, it has never found favour with growers of fruits that are natives of countries whose temperature is much higher than that of our own. Before the thousand-and-one light gossamer shading materials, running up from Haythorn's netting to scrim canvas, were invented, common whitening and lime, reduced to the consistency of paint by mixing with hot water, linseed-oil, and skim-milk, were used for shading the roofs of houses and the man who could manufacture a storm-resisting paint was hailed as a benefactor. Plant and fruit growers still living can tell us how the *Stephanotis* and other plants refused to flower under their baneful influence; how thousands of Peaches became whitewashed, not by the shade, perhaps, but by the lime mingling with the tankfuls of soft water from which the trees were syringed. I do not for a moment condemn the judicious use of light shading, neither do I think plant or fruit growers can entirely dispense with it; but to young men whose aim is a profusion of blossom or full crops of highly-coloured fruit, I would say think well before you resort to systematic shading. Keep your glass clean; keep the interior of the house as clean and sweet as a living room; ventilate freely by day and give a chink of air at night; and, above all things, allow vitiated air to escape by opening the top lights early on bright mornings. With two instances of the result of systematic shading, one upon plants the other upon fruit, I will close this paper.

When a young beginner I had charge of the finest *Stephanotis* I have from that day to this seen. It covered the back wall of a hip-roofed Pine stove, and the foliage was magnificent, but constant shading and incessant drenching kept it in constant growth. Shoots that would have formed a girdle round the garden were cut out annually, but the flowers were conspicuous by their absence. Under this mode of treatment is it matter for surprise that people in these days even jump at the conclusion that there exists a non-flowering variety of *Stephanotis*? The other lesson was learned in a Muscat house. Imperfectly ventilated and with a trellis too near the

glass, a set of well-planted Vines became badly scorched every summer. Annoyed by their unsightly appearance, the head gardener decided upon the use of canvas, which was tacked on in the spring and remained until the following autumn. This extended from the eaves slightly above the line to which the young canes were shortened back at the winter pruning. The buds, notwithstanding the scorching of the leaves, had ripened well and produced good bunches of Grapes, which, owing to want of light, never coloured properly. The wood of the same year made in the full blaze of the sun ripened in a satisfactory way, and for a time we lived in a fool's paradise, but, as many of your readers will premise, our joy was of short duration. The following season the young leaders were shortened back to within 3 feet of the upper margin of the shading of the preceding year, and the buds on these short lengths of wood produced good shows abundantly. Below the line, *i.e.*, the shaded portion, the breaks from the spurs and the lower parts of the young rods were weak, and not a single show was found upon one of them; indeed, so marked was the failure that one could tell to an inch how far the shade from this light material had extended. This, it is hardly necessary to say, was the first and best lesson I ever learned in the art of Muscat growing. To some I may appear in the light of a Job's comforter, but common-sense facts are stubborn things, and I still maintain that more may be learned from the record of one thoroughly investigated failure than half a dozen successes.

GRAFTING.

We are just now on the eve of the grafting season, and those contemplating practice will do well to be prepared with scions. Too many who wish to graft trees otherwise useless or not of sufficient merit to retain have found a season lost solely because they omitted to provide themselves with the needful grafts at the proper moment. To work with prospect of success tree growth should be a little in advance of the scions, and if these have been taken from off the parent trees and laid into the soil as if ordinary cuttings, they will remain dormant even after all tree growth has pushed freely. No doubt trade growers provide themselves with an ample stock of grafts seasonably, but grafting is much less resorted to in the case of young stocks than formerly, and budding is preferable wherever possible. Buds must be full of excitement at the time of insertion, and union with stock and bud soon results. Were that not the case, the bud would soon perish. On the other hand, a graft has so much of body and of hard wood in it, that it will endure for some two or three weeks in an active state, even though union with the stock be not effected. When the stock is in fit condition for grafting the scion is the same, and if the work is properly performed, without doubt the uniting process follows rapidly. After all it is just possible that the condition of the stock has most to do with the rapidity or otherwise of the process of union, for grafts are not easily killed until the season has considerably advanced. Whilst seasons and situations must govern the time for grafting appreciably, yet the middle of April is, on the whole, about the most favourable time. In the case of stout stocks it does not at all follow that the heads which are to be removed need remain on the trees till so late a period. If cut some 6 inches or so above the point at which the grafting is ultimately to be done, even during the winter, the stem will not appreciably suffer, and if freshly cut clean off lower down just when the grafting is desirable, the stem will probably be found amply supplied with sap. Of course very much depends upon the extent and condition of the roots, but as grafts cannot for several weeks absorb all the sap created, it is evident that too powerful a flow early is not desirable. Later, when the union is perfect and

growth has resulted, the sap force can hardly be too strong, as a vigorous growth from the scions the first year means the foundation of a fine tree-head later. There are literally tens of thousands of trees from five to fifty years old in the country which would be all the better for, and indeed would soon well repay, beheading and grafting. We have an immense number of Apples trees, for instance, but how many of them either fruit sparingly or produce fruit that is almost worthless? How many, too, have become literally cope heads, so thick that pruning or thinning is a work of despair, and even if done would hardly be remunerative. In all such cases it is wiser to take the heads off to clean stems, and re-graft with some other productive and meritorious kinds. The beheading does not check the root action of the tree; whilst the re-heading by grafting literally gives renewed life and vigour to trees previously thought only fit to grub up. The robust growth on the tops allied to healthy and vigorous leafage reacts upon the roots—inspires them, as it were, with renewed activity; and conjoined, a fine, productive tree-head soon results. When so served, orchard or garden trees have a start which no newly-planted young trees can hope to overtake. A stout stem, say 6 inches through, will easily take four strong grafts as big as a man's finger; and each one, throwing the first year three stout shoots, forms a big head at once, which in three years becomes a large tree. Then fruitfulness follows quickly also, for the root and head force is soon equalised. Of course, much then depends upon the sorts worked, as some are so much the more precocious than others, and some so much the more prolific, especially early kinds. We must not, however, be too anxious to give up everything good in fruits for the sake of securing precocious or free-fruiters. We want some which will give us late keepers, high flavour, fine form, or other qualities having special market value. There is so much room for development, in Apple culture especially, that too much stress can hardly be laid upon the importance of re-grafting old and apparently worthless trees. A very odd-looking object certainly is a newly-grafted tree which has some seven or eight branches all worked. After all, it is very doubtful whether that is the most desirable plan to adopt. As a rule, I think a clean stem some 4 feet or 5 feet from the ground to be preferable, in the case of standard trees, to many branches worked higher up. In the former case some four or five stout grafts only can be employed, but the sap force is concentrated, and the growth all the more robust; the resulting head later becomes the most handsome, whilst one the product of many branches always presents an ungainly appearance. The work of grafting is simple enough, and when done not too far from the ground, is very easily performed. A clean part of the stem is selected, and a clean cut with a saw made, so as to obviate the tearing of the bark. A sharp knife is drawn from the top of the stem 4 inches or 5 inches in length, and clean through the bark, in as many places as the grafts are to be inserted. A specially prepared piece of wood, pointed and flattened like one side of a clothes-peg, is prepared, and driven in behind the slits in the bark to open it. The grafts, stout and of clean, vigorous wood, bevelled on one side to fit the opening made, are driven well in, and then are secured by a bandage of stout bast, then clayed over, and finished off neatly. Carefully done, the result may be looked for with entire confidence. A. D.

Protecting fruit blossoms.—Unlike Mr. Hobday's trees (p. 233), our Apricots and Peaches are fully three weeks or a month earlier than last year. Our first Apricot bloom opened on February 28, and that of our first Peach about the 8th inst. On the 11th we were visited by a severe snowstorm, followed by sharp frosts, which have continued more or less now for more than a week. Notwithstanding the severe weather, however, our Apricots are merely protected by fishing-nets, but these, when folded two or three times, afford a considerable amount of protection both from frost and cold winds, and up to the present time the blooms do not appear to have suffered

much. For Peaches we have canvas, rolled up in the morning on bright days and let down in the evening; but where fishing-nets are used they are not removed at all until the fruit is set and all danger from frost is over. Before the severe weather set in Pears with us were very forward, some blooms being nearly expanded; these we protect by means of fishing-nets; likewise Cherries, and where small standards or bush trees have a good show of bloom on them, they should be protected by placing three or four stakes around them and throwing a piece of canvas over them at night. If this were done many disappointments would be avoided.—OLIVOR.

HARDY FRUIT CULTURE.

It is pretty generally admitted that the less pruning Peach trees want in spring the better; it cannot, however, be dispensed with altogether. The thinning out of exhausted wood and the shortening back of strong leading branches are a necessary part of the spring management of Peach trees; cutting out wood not wanted should, however, have been done before this, and taking off the tops of the leading shoots had better be deferred until the trees are in bloom, or at least until the buds have swollen up sufficiently to enable the cultivator to readily distinguish fruit buds from wood buds at the point to which it is desirable to cut back. This is of more importance than the inexperienced would imagine, because Peach trees in vigorous health form so many buds, that before they begin to swell in spring it is difficult to decide whether they are fruit buds or wood buds. If there should be only flower buds at the point to which any shoot is to be cut back and no wood buds below it, which is not at all unusual, especially in the case of large-flowered Peaches, that shoot will be useless, because there being no wood bud to form growth, it will ultimately die. In all doubtful cases as to whether there are wood buds or not, it is better to defer pruning until the flowers are open, and then, if there are no wood buds, the shoot can be left the whole length, as there are invariably wood buds at the end, or it can be cut out altogether. No one need apprehend any danger to the crop or the tree from pruning when the trees are in flower. Of this I am certain from my own practice, both in the case of trees on open walls and those under glass.

Thinning the bloom on Peach trees is not so often practised as it might be. It is more necessary perhaps to do so in the case of trees under glass than in the open, but in all cases where there are double and treble buds one will suffice to furnish a crop, provided those buds which are not wanted are removed as soon as they can be handled, because it must be evident the remaining half must be better nourished, and consequently in a better condition to resist unfavourable climatic conditions than would be the case if all the flowers were left to open and fall from the tree in a natural way. In the treatment of Peach trees on open walls most people are advocating more root moisture than has hitherto been allowed, and also biennial lifting or root-pruning. These measures are not being taken any too soon, for but in very few instances have the trees received the amount of attention which they require. In many cases the roots have been permitted to find their way down into ungenial soil, while others in well-drained borders have suffered from want of water, and not unfrequently have the branches been so much crowded that it has been impossible for the wood to get ripened even in the most favourable seasons. In the case of outdoor Peaches, deep and rich borders must give place to borders composed wholly of good loam and not more than 2 feet deep. Manure of any kind, except as a surface dressing, should be altogether dispensed with. The question of drainage, too, must be considered, and our views on the necessity of draining all borders alike regardless of the character of the soil must be modified. It is possible to drain too much. My own experience leads me to believe that draining fruit-tree borders is only necessary in a very limited number of cases. The roots

should be kept near the surface, where they can have the benefit of the sun's warmth. Lime in some form or other should, it is thought, be present. But I, however, happen to know of a garden in which chalk has been used for surface-dressing Peach borders annually for several years past. In this case the chalk has to be conveyed seventy miles by rail and three miles by road, but the Peaches are no better in this case than in others in which no chalk or anything approaching the character of lime has been used. I am, therefore, of opinion that lime is not a necessity for the successful cultivation of the Peach. I have met with quite as many failures in the chalky soils of Surrey and Sussex as I have in soils of a wholly different character.

For Plums and Pears high walls and wide borders are considered to be needful, but these the character of the soil should decide. If the soil should be of a kindly, friable nature, such as an experienced fruit grower would consider suitable for these fruits, and of a depth of, say, 3 feet, then I say high walls and wide borders are desirable, but where conditions are unsuitable I am equally confident that the walls should not exceed 10 feet in height and the width of the border should be 8 feet. This will place the trees under what I may call a moderate system of restriction, and I am satisfied that is the only safe rule to follow when the roots have not a wide run in a favourable soil. While the roots can find an agreeable medium the trees generally remain fruitful, but there are miles of low walls in the country furnished with trees to the top which are every year bare of fruit because the roots have been allowed to remain down in an ungenial soil. The result would have been no better had the walls been twice the height, but if the roots had been restricted in proportion to the space covered by the branches by being occasionally lifted out of the bad soil, results would have been more satisfactory. High walls in conjunction with wide and deep borders are desirable, because when it can be prevented, both Pear and Plum trees are the better for not being severely pruned, but when circumstances make it a necessity satisfactory crops over a long period must not be expected, unless the roots are prevented from getting down into an unkindly subsoil.

Disbudding fruit trees is an operation that will soon claim attention, but in a general way it is commenced too soon. In a laudable desire to relieve the tree of an unnecessary amount of growth we are apt to lose sight of the fact that the said growth affords a certain amount of protection to the young fruit. I have many times observed that more fruit is lost after the crop is set than before, a circumstance which I think shows that the young fruit is more tender than the flowers, and as the leaves are developed soon after the flowers fade it is plain that they are intended to act as protective agents; therefore to remove them too soon is to deprive the fruit of some of the protection which Nature has provided for them. When, then, is the proper time to disbud? So far as my experience goes, I should unhesitatingly answer that the first week in June was soon enough to disbud any tree on open walls, but Peaches and Nectarines should take precedence after that date, and then should follow Apricots and Plums, and if the results are compared with seasons when the work has been done earlier, I am sure it will be found that it is better to disbud late than early. J. C. C.

Unheated vineries.—In southern parts of the kingdom the practice of growing Grapes in unheated houses is rapidly spreading. The demand for Grapes is greatest in autumn when seaside towns are full of visitors, and the supply from unheated houses can be sold before the damp, dark days of early winter render fire-heat necessary to keep the crop from getting mouldy. The main point is to secure a good sunny aspect, and a light, well drained soil favours early ripening. In some parts of Sussex the soil is naturally so well suited for Vines that cuttings of them are put in without any more ground prepara-

tion than would be given to a plantation of bush fruits. After they have got strong a slight wood-work structure just enough to carry the glass is run up over them, and really good crops are thus secured in a short time. Expensive borders and lofty vineries have been thrown quite into the background. Span-roofed houses with a row of Vines on either side are in favour with many, but I think the lean-to form is decidedly the best, as it retains heat longer than any other form. The chief cultural point is to keep the Vines as cool as possible in early spring, so as not to excite them to grow while the nights are very cold. Plenty of air is given both night and day up till the time when they can be no longer retarded; then, in order to economise sun-heat as much as possible, they are shut up early. It is surprising how much sun-heat plants will bear if their foliage is dry, but in the morning when it is wet with dew, scalding readily takes place. We therefore ventilate early and shut up early. Very little syringing is done in these cold houses, damping the floors being enough to create an amount of moisture capable of maintaining healthy growth. The roots are allowed plenty of space inside or out in which to ramble, and plenty of good surface mulching is given them, and also liquid manure when the crop is swelling. The Black Hamburg is the greatest favourite, and Foster's Seedling makes a good white companion for it, but of late the demand for white Grapes has been but limited. By being close to the market, fruiterers or growers in this district manage still to compete with imported fruit even at 1s. per lb. These cool-grown Grapes in no way interfere with either very early or late keeping crops grown in properly heated structures. Good early Hamburgs directly the latest Alicantes and Gros Colmars are finished always realise good prices in limited quantities, but the bulk of the Grape crop is cleared off at very low prices, and must therefore be produced by utilising the sun's rays to the utmost, thus saving fuel for crops that realise a higher figure. —J. C. C.

The Plum crop.—Notwithstanding the heavy crop of Plums which we had last year, the promise at the present time of another full crop this season is very bright, the trees being wonderfully full of fruit buds, from which the winter covering of brown scales has already fallen, and a sprinkling of white spots is showing on even the smallest twigs. Even on a north wall the Victoria variety never fails with us, and the same may be said of the purple and yellow Magnum Bonums. But the most satisfactory trees are some upright cordons which are growing on a west aspect and which are about 10 feet in height; these were lifted and replanted late in the autumn of 1885, an operation which had become necessary, as they were too vigorous to bear fruit. We had therefore no crop from them last year, but now every branch is bristling with fruit buds from top to bottom. Lifting the roots had the desired effect in a larger measure than I had anticipated, for instead of the trees making long, stout leading shoots they made great numbers of small ones which are now full of fruit buds. —J. C. C.

SHORT NOTES.—FRUIT.

American Apples.—The business of exporting Apples, says the *Anti-American Times*, is increasing. Two years ago 220,000 barrels were shipped from New York; in 1885, 302,000 barrels; and last year, 349,000 barrels.

English grown Newtown Pippins.—Mr. Goodacre recently sent me some extra fine fruits of the Newtown Pippin grown on a south wall at Elvaston Castle, Derby, which, though lacking the rich yellowish green colour of imported fruits, were quite equal to them in crispness of flesh and flavour. This Apple is proverbially bad in this country; indeed, I have never before seen presentable home-grown specimens of it, but if it does so well on a wall in Derbyshire, it is certainly ought to do equally well in the orchards of Kent. —W. H.

Inarching by means of pot Vines.—J. D. (p. 19) gives a correct description of this kind of inarching. Last year I inarched some dozen Vines on this plan, having the previous year succeeded in establishing some very fine fruiting rods. The pieces left in the pots make excellent plants either for fruiting in pots or for planting out. I propose this summer to pot inarch some dozen Muscats. The results of this kind of inarching are very fine fruiting rods the same season; in some cases I have the next year cut 40 lbs. of Grapes from them. —STEPHEN CASTLE.

Pear Beurte Roland.—From the *Bulletin d'Agriculture* we extract the following: This variety, raised by the late M. Roland, schoolmaster, Grosse, Hamault, first fruited in 1851. It is of medium growth, and very suitable

for cordons and bushes. The fruit is of medium size, obovate, the stalk short, deeply inserted; the eye very small, closed, skin somewhat rough, pale yellow, covered with patches of brown russet; the flesh is firm and melting. It ripens in March, and is a very heavy cropper.

SEASONABLE WORK AMONG FRUITS.

Down to the present time our hardy fruit prospects are unusually promising, and, provided the passing away of the snow, of which we recently had 6 in., ushers us into genial spring weather, trees of all kinds will produce a glorious blossom. What the outcome will be it is impossible to divine, as trees protected by walls cannot be considered safe until after the 20th of May, and if the old adage that every frost in March is followed by three in May comes true the coming flowery month will be the most remarkable on record. Fortunately, we have neither the time nor the inclination to meet trouble midway, and as fruit trees generally are well ripened and the flower-buds are bold and plump, but decidedly late, our present business is to leave no stone unturned, but to strive manfully in devising means for their protection. The first enemy we have had to circumvent is the beautiful, but daring bullfinch. At one time he commenced a terrible onslaught upon Plums, Pears, and Gooseberries, and, contrary to our usual custom, we syringed twice instead of once with a wash of soot, lime, and soapsuds. Still he persevered, and a wash of alum, some time ago recommended by a correspondent, was tried, only with partial success, and, last of all, a quantity of old nets cast loosely over the trees most terribly touched his dignity. At once he took his departure, and to show how dwellers in wooded districts suffer, I am truly sorry to have to record the fact that the tenant of a small Cherry orchard has shot more than one hundred. Our Gooseberries, after all, are well furnished with buds, and soon they will be out of danger.

APRICOTS,

still looking well, are making slow progress, and the effect of 19° of frost, followed by 6 inches of snow upon the sap vessels, remains to be discussed another day. Being more precocious than Peaches, although barely in flower, we begin to feel anxious about them long before the latter claim our concern, and when all has been done for them they are 75 per cent. less profitable than Peaches. Non-protectionists so far have the whip hand, as they have saved a certain amount of trouble, whilst the stoutest woollen materials would hardly save the conservator's expanded flowers from the frosts which have prevailed since the 1st of March. A very small remnant of late flowers, however, sometimes forms a crop of fruit, and it is not yet too late to premise the conservator will win. In a very practical paper Mr. Hobday recommends evergreen branches for protecting fruit trees, and I can endorse all he has said, but unfortunately this method in some districts is not quite satisfactory. Here, for instance, the south-west winds sweep up a valley from the Channel, and no matter how carefully the boughs are tied and tucked in much damage has been done by chafing. The plan I now adopt is equally homely. I do not believe in coddling and canvas, and answers in my case much better. For each wall I have sets of smooth Larch poles, with a short piece a foot in length nailed to the top nearly at right angles to prevent them from resting against the coping. The poles are inserted a few inches in the border, 3 feet from the foot of the wall and 9 feet apart. A broad board weighted down to the stone coping and with a nail through it into the top of each pole completes the framework. From the edge of this projecting board two or three thicknesses of fishing net are dropped, and tied to the poles about 2 feet from the ground. A man and boy can cover 50 yards in a day; the nets and poles admit of our walking along the enclosed space, which is more or less dry; the boards prevent cutting draughts, and the weather must be unusually severe if we miss having a good set of fruit. I have often thought that west walls are the best, and south walls the least favourable to the culture of Apricots, and this Blackthorn

winter, with a continuous run of frosts ranging from 10° to 19°, strengthens the opinion that more fruit would be obtained in the long run. At this time the sap in trees on south walls is very active, and all the early flowers are killed, while trees on a west aspect are ten days later and comparatively quiet.

PEACHES.

We are now, this 19th of March, protecting our wall Peach trees with broad copings and fishing nets. They give wonderful promise, no bud dropping, thanks to ripe wood and two liberal supplies of water through the hose. These trees facing full south will now have to fight their own battle with the elements, as more cannot be done for them. Newly purchased and transplanted trees on a west wall have been well mulched and watered, but the knife remains in the sheath, and training will be deferred until they show unmistakable signs of making growth. It is to be regretted that our leading nurserymen do not keep a good supply of all the best sorts of Peaches and Nectarines on 2-foot stems, *in situ*, worked on the Mussel or the Brompton at that height from the ground. Half standards can be made out of dwarf maidens, but then the union is near the ground and the stem formed of Peach wood is tender and more liable than the Plum to be paralysed by severe spring frosts. I have paid particular attention to this matter for a great number of years, and can safely say short standards are hardier, more fruitful, and last longer than dwarfs. The most striking proof of this I have experienced over and over again in the two fine late varieties, Walburton Late Admirable and Barington, which give great satisfaction when worked upon 2 feet to 3 feet stems.

STRAWBERRIES.

Where the formation of new plantations is contemplated the ground should now be ready, but the transfer from nursery beds need not be made until the middle of the coming month. The dry season has been highly favourable for trenching and getting the land into fine tilth, a very important matter where it has to remain undisturbed for a period extending over three years. As spring plants cannot be expected to give fruit of any value, we always pinch out the flower-scapes and crop this well-prepared piece of ground with successive sowings of Cos Lettuce. The seeds are sown in shallow drills, the young plants are thinned to 16 inches apart, and no matter how dry the season we are never without large crisp Lettuces.

If the old beds have not been trimmed, thoroughly cleansed, and dressed off, this work may be taken in hand as soon as the weather breaks. When all troublesome weeds have been taken out with a small hand-fork one or two dressings with old soot will induce slugs to change their quarters and prove an excellent stimulant. When new soot is used, heavy dressings over the crowns of the plants should always be avoided. Some few cling to the barbarous practice of forking between the rows of these and Raspberries, but this destroys all the most useful roots, when the bulk and quality of the crop are greatly diminished. When the top-dressing is levelled down a good soaking of water will be of great service on warm, light soils, as we have had but little rain of late, and, judging from the way in which open quarters turned up when winter dug, these moisture-loving plants will need sufficient to penetrate the subsoil. Many people water these and fruit trees later on, but often miss their mark, giving the roots a full supply to start with.

Planting.—If this was not brought to a close in the autumn, fair success often attends planting early in April. With large trees there is of course considerable risk, but, provided they are puddled in, well secured, and mulched, young trees hardly feel the moving. I do not recommend spring planting, but there are few places in which this work is not thrown back, as was the case last autumn, and when this unavoidably happens the first appearance of returning life is the safest period to fix upon. If not already brought to a

close, every tree in garden and orchard that has not been well mulched should at once receive attention. Good manure in a half decayed state is generally considered the best mulch for fruit trees, but on cold heavy soils naturally rich enough to force good growth, it is questionable if better results may not follow the use of other materials. Here I give preference to finely broken lime rubble as a first dressing for stone fruits, and burnt refuse for Apples, Pears, and bush fruits. Where all the prunings and trimmings and a fair proportion of heavy soil are systematically reduced by fire, the ash or potash makes fruitful spurs and wood where strong manure forces rank growth which does not always ripen.

THE ORCHARD.

Work in this department can always be found. In this part of the country it is a standing dish to which all fruit growers can turn and return with advantage to the trees and benefit to their pockets. During the first spell of severe weather we laid to with spade and grub axe in a large orchard composed of vintage and choice old culinary fruits, and after heading back a few of the most promising for grafting retired, as we thought, for the season. A change to deep snow and sharp morning frosts, however, again finds us letting in more light and air, as it is folly to think of obtaining good table fruit from trees that are suffocated by wildings. The great fault in many orchards is crowded planting and allowing the trees to grow into entangled masses of spray and useless timber. Many of these trees are past their best, but half a loaf being better than none, thinning, trimming, and top-dressing will often renew the lease until such time as new plantations can be grown into bearing. Grafting and renovation are matters to which occupiers must pay personal attention, but new plantations should be made by the landlord. Men whose interest only extends from year to year cannot be expected to find capital for this work, as they may be called upon to give up before the trees produce a blossom. Once properly planted, yearly tenants who cannot make corn pay will find Apple culture fairly remunerative; but why not grant sound intelligent men in fruit districts long leases? Fruit growers at the hurriedly got up show recently held at Chester have proved that fruit rooms the first week in March were much better stocked than the most sanguine pomologists anticipated. Further, faulty as many of our fruit rooms are, the autumn and early winter sorts so well represented conveyed convincing evidence that sound keepers can be kept long beyond their allocated season. So far our progress is satisfactory, but to make Apple growing pay we must have quantity as well as quality; we must place ourselves in a position to turn out thousands and tens of thousands of barrels of fruit throughout the spring months weekly. Growers have shown that they have the ability; the ways and means now rest with landowners and legislators, who must bestir themselves if they wish to keep at home a portion of the money which we now pay to foreign fruit growers.

Planting.—Although autumn is the best time to plant, healthy young trees, especially if they have been formed or grown for a year in the home nursery, may be planted throughout March. The main precaution, as I have just pointed out, is puddling in, good mulching, and firm staking in a way that will prevent rocking, chafing, or straggling by the gradual settling of the soil. Hitherto easy-going people who could afford to plant for the rising generation put off from year to year where all details did not dovetail to a nicety, but speed is now the order of the day, and our fruit culture having fallen so sadly into arrear, my advice is to push on the work where the trees and soil are in suitable condition. Grafting, owing to the lateness of the season, will also be late, as the condition of the stock, not any particular period or date, must guide the operator. Young stocks generally are worked in March and April; old trees often up to the end of May. Of two periods, provided heading back and the selection of scions preceded the rising of the sap, it is better to be a

few days late than too early. Yearling shoots are used for small stocks, and clean, stout, two-years' wood is preferred for large orchard standards. To the uninitiated, grafting, like many other operations, may appear very difficult, but such is not really the case, as any man who is handy with his tools can soon learn the art; when to operate is gained by watchfulness and past results. What to graft is another matter, which must be governed by the varieties doing well in the district, by the situation, and, as a matter of course, the purpose for which the fruit is intended. On reference to Mr. Bunyard's excellent little book, "Fruit-growing for Profit," which, by the way, every grower should purchase, we find our Kentish leaders dividing Apples into four sections, *viz.*, early dessert Apples, to sell direct from the trees; culinary or "smashing" Apples, to sell direct from the trees; dessert Apples, for storing; and culinary sorts, for storing. These lists are very comprehensive, and might be quoted here in detail, but the price of the book is only 1s. 6d., and being so full of thoroughly practical information, not only upon Apples, but upon every kind of hardy fruit, the most experienced man will not regret perusing it for himself. For private use, selections may, of course, be made from each section, but the early and late sorts should be extensively planted for market.

W. COLEMAN.

FERNS.

W. H. GOWER.

TRICHOMANES AT KEW.

This genus consists of a large number of elegant plants, having for the most part extremely delicate, pellucid fronds; hence Filmy Ferns, a name by which they are popularly known. The collection of these plants just now at Kew is both extensive and excellent as regards health, and but for the fact that they are encased with dull green glass, they would afford a rich treat to all lovers of Ferns who visit that establishment. *T. alatum*, from Trinidad and Jamaica, is one of the best of them. It is a free-growing and elegant plant, with ovate-lanceolate, pale green translucent



Trichomanes arifoliatum.

fronds from 6 inches to 12 inches long; the pinnae are united to the main stem by a narrow wing, and the segments are deeply pinnatifid, the cup-shaped involucre being immersed. *T. crispum* is a distinct and handsome form with fronds from 6 inches to 9 inches or more in length, bright sea-green in colour, and the stems are clothed with tawny hairs; the fronds are once divided, the segments being oblong-obtuse, often so closely set as to overlap each other; the involucre is situated in

the points, immersed, but the hair-like veins which bear the sori are exerted, giving the edges of the fronds a fringed appearance. It comes from Jamaica and various other parts in the West Indies and Tropical America. *T. Leprieuri*, better known as *T. anceps*, is very plentiful in Trinidad, and is also found in Dominica and Brazil, and is one of the largest and finest species, growing from 1 foot to 2 feet in height; in the typical form the fronds are triangular in outline, the first divisions being pinnate, but afterwards they are several times pinnatifid; the spore cases, which are situated on the margins, are bell-shaped and pendulous; the colour is a very dark metallic green. Another very handsome form of this plant, also from Trinidad, has broadly ovate, acuminate fronds of the same intense blackish green colour, with all the divisions very much larger and broader than in the type; we have also seen a form from Dominica in which the fronds are oblong in shape, and the segments are still broader than in the previous variety. The caudex is erect and stout; naturally it appears to grow in loamy clay, but under cultivation it does not thrive in this material. It requires a somewhat higher temperature than that in which most of the other kinds succeed. *T. pinnatum*, sometimes called *floribundum*, on ac-

oftener plain, each bearing a terminal immersed involucre. In direct contrast to this curious little plant comes *T. trichoideum*, which may be utilised in similar positions. It grows freely and forms dense clumps of delicate fronds, which are usually from 2 inches to 6 inches high, but some specimens from New Grenada show that they attain there a height of from 9 inches to 12 inches; the fronds are bright light green and three or four times divided, all the divisions being minute and thread-like, through which the little erect black cups show themselves prominently. This is one of the most delicate and charming of the whole family, and widely distributed throughout the West Indian Islands. In *T. Luschatianum* we have a bold, robust plant of scandent habit, which forms a beautiful object if allowed to grow upon the stem of a Tree Fern. It may be described as a climbing *T. radicans*, with sessile fronds some 12 inches or 18 inches long, and with broad, deeply-divided segments of a rich deep green; it comes from Brazil. *T. auriculatum* is a native of Java. It is of scandent habit, and produces large, rich, bright green fronds, the ultimate segments of which are broad and deeply lobed, bearing on the edges the small exerted involucre. *T. exsectum* is a native of Juan Fernandez and Chiloe. It has a slender creeping stem, and bears

we found good specimens of nearly all the species in cultivation growing in an unheated brick frame in the back yard attached to his dwelling-house, the necessary protection in cold weather being afforded by a covering of tiffany. More recently we observed in Sir Trevor Lawrence's garden at Boxhill good clumps of *Trichomanes radicans* (the Killarney Fern) growing in nooks in the Odontoglossum house without any covering; whilst their adaptability for room decoration was strikingly exemplified by the late Mr. Cooper Fester at his London residence. The kinds with creeping rhizomes delight to ramble over tree stumps or rockwork. Under cultivation the latter is preferable, as it does not decay, and, moreover, retains a cool, moist, equable temperature, whilst those having a tufted growth and erect stems should be planted in crevices of rocks or stones, from which there is a free outlet for water; the interstices should be filled in with nodules of peat and Sphagnum Moss. In a wild state many of these plants appear to thrive in stiff yellow loamy clay, but we have never been able to maintain them long in a healthy condition in such soil. In arranging a case for Filmy Ferns we prefer moderate-sized blocks of sandstone to any other material. These should be set in an irregular manner, straight lines above all things being avoided. When the plants have been placed in the positions desired, the whole should be settled down by means of a sprinkling of water from a fine-rosed watering-can; such sprinklings should be repeated from time to time as may be necessary in order to maintain that genial moisture-laden atmosphere which is so essential to the well being of these plants. The situation should be such as to prevent the sun shining upon them at any time during the day. If such a spot is not procurable, then some light shading material must be provided for them while the sun is upon them, but by all means avoid the use of green glass.



Trichomanes reniforme.

count of the dense fringe which its exerted involucre form round the edges of the pinna, is also a Trinidad plant, which, like the preceding, does not thrive in a cool temperature. It is tufted in habit, and produces pinnate fronds a foot or more in length; these are of two kinds, the infertile fronds being broad and imbricated and much toothed on the edges; these are of a bright, lively shade of green, the apex of the frond being proliferous. The fertile fronds are not so, and the pinnae are much narrower, densely fringed on the edges with a single row of little, erect-stalked, cup-shaped involucre, and the veins are exerted. *T. olivaceum*, a native of Venezuela, is generally considered a form of the variable and widely distributed *T. pyxidiferum*; it is a free-growing plant with a creeping rhizome, which soon covers a block of sandstone or stump of a Tree Fern with its elegant deep green fronds; these are some 6 inches or 9 inches high, and two or three times divided into narrow segments, which render the partially exerted vase-like involucre to be very conspicuous. *T. Petersi* should be fastened to the face of a block of stone, over which it will soon ramble and clothe with verdure. It is a native of Alabama, and its fronds are less than an inch in height; these are entire, oblong-lanceolate in shape; sometimes it is serrate on the edges, but

fronds from 6 inches to 12 inches high, all the segments of which are very finely divided. *T. reniforme*, from New Zealand, is a similar departure in form in this genus to that of *Adiantum reniforme* amongst Maiden-hairs. It has a thin, wiry, creeping stem, and produces large kidney-shaped fronds which measure nearly 3 inches across; these, which are borne upon footstalks from 4 inches to 8 inches high, are thick and leathery in texture; when fertile (which under cultivation occurs but rarely) the involucre form a dense and conspicuous edge round the margins. When the fronds are not fertile they are more undulated than in the case of those grown in its native habitat. Of *T. venosum*, another New Zealand kind, we noticed nice specimens, also good examples of *T. radicans* (the Killarney Fern), *T. membranaceum*, a kind with a sea-weed look, and *T. maximum*, besides numerous other kinds.

THE TEMPERATURE of the house in which the Filmy Ferns at Kew are grown is kept at about 55° during the day, and is allowed to fall some 5° lower at night. There can be no doubt that the majority of *Trichomanes* thrive best in a low temperature and moist atmosphere—a fact clearly demonstrated a few years ago in an amateur's collection of these plants in Bermondsey, where

KITCHEN GARDEN.

W. WILDSMITH.

SALAD VEGETABLES.

GARDENERS one and all will, I think, agree that in order to produce a regular unbroken supply of salads more skill and forethought are required than are needful in any other branch of kitchen gardening. To obtain good and constant supplies of Lettuces, Radish and Mustard and Cress, seven months out of the twelve is an easy matter under ordinary open-air modes of culture; but in order to continue the same over the other five months—from November to the end of March—there must be frame space, and if the variety required be large, that space must be considerable. Presuming, therefore, that there is no lack of frames, and that only the following most generally required kinds of salad plants are needed, namely, Cucumbers, Lettuces, Endive, Radishes, young Onions, Chicory, Dandelion, Mustard and Cress, by strict attention to sowing at stated or regular intervals, a full supply at all times may be reckoned upon almost as a certainty. During winter Cucumbers are fitful, and sometimes refuse to succeed, no matter how well they may be cared for, but these constitute the only element of uncertainty, and when they do fail, it is, as a rule, near the end of the year, so that by making a prospective sowing about the middle of November in expectation of such an event the break in the supply need not be a long one, for seldom, indeed, do young plants fail to thrive when planted early in the new year if afforded a bottom-heat of 75° and a top-heat of from 65° to 70°. For late autumn and winter fruiting the seeds should be sown by the middle of August, and the young plants planted out in the beds of the Cucumber house by the middle of September. Should they show a disposition to bear before they have extended over two-thirds

of the trellis, the fruit should be picked off in order to get strength into the plants, and this operation will probably prevent premature exhaustion—fruiting to death of plants—before the most trying time has been reached—the dark, short days of November and December. These plants should continue fruiting till well into spring, a second lot of young plants being grown on in the meantime in another division, or part of the one division, to succeed these, whilst throughout the summer and autumn the supply may be obtained from frames, and the Cucumber house may be utilised for the growth of Melons; Telegraph is the variety to be preferred to all others. Everybody knows when to sow Lettuces for summer and autumn use; therefore winter supplies are all that need be alluded to. The first sowing should be made in the second week in August; this will ensure good Lettuces being cut from the open border till quite the end of November, and the next sowing made in the third week of August will produce plants for lifting, with balls of earth attached to them, for planting at the base of south walls and in frames. It is well to make a third sowing in September, and plant the produce out under handlights or in cold frames to succeed the plants lifted, and put in frames after they have completed their growth. For all these sowings there is no better variety than the Black-seeded Bath Cos. The colour—brown—may be objectionable to some, in which case Hicks' Hardy White Cos should be substituted. Endive is not a popular summer salading in this country, but it is invaluable all through the autumn and winter, and when well blanched there is no other ingredient of the salad bowl that equals it in appearance. The first sowing of this should be made in June, another in July, and a third early in August. These three sowings will generally be found sufficient. Part of the produce of the first sowing will probably be obtainable from the open borders, but a much better plan and one that ensures perfect blanching is to tie up, not over tightly, the whole of the plants, and plant them quite closely together under the shelter of walls, and where, if needs be, mats might be quickly thrown over them for protection from frost. The later sowings should all be lifted and be put in frames about the middle of November, and be tied up for blanching as required, or, better still, be lifted from the frames and put into the Mushroom house or any other dark frost-proof place, at intervals and in quantities as may be required. Moss curled and Broad-leaved Batavian are the most generally approved varieties. Supplies of Radishes can only be had good during winter by sowing in frames placed over slight hotbeds composed of leaves and stable litter. Open garden supplies, as a rule, are obtainable till well into October, so that the first sowing in frames should be made a month previous, and successional sowings at intervals of three weeks up to the end of the year, when the supply may be continued by sowing a few between the rows of Potatoes that are being forced in frames. The French Breakfast and Wood's Early Frame are the best varieties for forcing, and also for the earliest open-air supplies. Young Onions for the most part are preferred to Chives, and as a very small quantity is required for each salad, by sowing a small box in heat, say, half-a-dozen times between September and February, a never-failing winter supply may be kept up, and from that time—February—frequent sowings on a warm border are the best way in which to obtain supplies throughout summer and autumn. Any variety can be made to do duty in salads. Chicory and Dandelion are both highly prized for winter salads, and as they are of the easiest

possible culture, there is really no difficulty in having good supplies of them. Sow the first week in April in drills a foot apart, and thin out the plants to 9 inches asunder in the row. They will be ready to lift by the end of October, when they should be stacked in sand and stored in a cool place. Pot the roots, or plant them out in the Mushroom house in such quantity as may be required, and at varying intervals. To have the leaves well blanched, perfect darkness is essential. No note need be made about getting constant supplies of Mustard and Cress other than that during winter in but moderate heat it is necessary to sow once a fortnight. Celery, Tomatoes, and Beet, though used as salads as well as vegetables, are more frequently used separately; therefore, they hardly come under review in a general salad list.

Market Carrots.—Owing doubtless to the somewhat clayey nature of the soil in West Middlesex, Carrots as a market crop are not largely grown, although it is certain that very good samples may occasionally be produced, especially of the Intermediate forms. It is possible a further explanation for the non-production of Carrots here may be found in the apparent ease and cheapness with which they can be grown in Surrey, and especially in localities where soil is favourable and much cheaper rented than in Middlesex, and on this account Carrots can be offered at much lower prices than they can be grown here. The other day I purchased a real old-fashioned bunch of a dozen handsome clean Long Surrey Carrots in a local shop for the trifling sum of 3d. Of course the getting up, washing, sticking, and tying, besides loading and sending perhaps from thirty to forty miles to market, meant much labour, in addition to which there were market dues and the local shopkeeper's profits, who resides some sixteen miles from the London market. What the grower really received in the first place per bunch it would be interesting to know, but hardly more than 1d. per bunch. Very probably these same carrots would in a London shop, where rates, rents, and taxes are so heavy, have been priced at 6d. a bunch. As far as I am concerned, however, there is no room for complaint, and it is not a matter of surprise if the Middlesex men decline to compete with the Surrey Carrot growers.—A. D.

Globe Artichokes.—Our plants covered with short litter are, I find, all right, but where unprotected the probabilities are that many will die, and those not killed outright will be late in starting. Even where well protected this year they will be late in consequence of the protracted winter. Where there are plenty of sound roots of a moderate size, the result of frequent transplantation, a few may now be lifted, divided, potted, and brought on in gentle heat. If hardened off and planted out in May, they will bear earlier than those left out altogether, but the roots should not be cut up too much. It is best to leave a good piece of the old root-stock attached to the offsets, as under such circumstances less check is sustained. If there is reason to believe that the old plants are seriously injured by the frost, it may be advisable to sow seeds in order to raise a new stock, though seedlings, as a rule, unless the seeds were carefully saved from a good variety, are often of inferior character. Whenever I have raised plants from purchased seed, some portion has always been inferior, producing small, light, prickly heads of no value. Seeds saved, however, from selected heads of the purple-tinted variety have generally come pretty true. If the seeds are sown now in heat they soon germinate, and when potted off into single pots they rapidly acquire strength, and by the middle of May, or perhaps earlier, they will be strong plants in 5-inch or 6-inch pots ready to plant out. They should be grown on in a warm house or pit till within a few days of the time when they are to be planted out.—E. H.

SHORT NOTE.—KITCHEN.

Transplanting boxes.—Mr. Harwood, of Colchester, sends us a specimen of what is called a transplanting box, which has a removable bottom. We object to mechanism of all kinds in the garden. Any man who knows how to move

a plant can do so very readily without any mechanism, and all such things as transplanting boxes with removable bottoms, and flower-pots with wire "lifts," are unnecessary.

PROTECTING BROCCOLI IN WINTER.

Most growers will admit that there is much uncertainty attending the cultivation of Broccoli. Taking into consideration the fact that this crop generally occupies the best position in the garden, as well as some of the best soil, during six or nine months in the year, it is disappointing to find at the end of that time that one's labours have resulted in a very inadequate return. Yet for many years such has been the case, and this season forms no exception to the rule, for most of the crops of Broccoli that have come under my notice, and which were once so promising, are now blackened and for the most part destroyed through the severity of the weather, all kinds having suffered about alike. One would have thought that, owing to Broccoli being such an indispensable vegetable, gardeners would have been able to lay their hands on some more hardy and trustworthy sorts than at present exist, but such is not the case. True, there are plenty of varieties, far too many, for half-a-dozen would be amply sufficient, provided they possessed that one desirable property, hardiness, but that is still a desideratum. My experience is that Broccoli intended to stand the winter is often overgrown; kinds of medium size and sturdy growth pass the winter much better than such as are more succulent. A too rich soil for Broccoli is often disadvantageous, as it renders the plants soft and pithy, and thereby more liable to injury than they otherwise would be. Hard ground moderately enriched and plants set at a greater distance apart than is usually the case are the best preventives of injury from frost, and yet after all these conditions, if carried out, will only partially save a crop. We must therefore resort to other means of doing so, such as providing some suitable protection. The following facts in connection with this part of the subject may be worth recording: A plantation of several sorts of Broccoli had to be taken up early in November to make room for some greenhouses; I therefore had a trench dug 5 feet wide and a good spade's depth, throwing the earth half on one side and half on the other to form banks; the plants were lifted carefully with all the earth attached to the roots they would carry and were laid in this trench, in which the roots were covered with the loose earth left at the bottom; they were placed at convenient distances apart, and made firm in the soil by treading. Thus circumstanced, they were allowed to remain until frost set in, when the occurrence of the banks on each side enabled me to lay some supports across, on which I laid rough litter sufficient to protect the Broccoli to some extent from frost, though not enough to keep it entirely from them, for they were sometimes frozen. By taking the litter off at short intervals and admitting light and air I saved the principal part of my crop from destruction, while if the plants had stood where first planted I fear I should have lost them all. This circumstance leads me to think that until we get a good hardy Broccoli it would pay where it can be done to devise some means of protecting the sorts we now grow of this useful vegetable. THOMAS RECORD.

Kitchen garden edgings.—Variegated Ivy makes a good permanent edging in connection with stones which it covers. I have seen the stone edging lifted without disturbing the Ivy much, and the walks relaid with asphalt minus the stone edging; therefore the asphalt came close up to the Ivy, which was clipped in so as to form a straight edge. After laying down the asphalt, some white and red gravel was sprinkled over it to make it firm. This made neat and firm walks and looked well in connection with the Ivy edging. Some might perhaps object to Ivy on the ground that it harbours slugs and the labour needed to clip it, but it did not appear to harbour more slugs than Box, and as regards clipping it is much easier

done than that required by many edgings. I have seen walks edged with a turf about a foot in width, and when kept clean and neat, right well it looks. But for well-kept gravel walks Box is my favourite.

—OLIFOR.

Potato planting.—Because soils were working so admirably, Potatoes were being planted very early, growers naturally taking advantage of the fine, dry weather. Tubers, of course, find the ground cold, and not conducive to early growth; hence it is just possible that they may prove even more restful planted than if kept in store. Judging by the excellent crops often found from self-planted Potatoes, it is naturally concluded that early planting conduces to the same result. It is doubtful, however, whether more self-planted tubers are not destroyed during the winter than live to grow, and equally with very early planted tubers it is possible that between cold soil, vermin, and danger from early frosts after growth is made that more come to grief than if planting was done a month later. Under ordinary conditions a good average planting time for early kinds is about the end of March. Of course in the open ground, as in warm borders, planting may be done much earlier. No real test seems to have been made as to the relative values of plantings in March and in April, but as in the latter case, assuming the soil to be of equal character, growth is the more rapid, it is very possible that the April plantings would be the most productive. Still, no one can blame growers for promoting planting so early when weather is so unusually favourable and soil in such admirable condition. Over large breadths the dibber still remains the favourite implement for planting, and when employed by an expert it is hard to beat it. I use it myself largely with the best results, and the method has the merit also of being an expeditious one. Of course, it is not a desirable method on wet soils, but those are just the soils in which Potatoes should not be grown; indeed, it is fair to say that if the soil be too wet for dibbling over, it is unfit for Potatoes altogether. —A. D.

KITCHEN GARDEN NOTES.

WINTER'S WORK.—The sudden and unexpected advent of another winter—deep snow and as much as 16° of frost—has quite put a stop to planting, sowing, and cultivating; we can therefore furnish no notes of present doings, but will take a general survey of our winter's work, and how much more interesting would our gardening journals be if all who are capable (and there are few who are not) would but record their doings in certain departments at stated periods of the year. It ought to be our duty so to do, and thus conjointly would hints and ideas be gathered from the several records that would assuredly prove of great value to all, not to mention the satisfaction that one feels in having honestly striven to impart the best information in one's power for the use of the fraternity in general. Such, therefore, is the object of this note. Our special winter's work may be said to have begun with November, when most of the crops were exhausted or ready for harvesting; then is the most suitable time to make notes as to the following season's cropping in order that the various plots of ground may have the preparation, as regards manuring or non-manuring, digging, or trenching that is likely to best suit each particular crop. This, I need scarcely say, necessitates having a plan of the kitchen garden as a kind of working index to the diary of daily work, and having such a plan, the old one of the previous year is now brought into requisition in order that, in deciding the cropping of the following (*i. e.*, the present) year, the various plots may be occupied with crops of the most opposite description possible from those of the previous year. Strict rotation is not possible within the limited extent of our ground, and therefore we have quite given up attempting to follow that plan. We are satisfied if we can but arrange to grow Carrots, Beet, or Parsnips on ground that was last cropped with Celery, and so on throughout the entire garden. Well, all this we arranged in November, and with but slight modifications; contingent on unforeseen requirements it is a plan to which we shall doubt-

less be able to adhere. It just now occurs to me though that this exceptionally severe and long winter is likely to upset our arrangements considerably, as Broccoli is being slaughtered wholesale by this last frost. Kale and Brussels Sprouts, too, have suffered, and we must plant additional lots of Cauliflowers and Coleworts to make good such losses. The ground for these catch crops will probably be taken from that set apart for Potatoes, and the Broccoli and Kale ground be prepared for late crops of Potatoes instead of for Celery, as was intended, and Celery will then have to wait for the ground occupied by the earliest Cabbage. Apart from these unavoidable contingencies that in ordinary seasons are scarcely worth mentioning, this plan, or what I call a garden guide sheet, is of the utmost value, as it ensures the methodical, and therefore the most profitable, way of extracting from the soil the fullest amount of produce that can be got from it, because what one kind of crop does not utilise another will, or, in other words, what may be unsuitable for Peas will be relished by Potatoes.

The cropping decided, next comes the preparation of the ground, and here I may say that depth of tillage, for all and every variety of crop, I look upon as essentially necessary; therefore trenching is always preferred to mere digging, and practised when time allows. None of our ground ever goes more than two seasons without being trenched at least 3 feet deep; consequently we do not require to manure so heavily as must be done on shallow soils in order to keep the crops growing, and, what is more, tuberous-rooted crops always turn out of such ground straight and clean, which, if full of manure, would not be the case. As a matter of course, ground that is set apart for Peas, Brussels Sprouts, Runner Beans, Asparagus, Sea-kale, and autumn Cauliflowers is trenched deeply and highly manured. Then, as to manure, as we are not overdone with this commodity, we have to take into account our stock of all kinds, and use what we think most suitable for any given crop. For Turnips, Radishes, Spinach, and Lettuces we for the most part manufacture our own, by burning up all the refuse leaves, scraps of sticks, wood, and prunings that we can get together, the ashes from such a smother being equal to the best of manures for the afore-said crops. Soot and lime, a thin layer put immediately under the top spit and stable-yard manure at the bottom of the trench, are the best fertilisers for Onions, Shallots, and Garlic. Stable manure in its entirety is that which we prefer for all deep-rooting crops, such as Peas, Broccoli, Brussels Sprouts, and Kales. For Potatoes we are careful never to apply fresh manure of any kind; vegetable or leaf-soil, guano, bone-dust, Beeson's and several other kinds of artificial manures are preferable, as the tubers not only turn out cleaner, but in seasons when murrain has been prevalent I have noted immunity to some extent from that affection in the case of crops thus manured compared with those grown with fresh stable manure. We were in the midst of this work at Christmas when the great storm set in, and all hands had to be told off to cover up, with Bracken and long litter, Celery, Parsnips, Beet, Cauliflower plants, and herbs, and to lift sufficient supplies of Parsnips, Horseradish, Jerusalem Artichokes, and Celery to serve till the storm ended. Our next operations were cutting and pointing Pea sticks and Bean rods, and examining root and Potato stores to remove decay. This work ended—the snow had fortunately come before there had been any severe frost—by shovelling the snow and throwing it over the newly-trenched ground as each trench was completed, we were able to continue at that work till the storm was over, or rather till the snow had gone, for the frost still continued and prevented our completing the work; but the hard state of the walks and land was favourable for soil and manure-wheeling, and therefore mulching with long manure Raspberries, Strawberries, and narrow fruit-tree borders, as well as wheeling soil to places where it was needed for fruit-tree renovation and replanting, were done. Then came the end of the frost, followed by the finest February

weather on record, and trenching was all completed, seeds that it was desirable to sow were got in, and a commencement made at repairing Box edgings, turning and resurfacing with a bit of fresh gravel the walks, at which stage further progress is stayed by this new return of wintery weather. W. W.

TREES AND SHRUBS.

W. GOLDRING.

HELIANthemUMS AND CISTUSES.

I QUITE agree with all "W. G." says respecting the beauty of *Helianthemum (Cistus) algarvensis*, and also with his remarks as to the positions in which plants of this kind should be grown. The best example of *H. algarvensis* which I remember to have seen was in the midland counties, near Derby; it was growing at the base of a wall with a southern aspect; it was about 6 feet high and about 1 foot across. There are one or two other species equally beautiful with which I have met during my rambles in South Europe. *Helianthemum alyssoides* and *scabrosum* are two very similar plants, so much so, that even M. Gillet, in "Flore Française," omits to mention the latter. *H. alyssoides* is a twiggy, much-branched shrub, the branches of which are set at nearly right angles with the stem; the leaves are grey-green, small, and nearly round; the blossoms are as round as a wheel, and brilliant yellow in colour without spots. *H. scabrosum* has larger leaves, the branches are more upright, and the flowers, while similar in colour, are a little larger than those of *H. alyssoides*; in fact, the whole plant is more robust. The two are found growing side by side scattered in patches over a considerable area of country, generally on the outskirts of Pine forests. Bushes of them upwards of a yard high and as much through are when in flower a perfect blaze of colour. Large masses of them in full beauty are sights not easily to be forgotten. Although these two species come from so far south they have proved to be quite hardy, even at York; exposed on rockwork in Messrs. Backhouse's nurseries there, they have withstood without injury from 20° to 30° of frost. *H. umbellatum* is another interesting plant. In its wild station tufts of it may be seen fully a yard in diameter and about 12 inches high. It has small, narrow, Rosemary-like leaves, green above and somewhat silvery beneath. The flowers, which are borne in loose umbels, are pure white, and vary in size from a shilling to a florin. This plant is found abundantly in Central France and on the Eastern Pyrenees in exposed positions. *Cistus lavandulifolius* is another beautiful, upright, much-branched little seaside shrub, with narrow silvery leaves and soft, delicate, pale yellow flowers. This and *H. umbellatum* appear to enjoy a little peat and sand in the soil, which should also be well drained. *H. gattatum* is an annual species, the stems of which are erect, slightly branched, and from 6 inches to 12 inches high. The flowers, which are borne several together, are terminal, and as large as those of *H. (Cistus) formosum*, bright yellow, and with a handsome purple blotch at base of each petal. I have brought this home on several occasions, but have failed to cultivate it after the first year. It would be interesting to know if anyone has succeeded with it. R. POTTER.

The Constantinople Nut.—I have read with interest the account of *Corylus Colurna* (the Constantinople Nut), especially as I had in my kitchen garden here a very fine specimen of it, which I cut down in 1877, and then made the following memorandum concerning it: "Nov. 27, 1877. Just cut down a *Corylus Colurna*, a real curiosity; it was in the kitchen garden and took up so much room, that I was obliged at last to take it down, especially as the nuts were useless; they were so hard, that it was next to impossible to break them. This was really a tree, not a shrub in growth. The stem measured 6 feet in circumference at 2 feet from the ground, and 5 feet at 8 feet from the ground; it was straight up to that

height, when it branched. The ground shaded by the branches was 39 feet across." This tree I should think had been planted fifty five or sixty years before it was cut down. The figure of the nut (p 260) with its fringed beard is excellent.—W. WICKHAM, *Binned-H'gh, Alton, Hants.*

The Golden Cassinia.—I was in a nursery the other day where no tree or shrub is grown unless it be thoroughly hardy, and there I saw a quantity of this Australian shrub growing. It may therefore be regarded as hardy beyond a doubt, and no one need hesitate to plant such a pretty little Evergreen, which is so different from any other shrub hardy in this country. It is a low-growing and very branching bush, covered with tiny leaves, which are powdered on their under-surfaces with gold, as are the Gold Ferns, so that the bush has quite a golden hue at all seasons. The flowers are very small, but produced in long clusters terminating the shoots. It grows well in all kinds of soil, but thrives best in a light, sandy loam, in a dryish, warm spot. It has not been much planted, but, like other Australian shrubs, such as *Olearia Haasti*, which has also proved perfectly hardy here, it will become popular. *Cassinia fulvida*, the name of this golden shrub, is better known under its synonym, *Diplopappus chrysophyllus*.

Cupressus Lawsoniana intertexta.—Of the numerous varieties of Lawson's Cypress, that called *intertexta* is, in the opinion of many, one of the most beautiful and most elegant. It seems, however, to be too informal for some nurserymen, who dislike a tree, especially a Conifer, if it is less symmetrical than a sugar-loaf, or has any tendency to depart from the conventional Cypress growth. But such is the growth of *intertexta*; it takes a form different from any of its relatives; it spreads at the base and throws out its branches more horizontally than others, and these hang in a loose and most graceful way. The growth is never so dense as in an ordinary Lawson Cypress, and the whole plant is of a lighter shade of green on account of the branchlets being more glaucous. It is a pity that it is not a stock plant in tree nurseries, for one would like to plant it, as it is capable of producing a better effect in a group or isolated than most others. Messrs. Veitch catalogue it as synonymous with *juniperina*, but what Juniper it resembles in growth is not clear. The price that is asked for it is not in the least too high in comparison with that of other and, in our opinion, less valuable varieties.

A good climbing shrub.—*Ercilla spicata* is a name one may find in some nursery catalogues of shrubs, but the plant itself is but imperfectly known, though it is not without value as a climber; indeed, there is not a shrub that clings more tenaciously to a wall than this Peruvian plant. It has an abundance of thong-like branches, and when these are placed against a wall or tree trunk they send out myriads of stem-roots like the Ivy, and by these the plant fastens itself so strongly, that when it has made a huge overhanging head, the heaviest snowstorm will not dislodge it. A climber such as this is often needed in certain circumstances, such as a wind-exposed part of a house. It does not possess remarkable beauty of foliage or flowers, the former being small and pale green, while the latter are small and inconspicuous. The leaves are leathery in texture, and though normally evergreen, the plant loses its leaves in our winters as a rule. Besides its use as a wall covering, it is a capital plant for planting at the foot of a short tree trunk, pillar, or similar support. Its branches quickly reach the top of its support, and then spread out into a large umbrageous head as Ivy does, when it assumes its tree-like growth, but while the *Ercilla* is very rapid the other is comparatively slow. It is a native of Chili, whence it was introduced to Europe about fifty years ago, and has always proved itself perfectly hardy, even when planted against isolated stumps or pillars. It is known also under the name of *Bridgesia spicata*, and is catalogued as such by some nurserymen.

Bambusa Metake.—This Bamboo, when planted in masses of three or four together close to the edge of ornamental water, has a fine effect reflected on the water; indeed, such a position seems to suit it best, as it enjoys an abundance of water, especially during

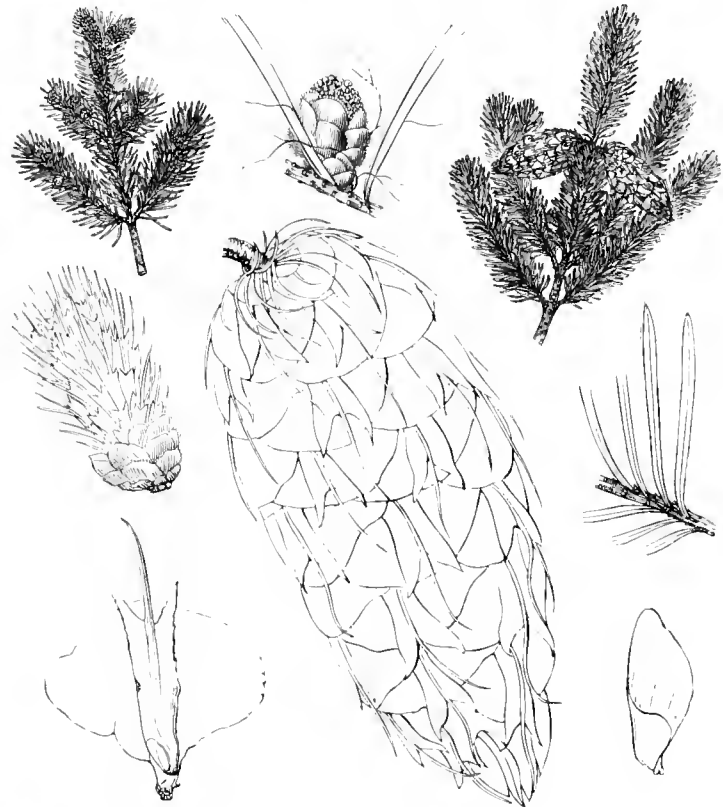
the summer months, and a light rich soil that is free from chalk. The latter gives the foliage a sickly light green colour. This Bamboo is easily increased by dividing the roots, but it is not safe to plant it in positions exposed to much east wind. We lately planted a good specimen of it on the Grass, thinking it would look well in such a position, but the late severe frosts, combined with cold cutting east winds, have, if not killed it, quite spoiled the leaves by converting them to an ashy grey. When new growth takes place this defect will be somewhat remedied, but the plant will be disfigured for a long time. Do not, therefore, plant this charming Bamboo in exposed places if shelter elsewhere can be given to it.—SOUTH HANTS.

THE DOUGLAS SPRUCE.

(*ABIES DOUGLASSI*.)

OF late years there has probably been more written about the Douglas Spruce than about any other Conifer, both as regards its qualities as

of Larch, Scotch, and even Spruce, neglecting such trees as the Corsican Pine and the Douglas Spruce. The comparative scarcity and high prices of these two trees in the nursery have, of course, influenced planters; yet by this time, seeing that the tree has been introduced sixty years, plantations of it ought not to be a rare sight. Another point, no doubt, that has influenced planters is that the tree, though thoroughly hardy, will not succeed in exposed places where the sturdy Scotch, the Corsican, and other Pines are thoroughly at home. The Douglas must have shelter and a good soil, but there are thousands of acres in sheltered valleys in this country still under wood that would exactly suit the Douglas. Its growth is rapid when once it has become established, and surpasses even the Spruce in that respect, particularly in sheltered places along the southern coast line, where its annual growth varies from 2 feet to 3 feet. Some



The Douglas Spruce (*Abies Douglasi*); coning branch, flower, full-sized cone, cone-scale, seed and leaves.

a timber tree and its value for ornamental planting. Writers are all agreed that this tree has great merit for forest planting, and some even look upon it as the best substitute for the Larch should that tree continue to degenerate, as many assert it does. When such authorities on tree-planting as Sir Herbert Maxwell speak in unqualified praise of the Douglas Spruce as a timber tree for this country, no one need hesitate to make plantations of it. The home-grown timber has proved in all respects excellent, scarcely inferior to the imported logs of it, and by actual experiment it has been ascertained that it is stronger and tougher even than the Pitch Pine. But no one has had much experience of English Douglas Spruce timber grown in plantations, as there are very few places where it has been extensively planted, and this fact shows how hard it seems to deviate from the beaten track among planters. They still plant their acres

of the greatest annual growths I have seen are made in an avenue a mile in length at Bayham, in Kent. Throughout the course of the avenue the ground undulates a good deal, and the road and the trees follow the surface of hill and dale. On the high spots the trees are continually lashed by the wind, and therefore are miserable specimens—stunted and thin; but where the ground dips so that the avenue trees are sheltered from the wind, they shoot up long annual growths, and, moreover, are densely whorled with branches.

The trees in this avenue afford a good illustration as to the influence of shelter and exposure on the Douglas Fir, and one would hardly credit the fact that all the trees were of the same size and age at the time of planting, so great is the difference between those on the high ground and those in the low spots. The good soil which gathers in the low places may, of course, contri-

bute to the growth of the trees, but without the shelter they could not have made such rapid progress. Shelter, therefore, is essential for the Douglas Spruce, whether it be planted in masses or as isolated specimens, and coupled with this it should have a deep loamy soil to grow in in a moist, but by no means waterlogged, spot. The finest trees of *Abies Douglasi* I have seen in this country have mostly been in sheltered spots, protected from prevailing winds either by plantations, high ground, or buildings, and invariably on good, deep, moist soils. On thin, poor soils, and especially if exposed, it is almost always a failure. It succeeds on sandy soils, and particularly if it be peaty, and I have seen excellent specimens on the chalk; but, as a rule, it is not a good tree for such soils.

It is a beautiful tree in all phases of its existence, from the seedling stage to towering trees a hundred feet or more in height, and there are few more beautiful sights in a nursery than a mass numbering thousands of young plants just when they are bursting into new growth, and there is certainly no ornamental tree that presents such a noble and yet elegant aspect as a Douglas Fir when of such a size as that at Dropmore. This Dropmore tree is probably the finest in Europe, being now some 120 feet high, with a spread of branches of over 70 feet, and a girth of trunk at a yard from the ground of over 10 feet. It is truly a grand specimen, having a towering hole as straight as a mast, and regular whorls of feathery foliage from the top to the very base, where they sweep the turf. It was planted in 1828, and is therefore one of the oldest trees in this country, as it was only two years before that date discovered by the traveller David Douglas, who was at that time collecting for the Horticultural Society of London. It was from this source that Lord Grenville, the owner of Dropmore, obtained his seeds. From that time to this the tree has been largely planted throughout the length and breadth of these islands as an ornamental tree, and it is not too much to predict that it will be one of the trees of the future, and will be almost as important in an English park or garden landscape as the Lebanon Cedar. As to its value as a timber tree, that subject may be left for discussion in *Woods and Forests*, but few will question its importance from an ornamental point of view.

Up to the present there have been very few varieties crop up, notwithstanding the millions of seedlings that have been raised. There is a pendulous variety which is an even more graceful tree than the type, and a variety named *Standishi* having longer and greener leaves, and is similar to the variety *taxifolia*, which name is often applied to *A. Douglasi* itself, especially in old collections, on account of the tree having once borne the name *Pinus taxifolia*. A variety named *Stairi*, which has a sickly look, being neither golden nor silvery, is scarcely worth mentioning. Of the typical Douglas Fir there are evidently two distinct forms in nurseries—one having pale green foliage, while the other is very glaucous. The latter is said to be the genuine form, producing the best timber, and altogether a finer tree.

It need scarcely be mentioned that the Douglas Fir is a native of North America, where it forms boundless forests in the regions of the great far west, and extending as far south as Mexico. It was first discovered about the year 1797 by Menzies, but it was not till thirty years after that Douglas introduced it to Europe. According to the latest revision of the *Coniferae* this tree is strictly not a true *Abies*, but forms a genus by itself named *Pseudo-tsuga*, but it will

probably be a long time before this name is generally adopted. W. G.

SOCIETIES.

ROYAL HORTICULTURAL.

MARCH 22.

THE meeting of the fruit and floral committees was on this occasion held in the conservatory, and was very interesting, owing to the fine collections of plants and cut flowers sent by nurserymen, especially worthy of note being the groups of Hyacinths from Messrs. James Veitch and Sons and Messrs. Cutbush and Son, and the beautiful pot Roses of Messrs. Paul and Son, as well as the showy collection of Cyclamens from the St. George's Nursery Co.

First-class certificates were awarded to the following plants, viz., *Rhododendron balsaminiflorum carneum*, a double-flowered variety, the flowers of a beautiful saffron-yellow, shaded rose and as large almost as those of a *Gardenia*; shown by Messrs. Veitch. *Boronia heterophylla*.—A great acquisition to this beautiful class of plants, more especially as the colour, which is of a beautiful rose-crimson, is so effective; the flowers are very large, and borne in great profusion all along the stem, even in very small plants; in addition it is also sweet-scented; exhibited by Messrs. Veitch. *Zygopetalum Veitchi*.—This, the result of a cross between *Zygopetalum crinitum* and *Colax jugosus*, was carrying two flowers; the lip is beautifully spotted with rich violet on a whitish ground, the petals brownish, dashed with yellow; shown by Messrs. Veitch. *Hyacinth La Belle*.—A variety bearing a large spike of single flowers, which are of a beautiful pinkish colour; also exhibited by the Messrs. Veitch. *Odontoglossum triumphans* (Rosefield variety).—This plant was carrying two large spikes of fine large flowers; the petals and sepals of a dark chocolate colour, banded and tipped with yellow; the lip, whitish, with violet markings, and margined with yellow, very pretty; shown by Mr. De B. Crawshay.

In addition to the above certificated plants, Messrs. Veitch sent five new *Amaryllids*, viz., *The Bride*, white, striped with red; *Paulina*, the petals of a beautiful orange scarlet, having along the centre of each a distinct band of greenish white; *Hon. and Rev. J. T. Boscawen*, large and of fine form, scarlet, with distinct white band along the middle of each petal; *Hilarions*, a beautiful self-coloured scarlet; *Her Majesty*, white, blotched with red.

Messrs. Veitch also staged a very fine group of Hyacinths, the colours well arranged and displayed to advantage. Noticeable among the varieties were *Lord Derby*, porcelain-blue; *King of the Blues*, dark blue; *Lady Derby*, pure white, with fine large pips; *La Grandesse*, very fine white; *The Sultan*, dark blue, and many others. A silver-gilt Banksian medal was deservedly awarded.

Messrs. W. Cutbush and Son, The Nurseries, Highgate, staged a somewhat similar group to the above, the flower-spikes and individual flowers being large and good. Worthy of note were *Madame Van der Hoop*, large single white; *Linneus*, single red; *Pondin*, similar to *Lord Derby*. A silver Banksian medal was awarded.

Messrs. Paul and Son, The Old Nurseries, Chess-hunt, staged a beautiful group of pot Roses. These were remarkably fine for the season. Conspicuous among them were *Lady Mary Fitzwilliam*, of a light pink colour, large and full; *Innocente Pirola* as a half standard, bearing very large creamy white flowers; *Dr. Andry*, beautiful scarlet; *Francesca Kruger*, saffron-yellow; *Jean Ducher*, very distinct and pretty; *Rubens*, large and fine; *Heinrich Schulteis*, large, bright pink. In good condition also were the *Polyantha* varieties *Mignonette*, pink, and *Paquerette*, white; the curious *Rosa viridiflora* and *Rosa rugosa alba*. A silver Banksian medal was awarded.

Messrs. Paul and Son also exhibited the two *Saxifrages* *Frederici Augusti* and *Sancta*, the former of which has longer flower-spikes and paler yellow flowers. The same firm also sent a beautiful white Lilac,

named *Marie Lemoine*; the flowers and trusses were large and freely produced.

Mr. Drost, Kew Nursery, Richmond, contributed a very fine lot of *Spiraeas* and *Lily of the Valley*. These arranged on the ground in a circular form were very much admired. A bronze Banksian medal was awarded. Mr. Drost also exhibited a new Tulip and some cut sprays of English-grown Lilac, which were remarkably good.

Mr. George Maw sent a dwarfed Japanese *Pinus*, said to be thirty years old.

Mr. De B. Crawshay, Rosefield, Sevenoaks, sent five varieties of *Odontoglossum*, including the one alluded to above. Mr. Todman, Rose Park Nurseries, Upper Tooting, exhibited nine varieties of *Azaleas* of the hybrid Chinese type. Mr. Palmer, gardener to Mr. J. H. Powell, sent cut blooms of *Odontoglossum excellens* and *Pescatorei*. Mr. Gilbert, Bourne, Lincolnshire, exhibited a bright yellow Primrose. Mr. G. F. Wilson, Heatherbank, Weybridge, sent the *Trencham* variety of *Coleogyne cristata*. It was growing in a small pot, and bearing a fine spike of flowers. Mr. Wilson also contributed some fine hybrid Christmas Roses. Mr. Charles Turner, Royal Nurseries, Slough, sent a beautiful lot of the new *Violet Wellsiana*. These were covered with bloom. The flowers are of large size and of an intense blue. Mr. H. A. Mangles exhibited a plant of the handsome *Sikkim Rhododendron Falconeri*, carrying a truss of large, creamy white flowers. Mr. F. A. Philbrick, Bickley, exhibited *Cypripedium Bartetti*, a cross between *barlatum* and *Chantini*. The flower is of a dark copper colour, petals and sepals of the same shade, the dorsal sepal large, margined with white and splashed with violet, the centre striped with dark brown streaks. Mr. Philbrick also showed an *Angraecum citratum* bearing two large spikes, each about 2 feet long, of its beautiful ivory white flowers.

Mr. T. S. Ware, Tottenham, staged a very representative collection of *Narcissi*, intermixed with *Anemone fulgens*, *Chionodoxa Lucilia*, Tulips, *Anemone coronaria*, very fine; *Doronicum Clusii*, bright yellow; *Megasea speciosa*, and a few Tree Peonies. A silver Banksian medal was awarded.

Messrs. Barr and Son exhibited a very fine collection of *Narcissi*, interspersed with the beautiful *Cocos Weddelliana*, rendering the group very effective. Included in this group were *Anemone fulgens*, *Anemone coronaria*, *Iris reticulata*, &c. A silver-gilt Banksian medal was awarded. Messrs. Barr and Son also staged a collection of hybrid Christmas Roses.

Messrs. Collins Brothers and Gabriel exhibited a collection of *Narcissi*, and a handsome gathering of *Chionodoxa Lucilia*, which was very effective. Prominent in this group were *Anemone fulgens* and *Allium album*. A silver Banksian medal was awarded.

The St. George's Nursery Company (Mr. H. B. Smith, manager) staged a fine group of Cyclamens, very noticeable being the white varieties, which were of large size. Other colours too were good. A silver Banksian medal was worthily awarded. Messrs. Green and Nephew exhibited their *Munstead* flower-glasses.

Fruit committee.—Mr. S. Ford, the Gardens, Leonardslee, Horsham, sent a collection of fourteen varieties of Apples, the best being *Norfolk Beauty*, *French Crab*, *Mère de Ménage*, *Golden Reinette*, *Duck's-bill*, *Yorkshire Greening*, *Adam's Parnain*, and *Miss Margaret*, a small, late, very highly coloured Apple, which the committee considered very promising. Mr. Ford also sent a dish of *Uvelale's* *St. Germain Pear*. A cultural commendation was awarded for the collection.

Mr. G. Allis, Old Warden Park Gardens, Biggleswade, sent sixteen dishes of Apples, noticeable as being in good condition were *Norfolk Beauty*, *Wellington*, *Striped Beauty*, *Blenheim Orange*, *New Hawthorn*, and *Northern Greening*. The whole collection had been well kept. He also staged three bunches of *Black Alicante Grapes*, for which a cultural commendation was awarded.

Mr. Roupell exhibited eight dishes of Apples, *New Northern Greening*, *Wellington*, *The London*,

or Five Crowned Pippin, Lane's Prince Albert, and Beauty of Kent being the best.

Mr. J. Barnett, Decker's Hill, Shifnal, sent a seedling Apple, of which the committee required a larger number to be shown.

The Gardeners' Orphanage.

A meeting of those interested in establishing the above was held in the conservatory on Tuesday, the 22nd inst., when the following resolutions were proposed and unanimously carried:—

1. That, in the opinion of this meeting, it is desirable to establish a fund to be called "The Gardeners' Orphan Fund."

2. That a provisional committee be appointed to prepare a scheme and lay it before a future meeting, and that the said committee consist of the following gentlemen: Dr. Masters, S. Hibberd, G. Deal, J. Wright, J. Roberts, C. Penny, B. S. Williams, W. Richards, J. Douglas, J. Fraser, C. H. Sharman, H. J. Veitch, J. Woodbridge, A. F. Barron, R. Dean, and John Matthews.

3. That W. Richards be appointed treasurer of the fund.

4. That the following gentlemen, viz., A. F. Barron, J. Wright, B. Wynne, be appointed honorary secretaries.

Narcissus committee.—The first meeting this season of the Narcissus committee was held at South Kensington on Tuesday last when the chief objects of interest submitted were very good specimens of flowers from roots collected at various times from their native habitats chiefly in Spain and Portugal, including many forms of pseudo-Narcissus, triandrus, Corbularia, and natural hybrids. Many of these had been sent home by Mr. George Maw, who also brought some of his own collecting and described the situations in which they were found growing. An interesting communication was made by Mr. Threlfall on the rudimentary forms of some organs found in certain varieties, by the presence or absence of which he hoped that it might be possible to distinguish in some cases one species from another, and which might prove of assistance in bearing on the question of doubtful hybrids; but as he was still at work on the subject he promised a further communication later on. Some fine flowers were sent from Ireland, but owing to the severe weather almost all the English ones had been opened under glass, and so could not be reported on. It was determined to hold a meeting on May 10 as well as the two in April (12 and 26) already advertised.—C. R. SCRASE-DICKINS, *Hon. Sec.*

ROYAL BOTANIC.

MARCH 23.

THE first spring show of the season held by the above society on Wednesday last was rendered very attractive by the magnificent display of spring-flowering plants, notably Hyacinths, Narcissi, Cyclamen and Camellias. It is very much to be regretted that there are no prizes provided for Orchids, which are now at their best. These might well be encouraged, seeing that there is such a wealth of bloom in most of the collections around London. Azaleas were very poorly represented.

Independent of the plants staged in competition for the prizes, miscellaneous groups helped to make the exhibition very attractive. In the competition for hardy herbaceous plants Mr. Douglas took first and only honours with a beautiful lot, comprising among others good plants of Solomon's Seal, Fritillaria Meleagris and its white variety, Megasea Strachey, and the lovely *Sisyrinchium grandiflorum*. In the hardy Primula class Mr. Douglas was also to the front with *P. rosea*, *nivea*, *obconica*, very fine, *intermedia*, &c. Messrs. Williams and Son staged a very handsome lot of Lily of the Valley. Messrs. Paul and Son won first honours with Roses in pots, and in the Amaryllis class Mr. Douglas showed some excellent varieties, including Dr. Masters, Calypso, John Heal, and one of his own raising, which was also certificated. The Cyclamens from Mr. J. Odell were beautiful plants, one mass of bloom, the white varieties especially good.

Messrs. Jas. Veitch and Sons, Chelsea, staged a fine group of Hyacinths, which were worthy of the large bronze medal awarded them. They also exhibited several new Amaryllids, and the new and beautiful *Boronia heterophylla*, as also other new plants.

Messrs. W. Cutbush and Sons, Highgate, in addition to the group of Hyacinths which they staged at Kensington last Tuesday, on this occasion added an effective display of Tulips. A small silver medal was awarded.

Messrs. Wm. Paul and Son, Waltham Cross, staged twelve very large plants of Camellias, as also some smaller ones, very noteworthy being one named Cup of Beauty, a white variety very much suffused with pink; Mr. D. Offey, white; C. M. Hovey, bright scarlet; Belle Jeannette, red with white markings. In addition to the above they also staged twelve boxes of cut blooms and well-flowered plants of Clematis *indivisa lobata*. A silver medal was awarded for the collection.

Messrs. Paul and Son exhibited a group of Tea and other Roses, including Mignonette and Paquerette of the Polyantha class; the curious *viridiflora*, and a white Lilac named Marie Lemoine, as also a small group of rock plants. A large bronze medal was awarded.

Mr. W. Rumsey was awarded a large bronze medal for a group of Roses, very fresh and pretty.

Mr. B. S. Williams, Upper Holloway, sent a very fine lot of Hyacinths, Tulips, Narcissus *Tazetta*, Cyclamen, and varieties of *Imantophyllum* minutum, forming a very attractive bank. The *Imantophyllum*s were carrying large heads of intense orange-scarlet blooms and were very effective. A large silver medal was awarded.

Messrs. Williams and Sons, Fortis Green, Finchley, in addition to the plants they had put up for competition, exhibited a group of Hyacinths. They were well grown, the foliage and flower-spikes stout and dwarf. A large bronze medal was awarded. Messrs. Williams also staged a group of spring-flowering plants, consisting of Narcissi, early flowering Pelargoniums, *Cytisus*, Azaleas, Lily of the Valley, &c., all well grown. A silver medal was awarded.

Mr. H. R. Wright, Turner Road, Lee, exhibited a fine group of Hyacinths. A large bronze medal was awarded.

Mr. James, Woodside, Farnham Royal, sent a large group of his now well-known Cinerarias, perfect in form, and having very showy colours. A large bronze medal was awarded.

The St. George's Nursery Co. (H. B. Smith, manager) received a bronze medal for a collection of Cyclamen, the flowers varying from pure white to dark purple.

Mr. J. Odell, Gould's Green, Hillingdon, exhibited a group of Cyclamens, the dark colours in this collection being exceptionally good. A large bronze medal was awarded.

Mr. Henry Little, The Barons, sent a very attractive group of varieties of *Lycaste Skinneri*, ranging very much in their shades of colour and markings, one named *gloriosum* being very noteworthy. In this group were also some cut spikes of *Odontoglossum* and *Cattleyas*, very fine. A bronze medal was awarded.

Mr. F. C. Jacob, Stamford Hill, sent a collection of *Odontoglossum*s, consisting principally of *O. crispum*. These were intermixed with *Adiantum*s, giving them a pleasing appearance. A bronze medal was awarded.

Mr. Charles Turner, Royal Nurseries, Slough, contributed a small group of Violet *Wellsiana*. Messrs. Barr and Son, Covent Garden, were awarded a large bronze medal for a group of Narcissi and other spring-flowering plants. Messrs. Collins Brothers and Gabriel put up a group of Narcissi, and were awarded a bronze medal. Mr. Drost, Kew Nursery, Richmond, staged a very attractive group of *Spiraeas* and Lilies of the Valley, with cut spikes of Lilac (English grown). Mr. T. S. Ware contributed a good display of Narcissi, &c., and Mr. J. Wiggins, gardener to Mr. W. Clay, Grove Road, Kingston, sent a group of Cyclamens.

Mr. W. Gordon, Duke Street, St. James's, sent a bouquet composed of *Cattleya Trianae* and Lily of the Valley; and MM. Francoise et Cie, 104, Regent Street, sent a basket of Roses and white Lilac, and

also a harp composed of Forget-me-not, Lily of the Valley, and white Lilac.

Messrs. Cheal and Sons, Crawley, Sussex, sent forty dishes of Apples. These had been well kept, and were very good examples.

Botanical certificates were awarded to the following, viz.: *Boronia heterophylla*, exhibited by Messrs. Veitch; *Selaginella gracilis*, a slender, arched form after the manner of *Wallichii*, also exhibited by Messrs. Veitch.

First-class certificates were awarded to Amaryllis *Her Majesty*, a white flower of good form; *Titania*, red, with white centre; and Hon. and Rev. J. T. Boscawen, white, splashed and dotted with scarlet. These were all shown by Messrs. Veitch. *Rhododendron balsaminiflorum carneum*, a double-flowered variety with flowers of a beautiful saffron-yellow, shaded rose. Exhibited by Messrs. Veitch. *Cineraria Blue Bonnet*, large flower, blue edges, with white centre; *Meteor*, a dark blue self; *Illuminator*, dark purple; *Stella*, dark maroon. All these shown by Mr. James. *Amaryllis Oriflamme*, flowers large, of fine form, rich scarlet, with distinct band reaching half way along each petal. From Mr. Jas. Douglas. *Cyclamen Royal Jubilee*, a very dwarf and compact variety, the flowers large, intense crimson; certainly the darkest coloured variety yet raised. Exhibited by Mr. Odell. *Oncidium Brunleesianum*, a variety with small flowers; the petals and sepals pale yellow, with dark bands across them; the lip bright yellow, with dark brown blotch on middle lobe. Exhibited by Mr. R. B. Lemon.

A detailed prize list will be found in our advertising columns

LAW.

PURSER V. THE WORTHING DISTRICT LOCAL BOARD.

THIS was a matter relating to rating. Mr. Purser was a grower of fruit, vegetables, and flowers at Worthing, where he had one acre one rood of land, on which were sixteen glasshouses, which covered almost all the land. He called himself a market gardener and nurseryman, and he grew for the market Tomatoes, Cucumbers, and other vegetables, and also Grapes and flowers. The statute said that "market gardens and nursery grounds" should be rated at only one-fourth, and the question was whether the appellant's property came within this exception. It was argued that the property in question was a market garden. All the plants were grown from the ground, and sometimes the roots were in the open ground. It was a garden covered with glass. For the District Board, it was submitted that this was in no sense a market garden. What was carried on really was a new industry, and it was desirable to have the decision of their Lordships, because in some places such land was rated in full and in other places it was at one-fourth under the exception. So far from the place being an ordinary market garden, the things were grown there by means of heat, water, and soil all supplied artificially. Mr. Justice Day said that in his judgment this place was a market garden. He failed to see how a garden was the less a garden because it was protected by high walls or a glass roof. Judgment for the appellant, with costs.

Names of plants.—*A. C. (Dumfries)*—A handsome variety of *Odontoglossum triumphans*—*C. J. (Dover)*.—*Cypripedium insigne punctatum violaceum*; Fern: 1, *Urtica trapeziformis*.—*New Holland*.—1, *Eriostemon cuspidatum*; 2, *E. scabrum*; 3, *Acacia leprosa*.—*J. C. R.*—A fine variety of *Imantophyllum minutum*.—*Anatole (Newcomb)*.—1, *Odontoglossum Alexandre*, a poor starchy flower; 2, *O. Pescatorei*; 3, *O. pardinum*.—*W. S. B., Dundee*.—1, *Phlebodium aureum*; 2, *Doodia aspera*; 3, *Pellaea hastata*; 4, *Asplenium lucidum*.—*J. H. McK., Manchester*.—*Acacia pulchella*.—*W. W., Epsom*.—2, *Lachenalia penula*; 3, *Phegopteris trichodes*; 4, *Polystichum capensis*.—*J. McF., Glasgow*.—1, *Zygopetalum crinitum*; 2, *Adiantum Barsei*; 3, *A. concinnum latum*; 4, *Odontoglossum oloratum*.—*Stork*.—1, *Eranthemum pulchellum*; 2, *Selaginella atrovirens*; 3, *S. serpens*; 4, *Odontosoria aculeatum*.—*G. T. O.*.—1, *Lomaria Patersonii*; 2, *Pteris mutilata*; 3, *Arthropodium obliterata* (also known as *Lindsea Lowii*); 4, *Hypolepis repens*.—*P. Nisbet*.—*Dendrobium speciosum*.—*A. C. Bartholomew*.—*Vaccinium serpens*.—*W. W., Epsom*.—1, *Sparmannia africana*.

WOODS & FORESTS.

"YORKSHIREMAN."

THINNING PLANTATIONS.

My attention has lately been drawn to Lindley's remarks on this subject, and which are apparently opposed to what some of your correspondents, including myself, have advocated. The passage had escaped me, and as it evidently lends support to those who advocate severe thinning, the branch growers, as I call them, and has no doubt influenced planters hitherto, it may be usefully quoted and examined here. I have much respect for Lindley's opinions as a rule, but in some practical matters he was mistaken, and that this was the case in his views on thinning plantations for timber, while his physiology was right enough, I think, can be easily shown. Lindley refers to an actual example of a Spruce Fir from a North Yorkshire estate "in which reliance had been placed upon crowding as a substitute for careful tending" (exactly what we advocate within safe limits), which showed that the annual deposit of tissue on the trunk—that is, the timber layers—decreased steadily and in proportion as the trees grew up and got more crowded, the first five years putting on 26 10ths of an inch, and in the last few years not above a quarter of that bulk. "In thirty-five years the tree only acquired a diameter of 10½ inches;" "whereas," he adds, "had the tree been properly treated, it ought, by the end of thirty-five years, to have been 18 inches in diameter;" that is to say, if it had had room to grow branches down to the bottom that would have been the result" ("Theory and Practice of Horticulture," pp. 410 and 411).

From these facts Lindley concludes that in thinning for timber it is better,

as a general rule, that no one tree should be permitted to touch another. Practically it is impossible to adjust the thinning of a plantation with such exactness, and in the annual removal of such trees as are touching others, spaces larger than are actually requisite, according to this rule, will be found. This, however, is an advantage, because it allows the wind to find its way easily among trees, &c.

Such is the advice of one of the best and soundest authorities on vegetable physiology, and it entirely supports the views of the severe thinners whom we have so often condemned. Yet Lindley's arguments, though sound physiologically, have not a leg to stand upon when it comes to the question of growing timber for its value—the final and all-important consideration. It is admitted that there is no surer way to grow to a single thick tree trunk in the least time than by giving it room to produce as many leaves and branches as possible, but—and there is everything in this but—that is not the way to grow the greatest quantity of the best timber to the acre. Where Lindley's big Spruce could be grown, probably half a dozen of smaller dimensions, but more bulky in the aggregate than the big one, clean, straight, and free from knots, could be grown that any timber merchant would jump at, while the rough big Spruce would hardly pay for its removal from the ground, and this applies to all trees less or more. Had Lindley only carried his arguments to the timber yard, I have no doubt he would have acknowledged his error.

THE RIGHT MEAN.—The practical question for foresters to settle is the right degree of thinning necessary to ensure the greatest quantity of saleable timber to the acre, and that is just the question that hardly any two foresters are agreed about, and which has never been solved because of the wretched mixed system of planting generally followed by which Firs and deciduous trees of all rates of growth and of different habits have been put in pell-mell together. Anyone, however, who can measure timber and has access to plantations may soon satisfy himself that trees thinned to the extent recommended by Lindley and his followers, or on his principle, produce the most timber individually, but the least quantity to the acre or to the square yard. We have measured old and favourite Larches that have always had room, and whose branches extend from 21 feet from

the base all round, where no other trees interfere, and we have measured others that have just half that room owing to their being crowded, the age and conditions of growth in each case being exactly the same otherwise, and find that while the confined tree has 50 feet of good timber in it, is branchless and clean for 40 feet up, the other has only 68 feet, and is very rough and knotty. A simple sum in arithmetic will show anyone the immense gain per acre the confined tree gives; and the same result holds good in all cases.

PROTECTION FOR THE TRUNKS OF TREES.—The trunk or stem of a tree may be likened to the backbone of an animal. It is the channel of communication between the root and the branches, and when any serious injury happens to it the whole tree is affected. In woods and plantations the importance of protecting the trunks of the trees is not often realised, and I fear that the decay noticeable in not a few Oak woods of mature age is due to causes affecting the trunks of the trees. When a tree is planted in an open space it clothes itself almost down to the ground with branches, especially the Fir, which branches shade the trunk in summer and protect it in winter. In a thick forest the trunk is not clothed in this way, but the branches of the trees form a canopy overhead and protect each other just as effectually, or even more so. In summer in such a wood the atmosphere is cool and moist below the branch line, evaporation being checked and the sun excluded, and in winter cold winds and frosts are excluded to such an extent, that when the ground in the open fields is hard frozen in the woods it is soft. But what happens in the case of a mature tree that has grown up under these conditions and then been thinned out in the usual way when a fall of timber is taken out? Simply this. The hitherto sheltered tree trunks are suddenly subjected to vicissitudes of cold, drought, and heat, such as they have never experienced before, and the effect or shock if we could realise it must be akin to that experienced by a human being who has suddenly been stripped of half or the whole of his clothing. I know certain extensive woods that the more they have been thinned the faster those left have decayed, and if it is not due to the exposure of the trunks, I am unable to assign a cause for their decline. In these woods, too, the number of ring-shaken trees is great, and every forester knows how seriously "shakes" reduce the value of timber, if they do not render it useless altogether except for firewood. The cause of "ring-shake" has never been satisfactorily explained, but the probability is that it is caused by frost or weather conditions of some kind. It cannot be supposed that a tree that has grown all its life in a crowd of others till it had made a trunk perhaps 40 feet in length destitute of branches could remain unaffected by exposure to the weather. But what has to be done when timber has to be removed from such woods? There is only one answer to the question, viz., do not thin out thick woods so severely as to admit the light and air to an injurious degree, but rather fell the timber in blocks and replant. Nurserymen say that it is not a good plan to plant trees from the nursery above 3 feet or 4 feet high, because they become hide-bound and do not grow so well as smaller trees do. Still, be this as it may, it is necessary under some circumstances to plant good-sized trees at the outset, and I have an impression that if they were always planted thick enough they would grow. It is their coming out of the crowded nursery lines to be planted may be on a wind-swept plain or hillside that stunts them for a time. When bark and stems are frozen in winter and parched in summer, and nothing else than a severe and lasting check can be expected, thick planting at the outset is the only safeguard.

— I am glad to see "Yorkshireman" (p. 267) referring to this matter. Few except theorists, I apprehend, go in for light and air. Everybody must know that there is always too much waste in the shape of knots and branches, however well a tree may be grown, and they must also know that everything which tends to

isolate growing trees also tends to an increase of branches. I do not, of course, wish to imply that it is impossible to crowd trees too much, but such a process of thinning as that sketched in THE GARDEN (p. 267) is most prejudicial if good timber is the aim of the grower. The "unbroken leaf canopy," which "Yorkshireman" quotes, is a reliable index to the forester, and anything short of a complete canopy is certain to lead to the development of lateral branches, and the timber value will be nil. This is not only true of the Pines, but also of our common English hard woods, notably so of the Beech: in fact, a thickly grown Beech wood will afford a better example of the way in which the best timber is produced than the Pine wood itself. I have had from time to time opportunities of visiting what are perhaps some of the finest Beech woods in the kingdom, and one is always struck with the circumstance that the tallest and cleanest boles are where the trees are growing thickly, or, to use Mr. Webster's words, where "the leaf canopy is unbroken." To see the effect of the light and air treatment, it is only necessary to repair to the margins of the wood or to isolated trees of the same kind. Hard pruners first of all thin to such an extent as to induce lateral growth, and then they are obliged to chop and hack away in order to destroy the growth which their bad judgment has encouraged. Such a plan militates against the production of good timber on a given area at the smallest cost. Left to grow on naturally, at least a third more trees would thrive on the same amount of land. These trees would be of infinitely better quality than those which have been deprived of their branches by artificial means, and finally all the cost of such pruning would be saved. In the face of such facts as these it is difficult to see what can be the motive of the advocates of pruning and thinning. One can only wish them the opportunity of disposing of their carefully manipulated produce side by side with the timber which, by a proper appreciation of natural conditions, has been allowed to thin and prune itself.—WILTS.

THE PYRENEAN PINE.

(PINUS PYRENAICA.)

IN my memory the above tree is always associated with an ungainly, tortuous-branched Pine—an error, no doubt, that got rather firmly implanted in my mind years ago by the daily sight of a clump of this very Pine, and that, perhaps, from accountable causes had anything but an ornamental appearance. The opposite of this is, however, the case, for the Pyrenean Pine is a highly ornamental tree, the beautiful light green leaves and conspicuous orange-tipped branches rendering it peculiarly distinct and interesting. Speaking truthfully, this is the case only in young and vigorous-growing specimens, for when old age is attained a much coarser habit of growth is partaken of, and the ungainly, tortuous-branched tree of my old remembrance is well represented. Rather more than half a century ago this Pine was introduced into England by Captain Cook, but that it has not taken extra well with tree planters is only too evident from its somewhat sparse distribution even at the present day, although this must not wholly be attributed to a general dislike to the tree by arboriculturists, but partly to the difficulty in procuring either seeds or seedlings and true to name. The stem of this Pine always puts me in mind of that of the Austrian or Corsican, while the branches, which are thick and strong, are regularly, although in most cases somewhat sparsely, arranged around the body of the tree. A bright green colour suffuses the leaves, more particularly in young specimens, these being variable in length as well as in arrangement, usually, however, 6 inches long and arranged in pairs. The cones are usually curved, about 3 inches long by fully an inch diameter at base, and arranged singly, but sometimes in twos. The bright orange-coloured bark of the shoots is very conspicuous and pretty, and renders recognition of this Pine easy indeed.

Rejoicing in no less than eleven different names, it is pretty evident that the Pyrenean Pine is confused with other nearly allied species, but by paying attention to the orange-tipped shoots recognition should be easy enough. We have seen specimens of this Pine that could hardly be distinguished from the *Laricio* save by the above-mentioned peculiarity, while others, again, resemble *austriaca* in a marked degree. It is readily enough raised from seeds by sowing these in boxes and placing them in a cool frame until they have attained a height of an inch or more, but this care is, perhaps, unnecessary, only that as seeds are difficult to procure one is reminded that a little extra attention is well bestowed if only for the sake of economy.

Good strong loam, rather dampish, suits well this Pyrenean Pine—at least, in such soil grows our finest specimen, and where it is partially sheltered by a clump of old and gnarled Oaks. We have seen it, however, thriving luxuriantly in peat soil on an Irish estate; indeed, about the largest and healthiest trees we have come across, as well as the largest in number, were growing in reclaimed peat bog, where flourished in all their grandeur as beautiful a collection of hybrid *Rhododendrons* as I have ever been privileged to behold.

A. D. WEBSTER.

CHOICE HOLLIES.

HAVING a fair collection of Hollies growing on the lime and old red sandstone, "W. G." (p. 267) is quite correct in surmising that the half dozen to which I draw attention do not exhaust my stock. Indeed, with the exception of *I. balearica*, which is capable of taking care of itself, I look upon the others as specialities which all lovers of this princely family should grow where climatic conditions suit them. Unfortunately, these do not pervade the whole of this island, but surely there are few places in which a sheltered nook or a few yards of wall cannot be found, and I question if *I. dipyrrena* and *I. latifolia* would not cause more inquiry than all the other Hollies put together. Before I proceed further I must pause to thank "W. G." for introducing *I. insignis* and *I. Fortunei latifolia* to my notice. I have not grown them, but upon the strength of his remarks shall certainly obtain plants in April. The first should be a worthy companion to *I. latifolia*, and a broad-leaved *I. crenata* will carry body which the normal form lacks. Slowness of growth is an advantage, as winter bedding gardeners are so frequently obliged to discard to the shrubbery *Retinosporas* and the hackneyed run of bedding Conifers generally. *I. Dahoon* does very well here, and a variety which I have been told is *I. opaca* is very handsome, but I am doubtful if it is true. It was planted before I came to Eastnor, and the late Mr. W. Osborne, the most careful namer of hardy trees I ever met with, was my authority. Hollies being so numerous and the type, *I. Aquifolium*, so good, varieties and species are not so extensively planted as they should be. Who would be without the handsome *I. Hodginsi*, *I. Shepherdii* or *nobilis*, the neat-growing *I. ovata*, or the bright spineless-leaved *I. laurifolia*? and would he extend his list to a score or more he might add *I. crassifolia*, *I. latispina*, *I. platyphylla*, *I. serratifolia*, *I. scotica*, *I. myrtifolia*, *I. Perado*, *I. balearica*, *I. altaclarensis*, and *I. flava*, a most beautiful shrub whose fruit the birds so kindly spare until they are hard pressed by hunger. Lovers of drooping Hollies may plant all the weepers, plain and variegated, worked, of course, on tall straight stems as lawn specimens. Of variegated forms the name is legion. The beautiful Golden Queen, of course, stands at the head of this list. Waterer's Golden is a best in itself and makes grand standards, pyramids, or round-headed bushes for those who can wait. The gold-margined, the silver-margined and the Milkmaids are gems of the first water, and may be duplicated to any extent. A gold-blotched variety recommended to me by the late Mr. J. Veitch is very handsome, but requires close attention when in free growth, otherwise it is apt to hark back to the bright, almost black, spineless

leaved *I. laurifolia*. Last, but not least deserving, the Hedgehogs, green, gold, and silver, should be well represented. They are quaint, and form handsome touch-me-not bushes, which must be seen and handled to be fully appreciated.

W. COLEMAN.

MAKING PARK ROADS.

ROADS and drives on private estates, and even on the highways, which are supposed to be managed by people who understand their business, afford plenty of examples of macadamising that would make the hair of the original inventor of the system stand on end were he alive. The real truth of the matter is that the majority of people who have to do with road-making only know the system by name, and have a vague idea that it simply means spreading plenty of stones on the ground and nothing more. Hence it is that so many roads are so uneven and always being repaired with no better result, and to the continual inconvenience of traffic and discomfort to pedestrians. Few people know how easily a good and properly macadamised road can be made, or understand how excellent and enduring such a road is. A man who thoroughly

UNDERSTANDS THE SYSTEM, and sees it carried out properly, will make a better road with a few inches of broken stones than others will make with three times the quantity of material, not to mention useless labour. Macadam cared very little what sort of a bottom he had to deal with if it were not an absolute morass, and he was not often deterred by that. "For a road," he says, "it is not necessary to lay a foundation of large stones, pavement, &c., as it is a matter of indifference whether the substratum be hard or soft, and, if any preference is due, it is to the latter." These statements look like heresy compared with much that we have read on road and walk-making, but the great road-maker was right, nevertheless. First of all, whatever the bottom was like, he took care to see that the ground had evenly settled before the stones were spread upon it, that there might be no subsidence in any part afterwards to cause inequalities, a matter which is often overlooked. When the roadway had to be cut and levelled, large stones dug out of the ground, or any inequalities to be made up, the ground was afterwards left to settle before proceeding further with the work. In putting on the stones quite as much care was exercised.

THE HARDEST STONE in the district was procured—granite, flint, or whinstone; next, it was broken to the regulation size—in pieces about an inch in diameter, though a rougher size will do; and, lastly, the stones were not laid on the road, but spread shovelful after shovelful to the depth of from 6 inches to 10 inches, which was considered sufficient for general highway traffic. The road was made slightly higher in the centre than at the sides to throw off the water, as the object was to form an impermeable crust that would keep the water from percolating to the bottom, thereby rendering it soft and causing it to work up, the necessary drainage being, of course, secured in the usual way. This is macadamising in the proper sense of the term, a system which has nearly superseded every other, but it is the attention to trifles in carrying it out that makes perfect work. For example, many people would attach little importance to the stones being broken or angular, and be quite as indifferent about the mode of spreading them on the road; yet these are two of the most important points. The use of water-worn stones of the same size will not make a solid crust, because they yield to pressure, their round surfaces offering little or no resistance; but it is different with broken stones, which when of uniform size, and clean, and properly spread on the ground, set fast on the same principle as that of an arch. I have seen roads made on an extensive scale on this system, and had to make such myself, and I have never seen anything to equal them.

WALKS, which are often cut out deep and filled in in the bottom with large stones, may be made on Macadam's principle with far less trouble and with much better results. Broken stones, to the depth of 2 inches or 3 inches, will be quite sufficient, and

they should, after being spread on, be beaten even on the surface with broad wooden rammers. This sets the crust effectually at the beginning. Afterwards a thin coating of clean gravel should be spread upon the surface to hide the stones, but no more. Such a walk is smooth and firm, and comfortable to the feet in all weathers; rain only washes it clean, and frost has not the least effect upon it if the bottom be drained. The material holds no moisture to freeze; it is the accumulation of soft gravel on the surface of walks that freezes and renders them so muddy and uncomfortable afterwards. With us the stones are broken by a machine to any size we want them.

J. S.

The Privets.—"Yorkshireman" (p. 267) does not say too much in favour of Privets for hedges and coverts. Both varieties named by him are used extensively here, but, like him, I find that the narrow-leaved variety makes the best covert, being more dense and spreading. As regards hedges, however, it is questionable which variety is best. The oval-leaved variety, though more erect than the common one, may, if regularly clipped, be kept dense and close right down to the ground, and here it is quite an Evergreen, or nearly so. At the present time it is quite green, whereas the leaves of the common sort are brown, and in many cases it is leafless. Both varieties thrive well on this cold east coast quite close to the sea.—OLITOR, *Northumberland*.

Furze for hedges.—In very cold localities, where other hedge plants will not thrive well, this makes a beautiful and useful fence—beautiful from its having such a profusion of bloom, and useful because it is cropped in winter by sheep, and the clippings eaten by cattle and horses. It is short-lived, however, and is subject to be killed down during severe winters. It is apt, also, to become bare and unsightly at the bottom. In forming a hedge of Furze, the plan pursued throughout most parts of England is as follows: A bank of earth is raised 5 feet wide at bottom, 3½ feet high, and 20 inches wide at top. In March a drill is drawn on the top along the middle of the bank, and the seeds sown therein and covered to the depth of 1 inch. In two years the plants will begin to grow luxuriantly, spreading downwards on each side over the bank, so as to almost cover the whole of its surface. This fence should be clipped once a year, between November and March, the particular time being regulated by the demand for the clippings as fodder.

Ilex crenata.—Mention is made in THE GARDEN (p. 246) of this pretty little Holly, and in the article in question *I. Fortunei* is given as synonymous with it. Now the plant in cultivation under the name of *I. Fortunei* differs in several respects from *I. crenata*, sufficiently so at all events to be worthy of recognition as a distinct variety. *I. crenata* itself is a low dense-growing bush with small, dark green, lanceolate leaves, about an inch in length, while *I. Fortunei* is more erect in growth, and the leaves are much rounder. The variegated form has the leaves more or less mottled with a beautiful golden colour, some being nearly all of that hue, while others are almost green; the variegated foliage, however, predominates to such an extent, that the whole plant wears quite a golden hue. All the above are very pretty dwarf shrubs, well suited for small gardens, as they are of very slow growth, and at all seasons bear a bright and cheerful appearance. For this reason they may be employed as pot plants for furnishing cold and draughty spots, where more delicate subjects would be injured, or for window boxes and balconies. *I. crenata* was introduced from Japan by Fortune many years ago, and is perfectly hardy in this country. There is one peculiarity connected with these little Hollies, and that is, they can be readily struck from cuttings, which is not the case with any of the other kinds. The most successful way of striking them is to take the current season's shoots about July, and, after removing the bottom leaves, dibble them into pots of sandy soil and keep in a close frame till rooted. They may also be grafted on the stronger growing kinds, but as they strike root so readily such a mode of increase is not needed.—T.

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"This is an Art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—*Shakespeare.*

MARKET SALES OF GLASSHOUSE PRODUCE.

The following was sent us some time ago, in reply to a query published in *Gardening Illustrated*:—

If "Amateur" intends growing for Covent Garden or any other London market, he may be assured that, unless he can sell his own produce in the market, he will be completely at the mercy of the salesmen to whom he may consign his goods. They return what price they choose, and in a general way it is most difficult to ascertain if one is fairly dealt with. The editorial recommendation, to select a trustworthy house, is good, but, as the following instance will prove, it is not an easy matter to distinguish the true from the false. Having this winter a quantity of flowers that I knew would be in good demand about Christmas and the new year, I thought that, instead of following my usual custom, of sending the lot to "a reliable man," I would divide them. I selected two of the largest and oldest-established houses in the market. I sent about the same quantities, of exactly the same quality, on the same days, and the result was on the first consignments a difference of one-fourth between the prices of the two firms. The disparity in price continued in an increasing ratio until at the beginning of the year there was exactly one-half difference in the returns from the two firms. Nor was this all. The firm that gave me the low price charged 10 per cent. for selling as against 5 per cent. of the other. It is needless to say how I acted under such circumstances; but I certainly have good reason to say that if the price returned by one firm was a just one, I was fearfully cheated by the other. Had I only sent on one day, I should not have thought myself so badly done by, as one day's sale is really no criterion; but it was the same every time. I may say that, although I have been familiar with Covent Garden for a good many years, I never had a greater "eye-opener" than this. I have hitherto put my produce in the hands of some old-established man; but I will trust no one in future. I will act in the same way with my fruit as with my flowers, for I see that a reputation for respectability is not a guaranteed against unfair treatment. As many besides amateurs are probably interested in market-culture, I have thought that the above details might be useful. I would advise anyone having choice produce, whether of flowers, fruit, or vegetables, to do as I did with my flowers. They will then not be absolutely at the mercy of one individual, and will get the current market price, whatever that may be. Another important point is to insist on having an invoice of sale on every sending. This is your only means of proving, in case of error, that you have sent the goods. But for this I should have lost money again and again. Never trust a man who will not attend to this. There is one fact in connection with the selling of market produce that some may like to know. The large growers of plants and flowers have stands in the market, which they occupy throughout the year. Those who send produce only occasionally, or who grow in small quantities, would not find it worth their while to do this. It is, however, open to them to engage a place in the flower market for a few hours only. This is obtained on application to those in charge every market morning, the toll being levied in a very fair manner. The would-be seller exhibits his produce, and the toll is computed by the quantity thereof. For about a shilling one may procure the convenience of sell-

ing a small number of pot plants or flowers.—*J. C. B.*

This is a very important matter, and we called the attention of Messrs. J. W. Draper and Son, the well-known foreign fruit brokers and auctioneers of Covent Garden—the leading house in the market—to this, and other letters that we had received. We suggested to them whether, bearing in mind such facts as are here set forth, it would not be a good thing to open in the market public auction sales of the produce of our English gardens. They at once responded to our suggestion, and now inform us that, although they cannot undertake English outdoor produce, they are ready to conduct sales of hot-house produce, fruit, and cut flowers three days a week in Covent Garden—viz., on Mondays, Wednesdays, and Fridays at 10.30 a.m. The advantage of this, we may point out to some of our readers, is that, as the sales will be public, the prices will be put on record, the firms will simply charge a fair commission for work done, and the whole thing will be above board and direct. We look upon it as an excellent step towards placing on a better footing much of our market-garden cultivation. At the present time, arrangements in the market are such that market growers have to attend at very early hours in the morning, and the private growers, when they feel disposed to market their goods, have serious difficulties to contend with. We strongly urge our readers to support this experiment.

ROSE GARDEN.

T. W. GIRDLESTONE.

PRUNING ROSES.

PRUNING ROSES is also very useful as a means of controlling to some extent their time of blooming. By this it is not meant that to obtain early blooms Roses should be pruned very early in the season, for very often Roses so treated would have their young growths all cut off by a late spring frost, and their flowers would be no earlier than those of the latest pruned trees. But if it is desired to prolong the blooming season, a considerable extension of time may be obtained by pruning the shoots to different lengths, cutting back some but little, others more, others very hard. The less a Rose shoot is shortened the sooner will its flowers be developed, and they will be produced later just in proportion as the shoots are cut hard back.

It is not impossible that the alleged lateness of the Rose seasons now, compared to those of former years, may be to some extent owing to a general adoption of a closer system of pruning than that formerly in vogue; for it may be looked upon as a fairly-established fact that there will be a greater difference in the time of flowering of Rose trees of the same varieties similarly situated where the shoots of some are but little shortened and of others pruned very hard than where the shoots are all cut back to the same length, though some be pruned three or four weeks later than the others. The topmost eyes on a Rose shoot are always the most precocious, and if these are allowed to produce flowers, the blooming time, where the growth of the trees is not interfered with by spring frosts, will be very early. The eyes half-way down the shoot are less precocious, and when these are cut back to, the flowering is later—although occasionally that of the long-pruned shoots may be simultaneous after a severe late frost, which, of course, would injure most the forwardest growths and throw them back. The eyes at the base of a shoot, however, are the least

excitable and appear the most completely dormant of all, and when plants are cut back almost to the ground, it seems to take them longer to elaborate their new shoots and the flowering is retarded.

On the other hand, the pruning of one half of a considerable number of varieties three weeks before the other half makes little or no noticeable difference in the time of blooming, and numbers of instances have been recorded of the pruning of the two halves (at an interval of twenty-one or so days) of long rows, each planted with one variety, which nevertheless have been ultimately found to flower simultaneously throughout the whole length.

If it is proposed to prune Roses to different lengths with a view to prolonging the flowering season, either some shoots on each plant may be cut hard back and some left longer, or some plants may be altogether cut back and others have all their shoots left more or less long. The latter course is decidedly preferable as making the plants rather easier to manage and as producing a more striking effect in the garden, for in a group of a dozen plants, six in full bloom, while six are still green, make a more brilliant display than if each of the twelve plants carried one or two flowers. The difference in height of the plants, however pruned, will not be very conspicuous, for although the flowering growths produced high up on a shoot are short, yet the elevation from which they start maintains them at a fairly high level, and the shoots produced from the base of a plant, in spite of starting from so near the ground, nevertheless make a much stronger and longer growth, so that they ultimately quite overtake those that began 18 inches or 2 feet above them.

This mode of pruning is only available for prolonging the period of blooming of Roses which are thoroughly perpetual in character, for it must not be forgotten that the cutting down of the strong-growing summer Roses almost to the ground merely results in immensely vigorous flowerless shoots. Consequently, a good way to treat these very strong shoots is to peg them down parallel to the earth, when the buds break much more evenly than if the shoots are left erect, and the bed also is much more completely furnished. Treated thus the Austrian Briers and the Moss Roses especially make effective beds; where the dark Moss Lanci is grown, its 6-foot and 8-foot rods cannot be better employed than thus pegged down, when they will produce flowering laterals throughout almost their entire length; and the crimson Captain Ingram and the white Blanche Moreau are also similarly available subjects. The pruning here resolves itself into the removal of the old wood that has already flowered, and then the young shoots are disposed to the best advantage, very much after the fashion in which Raspberry canes are dealt with.

In all the above remarks on pruning, the flowers either individually or collectively have been the principal consideration; but when it comes to pruning large specimen Rose trees, numerous other points have to be taken into account, and it may not infrequently be found necessary to leave shoots which cannot carry good flowers in order to avoid producing a lop-sided plant.

NEW AMERICAN ROSES.

THE Bride is by far the best white Tea in cultivation, and when well grown is as large as the finest Cornelia Koch and a much freer bloomer. As regards other new Roses, I saw some flowers of a Hybrid Tea shown in New York recently which promised to be very fine. It is said to be a free bloomer under the same treatment as *La France*, and grows on stiff stems much like *Paul Neyron*, which it somewhat resembles. The raiser informed me he had other seedlings which promised well. *Papa Gontier*, a French Rose, sent out a few years ago, has been brought out again this year, and the buds sold well, but unless it is extra well grown I doubt if it is better than a *Bon Silene*. I saw it shown in November very fine, and it was claimed that when expanded it did not show the pale semi-

double centre of *Bon Silene*, but when shown recently in a warm room I could not see any difference. Opinions at present differ as to the merits of Bennett's *Rose Puritan*. I have not seen it growing, but those who have are not very enthusiastic about it. I saw it exhibited at Philadelphia and was pressed for an opinion, but answered, I would like to see it again. Her Majesty so far has been a failure in this country, and although it is not wise to condemn a new *Rose* the first season, it has not shown good qualities with any grower. I have seen it with shoots 10 feet long and thick in proportion, and also when it was tried for early forcing, and would not grow an inch. The first time *Andre Schwartz* ever was shown—in fact, the only time it was shown—the grower was anxious for our opinion. It was poor as exhibited, and I had seen the plants a short time before. He wanted to sell, with our recommendation. I told him it was worthless, and he owned afterwards that my opinion was correct. Mr. Peter Henderson holds the stock of a new *Rose* called *Dinsmore*. This he thinks will be a good outdoor variety. It is evidently a free bloomer, but probably too double for forcing. I have not seen it when expanded.

We have had the darkest winter I have ever seen in this country, for even when we have had a clear night it would rain and snow in the day; in fact, we had both rain, snow, and frost about every other day. It was very bad for forcing; many *Roses* came pale; the favourite *Rose*, *Perle des Jardins*, from that or other causes, has been a partial failure. The early Hybrid Tea varieties have not flowered so freely as usual. I am cutting fine blooms of *Paul Neyron* and *Magna Charta* with stems 2 feet long. *La France* has been troubled with black spot, and so has *American Beauty*. This is a very sweet *Rose*, and fine in the early part of winter. It would probably do well outside in England. Though only sent out last year, it has been very fine in many places.

Maywood, New Jersey, U.S. JAMES TAPLIN.

Hyacinths at Highgate.—The Messrs. Cutbush have for so many years been celebrated as *Hyacinth* growers and exhibitors, that it is not surprising that these plants form a marked feature of their home spring show. Amongst the kinds most deserving attention we noted amongst the reds, *Howard*, very fine spike with large bells, orange-crimson; *Macaulay*, deep rose, striped with crimson, spike very large; *Etna*, deep pink; *King of the Reds*, *Von Schiller*, deep salmon-pink; and *Solfaterre*, bright orange-scarlet. Of whites, the best were *Snowball*, *Mont Blanc*, *La Grandesse*, *gigantea*, *Baroness Van Tuyl*, and *Sweetheart*. These all have fine spikes and large white bells. Of the blues, *Marie*, dark purplish; *Sultan*, deep purple; *William the First*, purplish black; and *Minosa*, are the most remarkable of the darks; whilst the best clear and light blues are *Charles Dickens*, *Grand Lilas*, *Czar Peter*, *Grand Master*, *Princess Mary of Cambridge*, and *King of the Blues*. Yellows are not numerous, but some of them are excellent, the most notable being *Ida*, pale yellow; *Bird of Paradise*, deep yellow; and *Sonora*, nankeen-yellow.—G.

Hyacinths at Holloway.—Mr. Williams' nursery is so intimately associated with *Orchids*, that one is rather surprised to find a group of some five or six hundred *Hyacinths* of their own growing arranged to great advantage with small *Palms*, *Dracunas*, and other ornamental-foliaged plants in the large conservatory. These bulbs were potted early, and have been brought forward very slowly, with the view of bringing them into bloom about the middle of March. To accomplish this, Mr. Williams says, care and watchfulness have been necessary, as some of the varieties needed a great deal of retarding, whilst others required an extra amount of heat to bring them into bloom just at the appointed time. In addition to the kinds which we have mentioned elsewhere, we noted the following as being extra fine: *Cavaignac*, salmon, striped rose; *Duchess of Albany*, pink; *Henry Havelock*, purple-lake; *Lina*, bright crimson; *Pellissier*, deep crimson; *La Noblesse*,

white; *La Belle Blanchisseuse*, pure white, large spike; *Distinction*, light blue; *Grand Lilas*, azure-blue; *Lord Mayo*, bright violet; *Haydn*, dark purple; *L'or d'Australie*, deep yellow; *Obelisque*, citron; and *Marchioness of Lorne*, striped creamy orange. All these are worthy the attention of those desirous of choosing colours for next season's forcing.—G.

DEATH OF MR. JOHN McHUTCHEON.

WITH great regret we have to announce the death of Mr. John McHutcheon, assistant editor of *THE GARDEN*, who died on Saturday, the 26th March. No other man had so long an experience of gardening journalism, he having been, before joining *THE GARDEN*, over twenty-five years with Dr. Lindley on the *Gardeners' Chronicle*. No one has passed so much garden lore through his hands. For over forty years the writing of the best gardeners in England was prepared for the press by him—himself a gardener. Such experience led to the acquisition of a mine of gardening knowledge and to excellence as a judge of the value of gardening writings. The sentence-without-head-tail-or-joint-men; the writers who break a man's heart with the very look of their absolutely illegible manuscript; the clever man who has a live nettle for application to his brother writers; those who write accounts of beautiful gardens as pleasant to read as an auction catalogue; the men who trot out the same old article on "winter-flowering plants" for the eighth time within the over-burdened memory of the editor; the generous distributors of puff paragraphs; the numerous correspondents who want to get bold advertisement in the body of the paper; the men who object to being edited, and who sprinkle their MS. with errors; the writers who say in French what could be better said in English; those who write for gardeners in Greek and Latin (often bad)—all these, and many more, he had to guard against night and day. A great eradicator of weeds, ever seeking flowers and fruit among ranker herbage, and ever patient so long as there was the least chance of finding any! So strong a mower, when swishing his scythe through Docks and Twitch, now and then perhaps cuts down a pretty alpine flower or delicate annual! If met by a number of irate gardeners, soon after he had robbed them of their flourishes, we fear they would have punished him; but many of those he edited would be the first to speak well of his work. Those who deal with established journals have often an easy task compared with that of the beginners! Trouble may be got over when the ship is anchored in smooth water. But when our so-called *Venture* sailed first it was a time when we had to "Do or Die," and then "Mac" did his duty—faithful as an Oak-leaf. And so we sailed away ever since, and after many days got into pacific seas and even among the flowery islands. For a long time past Mr. McHutcheon had struggled with a bronchial affection, during the past winter more severe than before, and he passed away quite peacefully and happily last Saturday morning. Faithful, loyal, kind, good-hearted, ready to help others, the belief

among his friends is that he never had an enemy. He certainly never deserved one.

John McHutcheon was born in 1819 in Ayrshire, in which county he spent his young days. As a boy he learnt gardening in the neighbourhood of his home, and afterwards worked in some of the best gardens in the lowlands, including those at Oxenford Castle, which place he left to come to London when about twenty years old. He first stayed for a few months in Messrs. Jackson's nursery at Kingston-on-Thames, and afterwards went to the Royal Horticultural Society's garden at Chiswick, then enjoying prosperous days. He had not been there more than a year or so when Dr. Lindley, requiring an assistant on the staff of the then newly-started *Gardeners' Chronicle*, selected him from among other young men for the post. He would have been sixty-eight years of age on the 31st of March.

Amaraboya princeps.—The above-named most beautiful *Melastomad* is one of the recent introductions of the *Compagnie Continentale d'Horticulture*, hitherto of Ghent, but who are on the point of transferring their business to Brussels. This most lovely plant is well figured in the second number of the enlarged issue of *l'Illustration Horticole*, and is a cool stove shrub with handsome foliage resembling that of *Medinella amabilis*, dark shining green above with red under leaf. The flowers are borne in large bunches and are of large size, of a deep rose colour with a pure white throat. It is a native of New Granada, and two other species are known, *A. splendida* and *A. amabilis*. This fine plant should be a great acquisition to all collections of stove shrubs.—W. E. GUMBLETON.

Begonia Gloire de Sceaux.—This *Begonia* has often been recommended as a valuable winter-flowering variety, yet, notwithstanding this, it is but sparingly distributed. It cannot be relied on to bloom in the early winter; indeed from Christmas till May appears to be its usual season, so that the blooms are just now at their best. This *Begonia* is of a stout, vigorous habit, and it naturally assumes a pyramidal habit, densely clothed with foliage. The leaves are large, and of a peculiar dark metallic green tint. The blooms are borne freely in good-sized clusters, and are of a pleasing shade of pink. The individual flowers are larger than any others of the same class; indeed, such as would have been considered a few years ago as very good in the summer-blooming, tuberous-rooted section. This *Begonia* was distributed by Messrs. Thibaut and Keteleer, of Sceaux, and announced by them as the result of a cross between *B. socotrana* and *B. subpeltata*.—H. P.

Spiræa Thunbergi.—This *Spiræa*, which is one of the earliest to bloom in the open ground, will flower well under glass; indeed, quite early in the season a few days in the forcing house will serve to bring out its pretty little white blossoms. It forms naturally a free-growing, but not a large bush, with long slender branches and small pointed leaves, which especially when first expanded are of a bright green tint. The branches curve over in a very graceful manner, and when thickly studded for a great part of their length with clusters of small Hawthorn-like blossoms, the whole plant bears a very attractive appearance. It is of a free-rooting character, and will do well if potted up in the autumn. Treated in this way the roots soon commence to be active. Sprays of it thus early in the season are very useful in a cut state for furnishing vases, but the blooms do not long remain in perfection when treated in this manner. Besides doing well under glass, it is one of those kinds that should be made a note of by the lover of hardy shrubs, as with plenty of room to develop itself the whole contour of the plant is most graceful, and its early blooming quality is also another recommendation.—T.

FLOWER GARDEN.

A RAMBLE AFTER ANEMONE FANNINI.

THE above plant is now hardly known in England, though for a long time botanists have been aware of its existence. Twenty-two years ago Harvey described it as "a noble new species of *Anemone* with flowers fully larger than those of *A. capensis*, and broad, digitately many lobed, thick, and softly velvety leaves: a most desirable plant to introduce into gardens." Some account of an expedition in search of this plant may interest your readers.

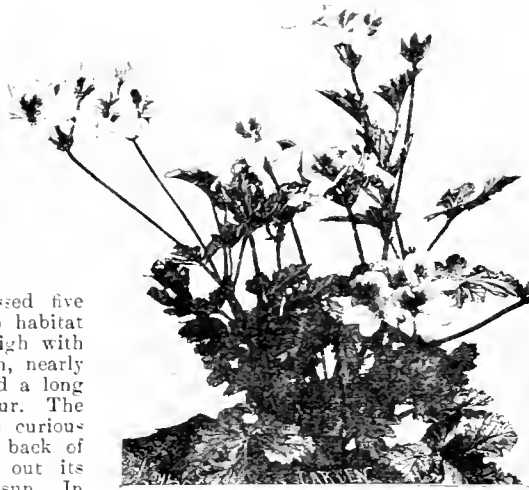
Starting on horseback from Maritzburg, 2000 ft. above the sea, one bright January morning, a 10-mile ride brings us to the base of one of those hills which encircle the capital of Natal on every side. Here and there one sees the annual garden *Convolvulus* covering the bushes with white, red, and purple flowers, sometimes mixed with the orange-yellow flowers of the climbing *Littonia modesta*. Dismounting, we begin our upward ascent, for 1000 feet must be gained before we reach level ground again. It is a stiff pull, but a thunder storm refreshed the earth last night, the sun is not yet very high, and the air is clear and cool. Trailing about is an *Ipomœa* with a large tuberous root, soft hairy leaves, and massive deep purple flowers.

Thick Grass clothes our hill with a few bushes, consisting of a *Cussonia* with its elegant Aralia-like leaves and huge, candelabra-shaped spikes of dull, green flowers; *Dais cotinifolia*, rich in thick heads of bloom; and a few thorny *Acacias*. *Gladolus Ludwigi* is just showing flower, and some fine, white, brown and green *Gomphocarpus* hang out a last few blossoms, for early spring is their best time. With us, the longest day passed five weeks ago. This mountain-side is the habitat of a singular *Habenaria* about 1 foot high with white and green flowers: sepals green, nearly alike, two large spoon-shaped petals, and a long strap-shaped trifid lip with pendent spur. The stigma is triangular in shape with two curious processes in front; pollina two, at the back of the stigma. *Gazania serrulata* opens out its showy yellow flowers to the morning sun. In swamps the snowy spathes of *Richardia africana* overtop the Grass; near by is a showy purple *Melastomad*, *Osebeckia Umhlangiana*, and the beautiful blue *Agapanthus umbellatus*. This last-named, I observe, varies a good deal in size and colour of flowers.

At last we reach the summit, and, looking back, see the white houses of Maritzburg lying 1000 ft. beneath us, encircled with huge squares of blue-black *Eucalypti*. Now, mile after mile, we canter along the undulating grassy hill-side, breathing the fresh air, but higher yet our road leads us, till we halt by a clear, sparkling mountain stream, 4000 ft. above the sea, and, dismounting our horses, turn them loose to enjoy the luxury of a roll and a graze on the juicy Grass, refreshing ourselves the while with the contents of our sandwich-box. A very showy white *Eucomis* grew in moist places hard by with a flower-spike some 3 feet high—*E. punctata* var. *alba*, probably. Overtopping the *Eucomis* was a fine *Chlorophyllum* (*Liliaceæ*), about 5 feet, good, showy white flowers, nearly half an inch across. Here, too, is *Pentansia variabilis*, that widely spread plant, for I have met with it up country in the latitude of Madagascar; it is a many-stemmed, prostrate herb with large heads of deep blue flowers. Some distance off a patch of deep golden yellow attracted our attention. It proved to be a terrestrial Orchid—*Eulophia ensata*: one plant bore forty-two thickly crowded golden flowers. Near by was another *Eulophia*, yellow petals and dark maroon lip, very handsome, but rarely met

with. Here, too, growing in moist black peat is *Nerine flexuosa*, *Satyrium carneum*, and *Disa polygonoides*. Plate 6532 in the *Botanical Magazine* does great injustice to the last-named plant, as I have seen it 3 feet high, bearing flowers along one half of its stem. Miss North's pictures alone do true justice to our flora—they seem to me beyond praise. All the summer rain and mist hang about these hills—often the temperature varies from 50° to 60° at midday in the shade. In winter it is much colder—frosts nearly every night, with, however, little or no rain. Last winter in a garden up here a large *Tacsonia Van Volxemi* was killed outright, and *Fuchsias* have to be brought indoors to keep them alive.

But the sun is mounting higher, and our destination, a solitary mountain top, is seen still far ahead. On again, still upward, and now we note some plants never found but on very high elevations. *Tritonia natalensis* is sending up a long coral spike; the shrubby purple-flowered *Vernonia mespilifolia* shows up a large blue Campanula, *Buddleia salva-folia* and a tiny purple *Mesembryanthemum*. By degrees our pace is reduced to a mere scramble, so we dismount and tie the horses to a shrub—*Paretta Bowkeri*. A few more steps upward, and growing amongst crevices of the granite



Cape Pelargonium Pretty Polly. Engraved for THE GARDEN from a photograph.

rock we find the object of our search, *Anemone Fannini*, at an altitude 4300 ft. It is really a superb plant, whether we look at the massive dark green, deeply lobed, velvety leaves 18 inches across, or the snow-white flowers larger than half-a-crown, borne on 3 feet high stems. Mixed with it is the beautiful *Watsonia densiflora*, with its thick crowded rosy purple spikes; here also is *Cynium racemosum*, a very handsome mauve *Scrophulariæd*: its common name is the Christmas Flower. One more sub-alpine plant is *Gerbera aurantiaca*, a vivid scarlet Composite, in appearance not unlike a much magnified English Daisy. A last scramble up a series of great altar like steps and we are on the summit of a flat topped mountain, not more than 10 yards across, roughly circular in shape, elevation 4500 feet.

This plateau is composed of horizontal granite rock, only accessible by the way we have come; on every other side is a fearful precipice some 800 feet down. The view is most extensive from the Drakensberg on the west to the mountains on the east of Maritzburg—not less than 100 miles across. A note of the plants found on the summit growing in black mould in rocky clefts gives the following: *Aloe* sp., *Asparagus* sp., *Buddleia salva-folia*, a dwarf *Chlorophyllum*, *Paretta Bowkeri*, *Greyia Sutherlandi*, *Richardia melenauca*, a Labiate, a *Lycopodium*, and a few Grasses and Ferns.

A bitter cold wind made me soon beat a retreat down again, and I was glad at the close of the day to find myself back in town in a much warmer part of the country.

R. W. ADLAM.

Maritzburg, Natal.

CAPE PELARGONIUM PRETTY POLLY.

THIS pretty old favourite is a charming plant to put out in summer, blooming steadily throughout the warm months, a quality which cannot be claimed by many of the more showy allied sorts, whose culture is generally reserved for the greenhouse. In colour it is a lively salmon-rose, with crimson blotches: the leaves are strongly and delightfully scented.

Border Carnations.—Now that the time for spring planting has come round, one of the first families that deserve attention is border Carnations. Get them into their blooming quarters early and half the battle is won. Why is it we hear so many complain that these beautiful flowers prove unsatisfactory with them? The reason is, in the majority of cases, owing to their being planted too late, so that the plants do not have time to make proper growth. This is often done under the mistaken idea that they are tender. I have for many years planted out large quantities of them, and my plan is to commence about the middle of February, and continue on all favourable occasions to the middle of April. Plants kept in pots after that time get starved, thin, and drawn. Last year I bought some, and they ran up with just one flower-stem, but did not make any Grass, and my plants are all dead. This is generally the result of late planting. To lay the foundation of success, plant this superb family early.—F. G. Tottenham

A pleasing contrast.—Some time ago a note appeared in THE GARDEN calling attention to the merits of *Solomon's Seal* for forcing. Having forced it for several years, I can speak highly of it for the purpose. We manage to have a few pots of it in flower from the end of January onwards till it flowers out of doors; but we use it freely for another and more appropriate purpose, that of planting in odd corners and near the base of shrubberies, where it is very effective. In one particular spot at the foot of some shrubs we have a large patch, over which some Ivy has been allowed to run. When in flower this is a very pretty sight, the long, arching spikes set in their groundwork of green being very showy. Their beauty, however, does not end here, for as the growths ripen they take on a bright yellow tint, which forms a pleasing contrast with the carpet of Ivy beneath.—E. B.

Seedling Carnations and Pinks.—The first week in April is a good time to sow Carnation and Pink seed. It will vegetate most freely in a hot-bed where the heat is not too violent. I raise about a thousand plants every year of the different sections; sometimes we give the most prominence to the scarlet bizarre Carnations: at another time, the red-edged Picotees. Last year we flowered a lot of purple-edged Picotees, and it is rather remarkable that there were amongst them some very handsome purple self Carnations, some heavy-edged purple Picotees, but very few light-edged ones like *Her Majesty*, from which the seeds were saved. This year we will be raising a number of yellow-ground Picotees, but even these sport in the most fantastic manner. Those who may purchase packets of Carnation or Picotee seeds must not expect, on the one hand, to have all flakes and bizarres, or, on the other, edged Picotees. There is also from 10 per cent. to 15 per cent. of single varieties, many selfs, and a large number of nondescripts. They are all interesting, however, and well adapted for cutting in flower and bud with long stems. The healthy glaucous foliage must not be cut off and some other foliage substituted, as even Carnations and Pinks are best when arranged with their own foliage. The cultural details are very simple. Prick out the small seedlings 2 inches or 3 inches apart in boxes, and when they are inured to the open air, let them be planted out a foot apart in lines, beds, or borders. The plants

like a generous, deep soil, with free exposure to light and air. Pinks require quite the same treatment. The beautiful laced flowers on a glistening white ground are most esteemed, and those with a great bunch of small petals are not so pretty as those with a smaller number, but broader, and on which the margin is better defined.—J. DOUGLAS.

Hellebores at Manchester.—At the recent spring show of the Manchester Botanical and Horticultural Societies, one of the leading features was a group of seedling Hellebores, shown by Mr. Samuel Barlow, Stakehill House, Castleton, Manchester, and to which the society's Jubilee gold medal was awarded. As many as twenty-five fine hybrids formed the collection, and the colours ranged from varied shades of light purple, purple suffused with green, and whitish green, flaked and speckled after the manner of some of the prettiest of the hardy Rhododendrons; the plants had been grown in pots, and the flowers were lifted upon slender stalks to the height of 18 inches or 20 inches above the ground in loose clusters of five or six, and with sufficiency of young, green foliage as bases to the heads of bloom. As parents, Mr. Barlow made use of *H. abchasicus*, *H. colchicus*, *H. olympicus*, and one or two others. It occupied five years, and in some cases longer, from the time of sowing until the seedlings flowered. Thus, patience is required in raising and blooming seedling Hellebores, as in the case of seedling Tulips. Mr. Barlow grows a large quantity of Hellebores in pots at Stakehill; and the mid-winter-blooming species and varieties had, as might be expected, gone out of flower.—R. D.

Wachendorfia thyrsoiflora.—Anyone in want of a good, bold, showy subject to take the place of *Gentiana lutea* where that does not do well cannot do better than procure this really handsome plant, which has proved perfectly hardy in the open air in this country, having withstood the severe tests of the last three or four years. It is growing in a rich, peaty bed well sheltered from the cold east winds, and although the foliage gets a little destroyed, the crowns do not suffer in the least, and are always ready to shoot up at the approach of warm spring weather. For bold foliage alone it is well worthy a place in the garden. The leaves are a yard long, 3 inches or 4 inches broad, prominently ribbed, and of a bright green, the mid-rib assuming a reddish tint, which becomes more intense towards the base; the flowers, somewhat resembling those of *Gentiana lutea*, are yellow, and produced in profusion on dense spikes a yard or so high. It ripens seed freely, and the plants, well attended to when in a young state and grown on, make good flowering specimens the second year. It can also be increased readily by division of the roots, which is best done in autumn. It would, no doubt, prove a valuable plant for marshy places, or close to the margins of artificial lakes, &c., as it grows better in moist than in dry situations.—K.

Violets failing.—"J. C. C." in THE GARDEN (p. 279) fancies his Violets have done badly. I should consider that he has been fairly successful with them if he has been able to gather a bunch two and three times a week during the winter. I should consider that ample in the depth of winter. Of course if anyone requires more, the only thing necessary is to provide more pit room for them. I do not think the best grower extant could gather more than thrice weekly in the depth of winter. A few years ago when I had charge of a garden in the suburbs of London I tried every conceivable way to flower Violets, but could not succeed. And yet, strange to say, not more than a mile away they not only grew, but flourished and flowered most profusely both inside and out. I have not much difficulty here in producing a good supply of flowers, and my method may be explained in a few lines. After they have done flowering I take off a sufficient number of rooted cuttings or runners and plant them in a specially prepared plot of ground about 18 inches apart each way. As they increase in size all the runners are carefully picked off, the ground kept free from weeds, and when dry a good soaking of water is given. About the first week in October, a pit that has been used for growing Melons is specially prepared for them. I clear away all the Melon soil (leaving the fermenting material) and fill up the frame with the following compost, viz.: To every three barrow-loads

of loam I add one of leaf soil, a peck of soot, and one peck of bone-dust. This should be thoroughly mixed a few weeks previous to being used. When put in the pits the Violets are taken up carefully with a good ball and planted a foot apart, and kept shaded and close for a few days, after which the lights are taken off when weather permits, closing them partially at night. We generally commence gathering flowers about the end of November. I herewith send you a gathering of three plants, which have not been specially treated in any way.—W. A. COOK, *Holme Wood, Peterboro'.*

* * A nice gathering of blooms, the flowers large and the foliage very healthy.—ED.

A BORDER OF WHITE FLOWERS.

It is part of my duty to fill two long wide borders, situated in a prominent part of the kitchen garden, with a variety of flowering plants, the aim being to make them both ornamental and serviceable. Not only are these borders supposed to be kept as gay as possible during the summer and autumn months, but they must also be made to furnish large supplies of cut flowers. At one time only a few kinds of plants were grown, and these were in straight lines. Of late years we have gradually broken away from this hard and fast line, and a mixture of herbaceous and various other plants less showy perhaps than Pelargoniums and Calceolarias, but infinitely more beautiful and serviceable, has been used. A well arranged mixed border or large bed ought never to be thought monotonous, but a change even in this is acceptable occasionally, and it occurred to me a mixture of wholly white flowers would prove very pleasing. In carrying out this, as it proved, happy idea, we not only created a very pretty effect, but also grew a very profitable lot of white flowers for cutting from, these being more in demand than all other colours. In order to make my notes as instructive as possible, I will both give the list of plants that can be used in these borders or beds of white flowers and also a few cultural details.

DAHLIAS.—For the back rows of a border or the centre of a bed Dahlias are most serviceable. Constance or Ariel, a very old favourite in this district, and which is usually catalogued as a *Cactus Dahlia*, grows to a height of 4 feet, is very branching in habit, and towards the autumn yields large supplies of beautiful semi-double blooms, which are much prized for wreaths, crosses, and church decoration. Mrs. Tait is rather more free flowering, and the edges of the petals are much serrated. It is a good companion for Constance. For planting in the second or even in the back row we have Pompon Guiding Star or White Aster, which grows about 3 feet high and is wonderfully free and useful for cutting from. Lady Blanche, another Pompon and rather smaller, is also a desirable sort. Of single flowering sorts there are few to surpass Alba or White Queen, this growing to about 3 feet in height and flowering abundantly. Dahlias may be increased either by cuttings or by dividing the old stools. For affording cuttings the old roots should have been started in gentle heat early in March. When the shoots are about 4 inches long they should be cut away cleanly from the old stem, in this way securing a small heel with each, though cuttings may be rooted without this, providing they have not become hollow. Dribbled singly in the centre of a 2½-inch pot filled with sandy soil, plunged in a gentle hotbed covered with a hand-light, watered in and kept rather close, though not sufficiently so to cause damping, they will soon strike root. Before they become drawn they ought to be removed to a shelf in a cooler house, and they may with advantage be given a shift into 5 inch pots before they become root-bound. In this manner strong healthy plants will be available for planting out late in May or early in June, and which if properly hardened off soon commence growing rapidly, surpassing plants raised by division, and also the old stools which may be planted intact. If they are to be increased by division the old plants should be started in gentle heat some time in April, and

when the shoots are a few inches high the old stem may be split up into several pieces, it being necessary that one or more tubers form part of each. These should be potted singly into 6 inch pots, or less if possible, and be kept in heat till fresh roots are formed, when a cold frame is the best place for them. We reduce divisions to one shoot, a single stem being preferable to two or more. Dahlias delight in a rich well-worked soil, and ought always to be kept closely staked and tied up, or otherwise the first rough wind greatly disfigures them. It may not be out of place to add that the sorts above named can be purchased in quantity and cheaply, a whole row of them being most effective.

JAPANESE ANEMONES.—The white variety known as Honore Jobert ranks among the most beautiful border plants, added to which it possesses the additional merit of being perfectly hardy and easily propagated. It is suitable for arranging next the Dahlias, as it grows to about 3 feet in height. We find the best time to transplant this Anemone is just as active top-growth commences, and if all the strong crowns are lifted and planted in groups, three or more in number, they soon spread all round, and may remain undisturbed for at least four years. Every strong root appears capable of creating a large progeny, numbers of young plants soon filling the ground from which the old ones were lifted. A strong loamy soil appears to suit this section of Anemones best, and with us they usually flower freely till severe frosts cut them down, affording unlimited quantities of charming cut flowers.

SWEET PEAS.—Although the coloured varieties are certainly the most beautiful, several good novelties being recently added to the list of these, we yet value the old white sort, and grow either a row or several patches every season. They are either sown in the open ground early in April, or raised under glass and planted out later on. The latter plan is preferable where slugs are troublesome. Added to this, Peas raised in pots can be more easily arranged with the other plants. We sow about a dozen seeds in each 5 inch pot, these having been previously filled with good loamy soil, and place in a cold frame till the plants are planted out. They are suitable for the back rows, and require to be supported with a light circle of stakes not less than 3 feet in height. On strong soil they require taller stakes, as they continue to grow and flower nearly all the season, especially if the seed-pods are gathered as fast as they form.

ROSE BOULE DE NEIGE.—This ought to find a place in every border of white flowers. It is of free growth, whether on the Brier or Manetti stocks, or, better still, on its own roots. The blooms are not large, but they are perfect in form, beautifully white, and most abundantly produced nearly all through the season. The foliage, too, is distinct and useful; and altogether it is one of the most valuable sorts in cultivation. Neither this or any other Rose will long succeed in a poor border. They require a good loamy compost at the outset, and annual mulchings of good manure. *Boule de Neige* should be freely pruned, the strong growths which follow branch and flower continuously, and in this respect also differ from the majority of Hybrid Perpetuals.

ZEAL JAPONICA.—This striped Japanese Maize is effective in any kind of mixed border or large bed, and singularly so when associated with white flowers. It is of free, elegant growth, and suitable for planting in the front of or among Dahlias and other back-row flowers. About the middle of April is a good time to sow the seeds, as if sown earlier the plants are liable to become stunted before they are put out. They transplant easily from pots, and if the seed is sown in pans it is advisable to place the required number of plants singly into 3½ inch pots, this being done when the second leaf is showing. We usually sow the seeds singly in small pots, place them in gentle heat, eventually hardening off the plants and transferring to the borders early in June. A rather poor soil is best for them, the reverse inducing a rank and but little variegated growth.

MARGUERITES.—There are no more showy border flowers than this class of *Chrysanthemums*. They are suitable for the middle line of either a border or bed of white flowers, and if the soil is not very rich they will flower abundantly from the time they are put out till severe frosts intervene. We have frequently potted up strong plants as late as November, and these have continued to flower up to Christmas. The old coronarium frutescens is one of the best for the borders, none of the others that we have tried being so free and continuously flowering. *Halleri maximum* is better for cutting from, but is scarcely so good in the open as it is in pots, being apt to grow too strongly. Plants struck in the autumn and wintered either in pots or boxes, in every respect similarly to zonal *Pelargoniums*, are preferable to spring-struck cuttings, as they are effective from the first. Failing these, cuttings may yet be struck in gentle heat, and if duly stopped, potted oil, or disposed thinly in boxes, any sandy soil suiting them, they will be of good size and fit for planting out early in June. *Pyrethrum uliginosum*, also frequently classed with the Marguerites, is of totally different habit and perfectly hardy. At the present time it is throwing up abundance of strong suckers, and these readily transplant, flowering strongly in the autumn. In good ground it attains a height of 4 feet to 5 feet, and is therefore too tall for many beds and borders. It is most effective in groups. Old clumps pay for lifting and replanting occasionally, a few strong growths affording a better display of bloom than a greater number of crowded and weakly ones.

SUMMER CHRYSANTHEMUMS. The earliest to flower and which I can recommend are *St. Mary* and *La Petite Marie*. The former grows to a height of from 18 inches to 2 feet. It is of branching floriferous habit. *Mrs. Cullingford* is of somewhat similar habit, but rather later. *La Petite Marie* attains a height of about 9 inches, is very early and free flowering. Cuttings struck in gentle heat any time in April, stopped once, then hardened off and planted out early, soon become established, and will be in bloom in July. We put in the cuttings thinly, and transplant from the boxes to the borders. It is necessary to winter a few stock plants of each in pots.

STOCKS, ASTERS, AND ANTIRRHINUMS.—We rely principally upon these for forming the second row from the front, and they are both effective in the borders and beds, and very useful for cutting from. The most serviceable Stocks are the white varieties included in the collections of *Early-flowering Autumn* and *East Lothian*, and if an earlier display is needed the *New Forcing Ten-week* should be sown. The latter is comparatively new, and is beautiful in either pots or the open ground. White varieties are included in the collections of *Victoria*, *Paeony-flowered*, and other Asters, or they can be purchased separately. It is a mistake to sow either Stocks or Asters in March, as so many are in the habit of doing, for early raised plants become stunted and flower prematurely; whereas those raised about the middle of April may be kept growing steadily and transplanted almost without experiencing a check. If the seed is sown thinly, either in boxes filled with fine light soil and placed on a gentle hotbed or else sown on soil levelled over a nearly spent bed, it will germinate strongly, and the seedlings, when pricked off where necessary into other beds or boxes of good soil, will be of good size for planting out late in May. We plant in patches, three in each, and after the first watering in, the soil being well enriched, little further trouble is seldom necessary. A packet of white *Antirrhinums* is usually included in the collections, and the dwarf white can also be purchased separately. We are fortunate in possessing a very handsome pure white variety, which annually proves one of our best and most serviceable border plants. We sow the seed early in February on the surface of a pan of fine soil, cover with glass, place on a hotbed, and closely shade till it germinates. When the seedlings are well advanced they are placed in a lower temperature, and eventually dibbled thinly

in a shallow bed of fine soil placed in a frame. From this the plants can be moved with a trowel to their positions in the border. We plant these also in patches of threes. Seedlings thus raised flower strongly in the summer and autumn, and those that survive the winter yield large quantities of bloom much earlier in the following season. It should be the aim of the cultivator to keep these white varieties carefully separated from the coloured sorts, as if a few of the latter become intermixed the effect is marred.

MIGNONETTE, GODETIA, AND PHLOX DRUMMONDI.—These are good front-row flowers, and the seed may be either sown at once where the plants are to flower or in small pots filled with good soil and placed in a cool house or frame. We are obliged to adopt the latter plan owing to the partiality of slugs for the tiny plants reared on the borders. Three plants in a patch or pot are ample, and the seedlings should therefore be reduced to that number. Those in pots ought to be planted out before they are badly root-bound. *Godetia The Bride* is our favourite white sort, and this, as well as the white *Phlox Drummondii*, may be raised and treated similarly to the Stocks and Asters.

VIOLAS PURITY AND VESTAL.—The position being moist and cool, white *Violas* will be found excellent front-row flowers. The cuttings being put in late in the autumn and otherwise treated similarly to shrubby *Calceolarias*, they form capital plants for putting out in April or May. Old plants may also be divided and replanted before hot weather arrives, but they are scarcely so serviceable as the young plants. W. I. M.

Spring flowers.—Notwithstanding the rather unprecedented weather we have been having lately, such of the spring flowers as were showing previous to the snow are now looking wonderfully bright in the places where it has melted; foremost amongst them perhaps stands the vernal Snowflake, presenting a charming picture rising out of a dense tuft of *Saxifraga cochlearis*. *Scilla bifolia*, *sibirica*, and *turica* are hardly at their best, although making a pretty show mixed here and there with tufts of *Galanthus Elwesii* and the single and double forms of the common species. Crocuses are also showing well. *C. Imperati*, the forms of *biflorus* and *vernus*, *aureus* and *susianus* are very useful, *albus* especially for planting in Grass, &c., in the more neglected portions. The quaint winter *Aconite* seems quite at home even amongst the snow, and here and there are patches just able to show their pretty golden flowers and fringed collars above the white covering. *Saxifraga Burseriana* and the varieties *major* and *grandiflora*, as well as the dainty little *S. Frederici Augusti*, are particularly welcome just now. A few of the oppositifolia clumps are covered with blossoms, and where the snow has melted one can easily judge how grand they must be in their native home in early spring.—K.

Jacks-in-the-Green.—The production of *Crimson Beauty Jack-in-the-Green Polyanthus* last year inspired me to specially save and sow seed from some other variety of the tribe, as it is evident that there is a wide field open for the production of really interesting and beautiful spring flowers, as far as these are concerned. Oddly enough, I have from the batch blooming already in a cool house some really beautiful *Polyanthuses* quite devoid of the huge leafy calyx which forms the distinguishing feature of *Jacks-in-the-Green*. That is probably a case of reversion, or it may be of advance; certainly the pips are very perfect ones and richly coloured. One half of the seedlings show the green collar, the rest are ordinary *Polyanthuses*. It would thus appear that seeds of *Jacks-in-the-Green* cannot be guaranteed to come true. It may be due to a preponderance of ordinary coloured *Polyanthuses* in the garden, or it may arise from the common tendency of all sections of the family to vary. After all, it is doubtful whether even the petted and over-praised *Narcissus* can excel the *Primrose* family in variety, beauty, or genuine popularity.—A. D.

Ophiopogon spicatus.—The Snake's-beard, or *Japan Grape Hyacinth* as it is often called, is not easily surpassed as a flowering plant; besides there is the chance of its fruit setting and ripening, which

prolongs its beauty for a much greater period. In the open air, however, this is seldom attained with any degree of satisfaction in this country, although in the south of France and Italy we are told that the fruiting stems are quite a feature in many gardens. When grown in an ordinary cool greenhouse, either planted out in the borders or in pots, its grassy foliage and spikes of bright blue or lilac flowers are very attractive, as also are the bright metallic glaucous fruits, which we have seen in abundance. In fine warm seasons a few are produced in the open, but they are very uncertain. Quite apart from the fruit, however, the bold, tufty foliage and the numerous spikes of *Grape Hyacinth*-like flowers make it a very desirable object. Any ordinary border fully exposed to the south suits it admirably, and if protected from the east and north so much the better. There are a few others in cultivation which are well worthy of a place in the border or rockery, such as *O. spicatus*, *japonicus*, *longifolius*, &c. *O. Jaburan* is a pretty violet sort, and is only surpassed by the variety with the variegated foliage. It is also perfectly hardy, forming elegant tufts of pale amber-striped leaves. They are all easily propagated by division, which is best accomplished in autumn after flowering, or in early spring.—K.

Hyacinths out of doors.—I often see in the gardening press the statement that *Hyacinth* bulbs after having been grown in pots and glasses are of little further use. I always plant mine in a south border after one season's greenhouse culture, and the result is eminently successful, the spike enclosed being a fair average specimen, and produced from a bulb planted out two years ago.—WRAITH.

* A good bloom. We have seen *Hyacinths* flowering many years in succession in flower beds.—Eti.

White Trumpet Daffodils.—Every grower of white Daffodils admits such varieties as *albicans*, *cernuus*, *tortuosus*, and *moschatus*, the latter of the *Pyrenees*, no doubt as types or garden hybrids. The chief men in England—for instance, the Daffodil Committee—dispute the idea of such additions as *Leda* and *Bishop Mann*. If both Daffodils are not distinct from each other, and, in addition, distinct from what is known by Mr. Barr as *tortuosus*, and now growing side by side at Temple Hill, Cork, I will willingly give ten pounds to any society of gentlemen in England as a donation to be disposed of as they wish, provided it goes to aid the afflicted, where gardeners' interests are concerned, orphanages, &c. The way to settle the dispute will be to let the Daffodil Committee subscribe among themselves the necessary sum to defray the expenses of say two members to come and see. If adverse to my statement, viz., that *Bishop Mann*, *Leda*, and *tortuosus* of Barr are not distinct, I will pay all expenses, and in addition the ten pounds, as stated. I see now plainly that I will have to resolve myself into a special Daffodil committee, and name and select my own distinctions in future. To send blooms of Daffodils that are in flower here since February to a meeting of say the 12th or 26th of April next is beyond my power, as the bloom in the south of Ireland is at its best from the 10th to the 26th of March, and to send white Daffodils to Chiswick from the congenial soil of the south of Ireland would be putting treasures into a siek chamber. I sent a collection of white Daffodils and other sorts to the early sitting of the Daffodil Committee, but they could not be reported on, as the English ones for comparison had to be produced from under glass.—W. B. H., Temple Hill, Cork.

Annual Sunflowers.—Seedsmen state that of late years there has been an unwonted demand for seeds of *Sunflowers*. It is a fact that a blaze of *Sunflowers* gives conspicuous dashes of colour to gardens. Someone has styled the *Sunflower* "the king of the flower garden," and there is a kind of regal aspect about it. It is common to see flowers more than a foot across, and the dark centres stand out conspicuously when margined with their broad zones of golden yellow petals. There are dwarf and tall forms of the single, and also of the double varieties. The last-named, when of a fine double character, are very imposing subjects; but the current taste certainly runs in the direction of the single in preference to the double

varieties. Wherever planted, they should have good soil, and while there is much in the quality of the variety, it is also certain that a good soil has a great deal to do with the production of fine flowers. People are very apt to plant Sunflowers in out-of-the-way places, where the soil is poor and uncongenial; and then the flowers are small and spare, disappointing the grower. The Sunflower deserves to be well cultivated, and then its blossoms, whether single or double, are of giant size and grandly developed. In Mexico, whence the common annual Sunflower was introduced, it is said to attain a great height, with flowers large in proportion. The Sunflower is, indeed, a plant of some importance in several ways. In the United States whole acres of land are sown with Sunflowers, for the purpose of preparing oil from the seeds. This oil is very pure, and little inferior to that of the Olive for domestic purposes; it also burns well. In Portugal the seeds are made into bread, and also into a kind of meal, in which form they are found to be an excellent substitute for coffee, while they are utilised for other purposes. There are many varieties of perennial Sunflowers that are of great value as border plants, and many grow them for cutting from at the end of the summer and in autumn. They are best increased by parting the roots about the middle of October, or later, according to the season, soon after the flowering period is over and planting out in good soil. The perennial varieties are generally of tree growth, throwing up many stems and producing large quantities of flowers. Some are double and some single. Some of the best are *Helianthus atrorubens*, *angustifolius*, *decapetalus*, *doronicoides*, *giganteus*, *multiflorus flore-pleno*, *orgyalis*, and *rigidus*, the last perhaps better known as *Harpalum rigidum*.

Double Cinerarias.—When we consider the pretty character of the flowers of the double Cinerarias, it appears strange that they have not made a greater advance in public favour. But although pretty, they are difficult subjects to deal with, which no doubt accounts for their not being more popular. At the same time, with skilful attention they make an acceptable change either in the conservatory or in a cut state, their rosette-like flowers, differing from the flowers generally in bloom at the same time. The number of different varieties has now increased to such an extent that they afford an agreeable variety, as the colours embrace deep purple, magenta, blue, white, carmine, and rose. The double Cinerarias do not like too much heat and but very little sunshine. Though not liking exposure to the sun, they require all the light possible and a moderate supply of air. The best lot of plants I have seen was in flower at the end of April in a cold frame, and shaded by a wall. The condition of the plants plainly showed that the treatment suited them, for the leaves were large and robust, and the stock was much more vigorous than when growing on dry staging and enduring the heated air of a greenhouse. From their condition one could see that there would be no difficulty experienced in getting offsets to increase the stock for another year.—J. C. C.

SHORT NOTES.—FLOWER.

Daffodils, Tulips, Hyacinths.—Would the bulbs flower stronger and better next year if the flower buds were removed this season?—X.

We send you blooms of a seedling *Helibore*, the result of a cross between *colchicus* and *viridis*, the former being the female parent. The leaves are rather like it, but are less persistent, and the blooms are shown up to greater advantage. It is very hardy and of vigorous constitution.—R. SMITH AND CO.

Not so good as *colchicus*; the colour is not so bright, and the addition of the green is of no advantage.—Ed.

I HAVE to correct two errors in my last article in THE GARDEN (p. 226), March 12. The author of *Primula Portenschlagiana* is not Becker, but Beck, and *Primula intermedia* (Portenschlag) was found since 1831, but very rarely. Nevertheless, it is an interesting coincidence that two friends found this scarce plant on the same day in different localities.—O. F., *Letchford*.

ENCLOSE you flowers of a lovely Daffodil which is imported into Hull and sold in all the flower-shops. Its beautiful rich colour is much admired. The variety is unknown to me, and I should be glad if you can give its name and a description of it in THE GARDEN.—J. ALLSOP.

Narcissus odoratus *Campenellii*. This excellent variety, a native of the south of Europe, has rich yellow and deli-

ciously scented flowers. It is well worth cultivating, as it grows freely and gives little trouble, being perfectly hardy. Doubtless it would be excellent for naturalising on the fringes of shrubberies or in colonies on warm banks. It is also valuable for cutting.—Ed.

Godetias.—These appear to great advantage when pictured in seed catalogues and some speak well of them, but I am not able to do so, as I have found them amongst the worst of all annuals to be blenished by rain and wind; and this invariably rendered those we grow so unattractive, that I have ceased growing Godetias, and I have no intention of introducing them again.—J. MUIR.

Sweet-scented Polyanthus.—I find that the yellow Polyanthus, whether single or Hose-in-hose, are very sweet scented as compared with the dark coloured kinds, which curiously enough seem to lack perfume. This is very strange, especially as yellows often come from reds and reds from yellows where diverse colours are grown in contiguity. Still it would seem as if all yellow Polyanthus retained the Cowslip perfume, although it is hard to understand why perfumes should not be allied to dark colours. However, the matter needs more elucidating.—A. D.

ERYNGIUM AMETHYSTINUM OLIVERIANUM.

ONE of the very finest of our border plants and a type of a singularly beautiful class of vegetation, rigid and strong in structure, and yet of extreme grace and delicacy of detail; of wonder-



Amethyst Sea Holly (*Eryngium amethystinum* Oliverianum). Engraved for THE GARDEN from a photograph.

ful colouring that cannot be actually described, but that recalls impressions of many beautiful things; of polished silver and steel and moonlight, and fishes' scales, and the armour of archangels from the hands of the early Italian painters; a good plant to place singly or in groups apart from others, as the radical leaves are large and handsome and form a base of some importance—a necessary feature in a well-shaped plant or group. Happily, this good plant is so well known that to praise it is almost superfluous, but it may be well to remind any lovers of fine flowers who have overlooked it that they are neglecting one of the best ornaments of the garden.

ENCLOSED is a spray of *Laburnum*, to show how well it will force. The plant is in an 11 inch pot, and is bearing 135 sprays of its beautiful flowers. I also send flowers of Paul's

double crimson Thorn, the Guelder Rose, and *Cantua dependens*, which last flowers well in the cool conservatory here.—GEORGE SAGE, *Bilton Gardens, Grantham*.

* A beautiful gathering of flowers. The *Laburnum* was lovely, and from the specimens sent will repay any trouble that may be taken to force it. The other flowers sent were also fine, more especially the *Cantua dependens*, which was very bright.—Ed.

PROPAGATING.

AZALEAN.—Where Azaleas have been forced prematurely into bloom, and afterwards kept in a growing temperature, they will be by this time in full growth, and if it is desired to increase them, these young shoots afford a really means of doing so, as they strike root easily enough; or they may be grafted after the manner followed on the Continent, but still there is no reason why Azaleas should not be more frequently grown on their own roots, as most of the varieties will do well in this way, and may be grown into neat little bushes. In selecting shoots for cuttings, the very strongest should not be chosen, as, in common with most other subjects, the weaker ones strike root far more readily than the stoutest. In a general way, shoots such as are here mentioned will be about 4 inches or a little more in length, and if that is the case, the entire shoot should be taken to form the cutting. This will allow of the cutting having just a base of older wood, which is a great advantage. The bottom leaves must be removed with a very sharp knife, as, if this is not done, the bark is liable to be injured, and thus forms a seat of decay. Whatever sized pots are chosen, they must have a drainage of broken crocks to within 3 inches of the top, and then the soil must be pressed down very firmly, leaving just enough space at the top for a thin layer of pure sand. The soil for the purpose should consist of very sandy peat, sifted fine; and the size of the pots will depend upon circumstances, for the cuttings must be kept very close, and where there is no propagating house, they must be covered with bell-glasses. Such being the case, the size of the pots will depend upon the glasses that are available for covering them, but before the cuttings are dibbled in the soil should have a slight watering, when, if the glass is placed in position and pressed down, the imprint of the rim will serve as a good guide for the insertion of the cuttings, as they must be kept far enough away from the edge to prevent their being injured when the bell-glass is replaced. The pots should be placed in a structure of about the same temperature as that in which the shoots have grown, and should any bottom-heat be available they are better if stood on the surface for about a month, in order to allow the cuttings to callus, when if then plunged into a gentle bottom heat they soon root. Of course, during the time they are confined under glass they must receive careful attention in the matter of watering, &c., one very necessary item being the removal of the glasses every morning, in order to dry up any superabundant moisture, or to allow of the removal of any decaying leaves. This last precaution is very necessary, as should the least sign of decay make its appearance and not be quickly removed, it will rapidly spread and soon carry off a great quantity. The only insect pests to guard against are thrips, which are liable to effect a lodgment on the leaves if long confined, while if not removed they spread rapidly. Where grafting is carried out, any vigorous growing kinds may be employed as stocks, and to ensure success they must be young and free, as in that case the wounds made in the bark heal far more rapidly than in older wood. Side grafting is the method generally employed, as thus the head of the stock, or at all events a part of it, is allowed to remain on until a union is complete. In this way not only does the head of the stock assist in forming a complete union by maintaining a regular circulation of sap, but also should the graft fail, the same stock can be at once used again. The actual grafting is by no means a difficult matter, the great point of course being to see that the barks of stock and scion are joined as exactly as possible, and as the bark of

an Azalea is not very thick, more care will be needed in this respect than is requisite with some other plants. The usual method of side-grafting is to take the stock, and at the height needed an incision must be made in the stem, penetrating a little deeper than the bark. Then, about a couple of inches above this, commence to remove a piece of the stem, and continue this till the incision is reached. The scion having been prepared by making a sloping cut after the manner of that in the stock, the two must be fitted together as intimately as possible, and tied securely into position by means of some soft grafting cotton. Then they must be placed in an air-tight case where they soon commence to heal over, and when a union is complete they may be hardened off. The success of the operation will be shown by the scion commencing to grow, and when that is the case a little air may be given.

BOUYARDIAS.—One often hears complaints of non-success in striking cuttings of Bouvardias, but if they are taken now and formed entirely of the young succulent shoots they strike root readily enough. The cuttings should be put into light sandy soil and kept close till rooted, which will take place in about ten days or a fortnight. Root cuttings and those formed of the older wood have been recommended for the increase of Bouvardias, but the young shoots possess a great advantage over these, inasmuch as they root quicker and will form good, healthy little plants in less time than either of the above methods.

CLERODENDRONS.—The mention of root cuttings above suggests how easily most of the Clerodendrons can be increased in this way, and some of them grow very rapidly. *C. fragrans* and its double flowered variety, with *C. fallax*, are among the most commonly grown of the shrubby kinds, and if a few of the principal roots are taken, cut up into pieces about an inch or so long, and dibbled into pots of light soil, they quickly push forth fibres as well as young shoots when placed under favourable conditions. The climbing kinds do not grow with the same freedom from root cuttings, but as a set-off a greater number of young shoots are obtainable, and they quickly strike root. *C. trichotomum*, a hardy species which has of late years attracted a good deal of attention as a beautiful autumn-flowering shrub, is remarkably easy of increase from cuttings of the roots, so much so that having occasion to remove an established specimen I was surprised the following season to see young plants of this Clerodendron making their appearance on the spot where the large specimen originally stood. On examination these plants were found to proceed from pieces of the roots that were broken off during removal. Induced by this, I dibbled a painful of pieces of the roots, and the following season quite a thick crop of young plants resulted therefrom. The Chinese *C. lucidum*, a showy, but by no means common plant in gardens, can also be increased in the same manner. It matters but little at what time these root cuttings are taken, but in a general way the early months of the year are about the best, and where required but little time should now be lost if young plants are needed.

FORSYTHIA SUSPENSA is not a difficult subject to strike from cuttings, either put in the open ground during the autumn, or in summer protected by a frame. A simpler and equally effective plan is to peg down the points of the young growing shoots, and when brought in immediate contact with the earth they quickly strike, and soon form a base, from whence other shoots are pushed up in the same way as Brambles. These last can, of course, at times be increased by division, and seeds of some may be available, but cuttings taken in the ordinary way by no means root readily, yet every shoot will strike if its tip be brought in contact with the soil and held there securely. This mode of increase can often be seen exemplified in our hedgerows, but it is also equally available for the beautiful double-flowered forms that yield such a display during the summer. All the species of *Rubus* cannot be propa-

gated in this manner; indeed, the beautiful shrubby growing *R. deliciosus* is by no means an easy subject to strike from cuttings, nor a quick one when layered. I have derived the greatest measure of success from taking the young growing shoots in early summer, and putting them in a frame that is kept close and well shaded. A very distinct form of double Bramble is *rosa-folius plenus*, and this being generally treated as a pot plant, and grown in a fairly warm structure during the winter, will by this time have made plenty of young shoots, which strike root easily enough if taken off and treated in the same way as Fuchsias and similar subjects. As this kind is very liable to the attacks of red spider, care should be taken that the foliage is quite clean before putting the cuttings in a close case.

T.

FRUIT GARDEN.

W. COLEMAN.

WALL & HOUSE PEACHES.

If the short paragraph, most likely hurriedly written, by Mr. Gilbert was likely to influence the builders of fruit houses in general and Peach houses in particular, the cross fire from three heavy guns (p. 252) will induce them to ask a few questions before they step out of their well-chosen path. As no one knows better than Mr. Gilbert the value of glass, I think he would have corrected or qualified one sentence had time admitted of his seeing a proof before his article went to press. Such, however, does not appear to have been his good fortune, and he now stands pledged to his statements, unless, as I have no doubt he will, he finds a different interpretation. By all means let us have more wall Peaches, but not at the expense of a reduced supply from houses, for much as I value a few feet of sheet glass, I should be extremely sorry to see outdoor culture neglected. Like my three friends who have taken up the matter, I have devoted many years to the cultivation of Peaches against walls and in houses, and having been tolerably successful, am in a position to endorse much that each of them has said for and against the two systems. That house fruit invariably takes the eye of judges and the public I readily admit, but unless it is judiciously grown with an abundance of light and fresh air, I question if many dishes of wall Peaches are not quite equal, and sometimes superior, in point of flavour. The seasons for some years past having been unkind, wall culture has been carried on under many climatal difficulties, but, notwithstanding these drawbacks, I venture to think the fine trees of the past and the enormous fruit of our boyhood are altogether eclipsed by the trees and fruit of the present day. Peaches, it is true, do not realise the prices obtained twenty, nay ten, years ago, but then the slow and antiquated method of cutting away two-thirds of every shoot annually has been superseded by the extension system, and I question if wall or house within a given period from the time of planting does not now pay two nimble sixpences where formerly the heavy machine brought in a slow shilling. But enough, and lest I, like friend Gilbert, may be charged with preaching what I do not practise, I may say I am now converting a large, late span-roofed Hamburg vinery into a Peach house, and have recently transferred Apricots from a south to a west aspect to make more room for a set of late Peach trees. Further, without reflecting upon nurserymen who do not profess to hold fruit-bearing trees, the demand for these having greatly increased, I have just put up the finishing portion of a timber wall 200 feet in length, and 9 feet in height, for training pur-

poses. Upon these walls, composed of Oak framework and deal boards, facing the west, Peach and Nectarine trees under my system of management always ripen their wood well, and when allowed to remain, ripen their fruit from fourteen to twenty-one days later than kindred kinds on brick walls facing full south. Mid-season sorts on south walls in good seasons produce a glut, and this, combined with the immense quantity of late house Peaches, keeps the price down. But still they pay better than Grapes, and on our cold, heavy soil they are more certain than Pears. I recollect reading in THE GARDEN a few months ago a statement from Mr. Gilbert to the effect that he had rushed up young trees of Walburton and the old Late Admirable, but was disappointed with the result. I, perhaps presumptuously, ventured to suggest annual root-shortening and more water, and, judging from the fact that he is now "going in for more wall Peaches which nobody seems to grow," conclude he has brought the first set of trees into subjection. The climate at Burghley is perhaps not so good as ours, but here, being surrounded by heavily-wooded limestone hills, the atmosphere is moist and cold—so cold, that my predecessor told me I had better not attempt the growth of wall Peaches. He, good man, having gone over to the majority, his system has gone too; but, regardless of his advice, I at once set about correcting defects then existing, below as well as above the surface, with the view to replanting the walls. The first operation was thorough draining; then, having the command of several hundred loads of old lime and brick rubble and the run of the top spit of a new line of railway, materials for a fresh start were speedily in readiness. When the old borders, richly endowed with rotten manure, were taken out, a concrete bottom, strong enough to carry a castle, was found 3 feet below the surface. As it was not my intention to allow the roots of the trees to penetrate the drainage, much more to touch the concrete—in this case quite an unnecessary expense—12 inches of rubble, 6 feet in width, completed the bottoming of the borders. Upon this, thin sods of turf, Grass side downward, were laid, and the compost, consisting of pure loam and old lime rubble, was wheeled in. Bone-dust in quantity to be of any use, had I thought it necessary, was a luxury beyond my reach, but this, much as I value crushed bones, mattered little, as stone fruits grow well, and the roots literally devour every bit of turf in the absence of its coaxing, stay-at-home allurements. Knowing that all the trees would require lifting at the end of the first, certainly the second, year, all my borders, in the first instance, were made 3 feet in width and a little over 2 feet in depth, not one particle of manure being admitted. To each tree a run of 24 feet was allowed, a duplicate being introduced for future removal. The winter of 1860-61 having destroyed thousands of young Peaches and Nectarines, some of the sorts supplied to me, obtained from France, did not prove true to name. Peaches in some cases turned out to be Nectarines, and *vice versa*; but all showed a disposition to grow, and by the judicious pinching of gross shoots they soon reached the top of the wall, which was too low. At the end of the second summer all the trees were lifted bodily and re-arranged with their roots lying in a horizontal position, and I can safely say from that time to this I have never missed having a full crop of wall Peaches. "J. S. W." is quite correct in saying that wall Peaches entail an immense amount of trouble, but then whatever is worth doing at all is worth doing well; therefore, whilst agreeing with Mr. Gilbert that more wall trees should be planted, I think house

culture, in which English gardeners excel, may safely be left to take care of itself.

MELONS, OLD AND NEW.

I NOTE what "J. C. C." says on this matter (p. 232), and remember his two favourite sorts well—the Beechwood and the Egyptian Green Flesh, both Melons possessing the highest flavour. The Beechwood, however, not seldom lost its foliage in the latter stages, like a good many Melons of the present day, and such well-known modern Melons as Read's Scarlet Flesh, Victory of Bristol, and Best of All are just as hardy in constitution, and perhaps more easily grown than the Beechwood and Egyptian Green Flesh; in fact, the two latter were always considered more delicate and difficult to grow than the coarser Rock and other Melons that were often preferred to these two, because they were more easily grown. I believe that more frequent breakdowns in modern Melon growing arise less from differences of constitution in the varieties cultivated than in changes in the modes of culture between the two periods. Whatever merits or demerits the old system of growing Melons on manure beds in pits or frames possessed or lacked, it was more favourable to the stability and longevity of the plants and the preservation of their leaves than our present modern methods. We met our difficulties and dangers in the beginning in pits and frames; but we have too often to encounter them towards the end of our culture in Melon houses. With a fair amount of soil and an inexhaustible store of manure under it the difficulty was rather to arrest growth and check the production of green leaves as the maturation of the fruit approached. With the scant supplies of soil allowed to Melons in modern houses, nothing is more probable than the exhaustion of the plants and the scalding or withering of the leaves as the fruit reaches maturity. Nor is this premature exhaustion of the plants wholly the result of their short supplies. The pace is intensely accelerated in modern as contrasted with old-fashioned Melon growing. One good crop a year in one pit or frame was considered quite satisfactory. Now, two, three, or even four crops from one house in the season are not considered anything extraordinary, and in Melon growing, as in racing or working, it is the speed that kills. Modern Melons are also sadly over-cropped as contrasted with those of olden times. It is no uncommon thing now to find the roofs of Melon houses studded with Melons almost touching each other. All advance well, and under powerful stimulus swell rapidly until the strain comes towards the finish, then the mechanical weight of the fruit, as well as their scramble for the materials and conditions of perfect maturity, starve and cripple and cut off the supplies from the leaves, which perish and the fruit suffers in flavour in consequence.

HORTUS.

Grafting and inarching Vines.—Mr. Coleman's remarks on this subject in THE GARDEN (p. 113) are excellent. With bottle grafting I have been very successful, and this is my favourite method. Let me assure Mr. Coleman that some Gros Colmars grafted on Muscats three years ago not only made good rods 20 feet long the same season, but have so united that I have to look twice in order to make sure which are grafts and which stocks. The operation being new to me, I was not content with trying what I supposed to be the right plan, namely, inarching with pieces to match the laterals left for the purpose, but I also laid several pieces on old stems or rods, and to my surprise these latter united as well as the others. In inarching on the old wood I was careful to at least see that one side of the scion was bark to bark. These old wood scions grew and are doing well, but they have not the strength that those have which are treated in the usual way. I think the cause of this is that, whereas I cut through at least one eye in both stock and scion (from which eye the union first takes place), in old wood inarching no eye or joint is to be had. In order to have the scions moving to correspond with the stock I keep them at the warm end of the house, and if I think they are not quite forward enough I lay them in warm water. I may add that in no case have I had to cut the old canes down. Did I have to do so I should object on the score of

losing the crop. Generally, but not always, I cut down at pruning time after the crop is cut. In some cases I have both stock and scion growing and fruiting side by side, and thus have Muscat and Gros Colmar, or Buckland and Alicante, or Gros Maroc, all bearing fruit at one time, the mixture when ripe having a somewhat diversified appearance.—STEPHEN CASTLE.

AMERICAN BLACKBERRIES.

THE character given in THE GARDEN (p. 232) by "J. C. C." to the American Cut-leaved Blackberry is so entirely contrary to our experience of this plant, that I cannot pass it without comment. "Any growth worth notice" is a trifle vague, but it does not give the impression of a plant that makes immense shoots 20 feet in length, which are wreathed with fruit throughout late autumn and affords us one of our most valuable crops of small fruit. During the last four or five years the fruit of this handsome plant has steadily increased in favour for use in preserves, tarts, and even for dessert—so much so, that recently wherever the native Bramble has been found growing about the place, it has been stubbed up and replaced by the American. Everyone knows the want of briskness in flavour and somewhat over-sweetness that have been so often urged as an objection against the native Blackberries when cooked, and which involve the addition of a sharp Apple or so to "wake up" a tart made of their fruit; but no such objection can be made to the fruit of the Cut-leaved Bramble, which maintains its brisk flavour when cooked and makes a delicious tart without any addition. When preserved also the flavour is far brighter and more piquant than that of the common Blackberry, and some persons even prefer the American Blackberry jelly to Red Currant jelly with saddle of mutton, &c.

The plant grows luxuriantly with us in any soil, sandy or heavy, but the best results have been obtained by planting in strong, well-manured land. Here the plants are grown beside a wire fence about 10 feet high, and treated just like gigantic Raspberry canes, the wood that has fruited being cut away and the immense young rods tied back more or less fan-shape to carry fruit for the season. It is not recommended for the north of England except as an ornamental plant, because in wet or cold localities the fruit being produced late does not get properly ripened. But in the south, even as a dessert fruit, it is superior when thoroughly ripe to the native Blackberry; only care must be taken to see that it is ripe, for the fruit colours early, and is therefore often picked because it is black, and if its flavour be then judged it may not of course be first-rate. When the fruit is quite ripe it does not require pulling, but comes off at a touch, and in that condition its flavour is excellent, and the fruit long of berry and large of pip.

As an excuse for standing about in fields and hedges on a sunny October day the wild Bramble has great attractions; but for tarts and preserves of delicious flavour the American Cut-leaved Blackberry is unrivalled and unapproached by any species native to this country.—T. W. G.

"J. C. C." states (p. 232) that these are a failure with him. His experience is exactly the same as ours. They absolutely refuse to grow, though the common Bramble is very much at home within sight of the American varieties. I must correct the last phrase, for the Americans have almost disappeared out of sight of their English relatives, though careful attempts have been made to grow them. Locality can hardly be the cause of failure, for the whole of East Anglia is proverbial for the luxuriance and fertility of its English Brambles in hedgerow and wood, as well as also frequently in shrubberies.—HORTUS.

Dessert Apples.—I herewith send you four dishes of dessert Apples. Having seen of late various opinions in your valuable weekly paper THE GARDEN respecting late keeping dessert Apples, as also America *versus* English as to colour and flavour, I was induced to send these as a sample of what we

grow in these gardens. They are from bush trees not more than 5 feet high. The trees bear crops every year, although this is not a good soil for Apple growing, as it is so light and dries up so quickly that the fruit is small.—JOHN CROOK, *Farnborough Grange, Hants.*

* * * Good samples of Cox's Orange Pippin, Sturmer Pippin, Ribston Pippin, and Lord Burghley. They were in very good condition, but lacked that sharpness which is to be found in these varieties when they are in season. What we want is a late Apple that will retain its briskness up to this time.—ED.

TRANSPLANTING VINES.

OPINIONS vary as to the best season for lifting and replanting the Vine, some preferring carrying out this important operation in the autumn, others during the winter while yet the Vines are dormant, and still more when the buds are bursting in the spring. If a renovation of the border only is contemplated, I should prefer to do the work in the autumn, or, say, late in September or early in October, at which time the leaves would be quite fresh and in good working order. Supposing the principal portion of the border was broken up, the roots being carefully preserved and relaid in a good fresh compost, not necessarily all turf, abundance of fresh fibre would be formed long before the leaves ceased to perform their functions, and the following season the Vines would be capable of carrying comparatively heavy crops of fruit. I repeat comparatively heavy crops, as it is owing to working renovated Vines too hard the first season that many besides myself have erred. Finding that they break strongly and appear to be well established in the fresh border, cultivators are tempted to retain as many, or nearly as many, bunches as are usually perfected by healthy Vines that have not been subjected to such a severe trial. The effect of this is not so much perceptible the same season as during those following when it will be found that the Vines have experienced a check from which they may not quickly recover. Instead of the whole of the Vines' energies being expended upon the production of a full crop of bunches, part of it ought to be diverted to the formation of abundance of fibrous roots and their usual accompaniment—well ripened wood growth. It will then be eventually found that a new and perhaps expensive border has been made for some purpose. Unless the work of renovation is carried out in a thorough manner, the improvement effected in the Vines will only be fleeting, and I have seen instances where it would have been a wiser plan to clear out the house entirely and start with a new border and Vines. As was pointed out on page 232 the best time to lift the latest Vines, or those which of necessity have to carry their crops till late in the winter, is at the present time. The work of partially lifting may yet be safely done, and if from a third to one-half of the border be undisturbed, the roots found in the portion forked away, preserved as much as possible and redistributed throughout the fresh compost, it will not be long before these are as active as could be wished for. The foregoing refers principally to the partial lifting of Vines.

WHOLLY LIFTING AND REPLANTING.—If it is thought necessary or advisable to completely lift Vines and transfer to another site, much the safest and best time to do it is just as the buds are on the point of bursting. Authorities upon the Grape Vine are generally of opinion that the roots do not commence active growth till the leaves are far advanced or about three parts developed, in this respect materially differing from the majority of deciduous trees. This may be true enough in the case of Vines that have been started at all early or which are rooting in a cold outside border; but the theory does not always hold good with regard to those rooting in an inside border, and which are allowed to start naturally. According to my experience, these frequently commence forming fresh fibres almost simultaneous with the bursting of the buds. For three years in succession we have had occasion to lift Vines during March, the buds being on the move in each instance, as were also many of the roots. When the transplanting is attempted while the Vines are in a dormant state, there is a possibility of many of the fibres rotting in the fresh soil, every wound being a long time in heal-

ng, and the consequence is a very weakly and uneven break. I find that both very old or quite young Vines may be wholly lifted and replanted in March without the total loss of crop. In 1883 we lifted ten large Vines of the Black Hamburg variety none less than fifteen years old, and brought them a distance of three miles, replanted them in a new house, and cropped the majority the same season. All had been previously rooting in a much-neglected border, and it was at one end where a pathway had been made where the failures came from, very few roots being obtainable with these. The bunches perfected on these transplanted Vines were small, but the berries swelled to a good size and finished well, so that on an average 6 lbs. of Grapes were obtained from each. They were planted as supernumeraries, and have since formed good stocks for late varieties. In the same house another row of supernumeraries was planted through the centre of the house. These perfected two crops, and the best of them were then given away. They were carefully lifted just as the buds were moving, and transferred to ainery two miles distant. Anything in the shape of a ball of soil about the roots is out of the question in transplanting Vines, but we took special pains in preserving as many roots as possible, and carefully protected these from cold drying winds. They were planted in an inside border, and the same season several of them perfected three good-sized bunches, the best weighing nearly 2 lbs. In addition they formed good rods, and last season from one of these was cut a bunch of Alicante weighing 3 lbs. Newly lifted Vines when in full leaf may perhaps flag badly on a sunny day, and until the roots are able to meet the demand on them, it is advisable to syringe a little thin lime-wash over the roof. Wholly or partially lifted Vines must have plenty of water supplied them, neglect in this respect soon telling its tale. Like plants in pots, they are dependent upon the supply of water from the surface, where undisturbed Vines ramble about in search of moisture. These sometimes sustain the crop when the principal portion of roots may be much in want of moisture.

YOUNG VINES are largely planted at this time of year, and rightly so, I think. They are supplied in pots by nurserymen, or raised on the place during the previous season and grown in pots. To plant the balls of roots and soil intact would be a mistake, and instead of this they ought to be soaked in a pail or tub of water, thus facilitating the separation of the soil from the roots, which admits of their being carefully untwined and spread well out into the soil. Thus treated the roots soon take possession of the soil, and from first to last the chances are they will do better than any that may be planted intact. As a rule these young Vines should be made to form a fresh rod from near the ground. To prune them now would most probably be followed by excessive bleeding, and in order to avoid this it is advisable to give the rods a sharp curve, thus inducing a strong break from the lower joints and, to further strengthen those to be laid in, all the upper buds should be rubbed out as fast as they burst. In many instances it is necessary to plant rather stronger rods than are usually supplied for the purpose, this being especially the case when they have to be brought through from an outside border. These should also be encouraged to push out their lower buds, and if the laterals resulting are stopped when at the fourth or fifth joint, these will help to swell the stems. Unless the stems are assisted to swell in proportion to the principal rods, sooner or later a check will be given, and a falling off in the value of the crops experienced. These tiny planting canes, with not a shoot on them within 2 feet or 3 feet of the ground, as we often see them, are very slow indeed in attaining a profitable size. I always prefer to plant inside, even if the principal portion of the roots is soon established in the outside border, and in this case quite the smallest canes are to be preferred—a very rank start not being desirable. No doubt the compost recommended by Mr. Coleman is most suitable for a border that is to be serviceable for a considerable time, but plenty of turf is a luxury few of us attain to. Luckily, it is quite possible to grow good Grapes for many years in a border composed principally of turfy loam and good garden soil in equal portions, lime rubbish, burnt garden refuse,

wood ashes, and bones being freely added. The best of Vine borders soon requires renovation.

I should add that a high temperature ought not to be kept in a house containing newly-planted Vines, especially when these have experienced such rough treatment as just described, the aim being to keep them slowly growing until the roots are active. A night temperature of from 50° to 60° is ample, and in the daytime it may vary from 60° to 70° with plenty of moisture about the house. Better, however, let the thermometer range rather higher than to subject the Vines to cold currents of air, which cause them to flag badly. W. I.

A curious Apricot tree.—We have here a large Apricot tree presenting a very singular appearance. It is on a south wall at the west end of a range of vineries. The east end of the tree is now covered with fruit and foliage. The tree from top to bottom, for about 2 feet wide, is covered with fruit as large as small Hazel Nuts. The middle of the tree is in full bloom, and the other half, or west end, is not yet in flower. The cause is a chimney-flue, which runs up at the east end and keeps the wall constantly warm. The tree is protected by a coping 18 inches wide, and a double thickness of common herring-net in front. The tree ripens its fruit in the same order.—ALBERT FENN, *Blythburgh Gardens, East Dereham.*

Protecting fruit trees.—Unless we get exceptionally severe weather in April, the chances seem favourable to a capital crop of nearly all fruits, and it is quite time to see to protecting materials, and to keep generally a watchful eye on the fruit walls and quarters. Of all different materials used for spring protection, I do not know of anything better than the ordinary 1-inch mesh fish-netting. Where fruit walls are naturally sheltered a double thickness is generally sufficient; but, on the contrary, where they are much exposed, it is advisable to put a triple thickness of net, and this I have only known to fail once, viz. in the very sharp frost of April, 1884. The netting is, I think, preferable to heavier coverings, such as tiffany, &c.; for, whilst breaking the force of all keen, biting winds and heavy sleet or hail, it allows plenty of air to play amongst the trees. Before the nets are put up, the trees and wall should have a heavy syringing to dislodge as much as possible any insect life that may be already on the move. Where red spider is prevalent, a sharp watch should be kept at this season on all kinds of bush as well as wall fruit. We were nearly caught napping last year with the Red Currants and Gooseberries, for the pest was getting a firm hold just as the buds were expanding, and had the trees not received two or three good washings they would have been nearly ruined for the season.—E. B.

SHORT NOTES.—FRUIT.

Is spur pruning out of the question when a Peach tree in good health refuses to bear a fair crop, root-pruning having been tried? The tree is an early Grosse Mignonne. Is this a specially difficult tree to fruit?—X.

MR. STEPHEN CASTLE, of West Lynn, Norfolk, has sent us a fine photograph of a wonderful house of Early Downes Grapes, of which we hope to have the pleasure of engraving a portion in good time.

The wild Plum of Japan.—Can any readers of THE GARDEN tell me where to obtain *Prunus pseudo-Cerasus*, the wild Plum of Japan, and what synonym it has, if any? The Japs call it "Sakuta."—FRANK MILLS.

Apricot bloom.—It would doubtless be difficult to ascertain the mean average when the earliest Apricot blooms on south walls expand every year. It is odd, however, that here, whilst in a very warm aspect due south and protected by a broad eave, the bloom is only just expanding, yet it should be reported as open a week earlier in the south of Scotland.—A. D.

Grafting seedling Oranges.—Will you kindly inform me in your next number when is the time to graft seedling Orange trees, and how it is best done so as to bring them into flower and fruit?—JOHN GREEN.

The present month is the best time to graft Oranges; the stock used should be the bitter or Seville Orange. Whip-grafting would be practised. Pot culture and a moderate heat will bring grafted plants of the cultivated sorts into bearing during the fourth year from grafting. Seedling Oranges may bear in ten or twelve years under the same conditions of cultivation.—T. F. R.

SEASONABLE WORK AMONG FRUITS.

(CHERRIES.)

ALTHOUGH two thirds of the month of March was wintry in the extreme and much snow fell, the weather, on the whole, has not been unfavourable to forcing operations. Much fuel, as a matter of necessity, has been consumed, and low night temperatures in every department have prevailed, but beyond the loss of a little time a fair average of bright sunlight has favoured the healthy growth of leaf and fruit. Cherries with us, thanks to well-ripened wood, have been a sheet of the finest bloom imaginable, and, judging from present appearances, the scissors will have to be freely used as soon as we have disposed of our first enemy, the active little grub, whose appearance at this stage is more certain than agreeable. If carefully fumigated before the flowers open, they can generally be kept in subjection until the fruit is set; but it is necessary to be ever on the watch, and whenever a single insect puts in an appearance a series of mild smokings may be commenced immediately after the petals drop. One smoking, however, generally settles the account with green aphids, and as daily syringing will now be safe and necessary, a dash of Quassia or soot water mixed with the ordinary soft water will most likely maintain a clean bill of health throughout the season. The house having been kept comparatively dry during the time the trees were in flower, the borders will now be in a fit state for a liberal supply of tepid water, which may be tinged with good liquid or not according to the condition of the soil and the age of the trees. It is usual to mulch old trees which fruit heavily every year and do not produce much wood, sometimes before the house is started, in all cases immediately after the Cherries begin to swell. Young ones, on the other hand, do not require it, as manure often produces a gross habit of growth before they feel the weight of the crop, when, independently of the trouble they give, the rapid rush of sap frequently causes them to cast their fruit before it reaches the critical stage of stoning. With these hints the young forcer of Cherries must shape his own course, as it is impossible to say without seeing them what regimen will best suit his trees. One thing, however, is certain; it is always safe practice to err on the side of temperance through the earliest stages of forcing, and, whilst giving plenty of water to the roots, make them ramify and work for their daily supply of food.

Ventilation.—Highly impatient of a high temperature, the Cherry must have a liberal supply of air, not only by day, but throughout the night whenever this element can be admitted without creating a draught. When one says the house must range from the low figures of 45° to 50° through the night and 50° to 60° by day, it may be assumed that a temperature so little above that of the external air can be maintained by opening the ventilators in the morning and closing them in the afternoon. But this method will no more suit Cherries than it suits Pines, Vines, or any other forced fruit. Whatever the range, be it high or low, the start must be made from the minimum point; fluctuations must be avoided until the maximum is reached. The descent by reducing must then be prevented, and finally a rise of a very few degrees in the Cherry house may take place after closing with sun heat and moisture. It is during this period of confinement, extending over three or four hours, that the most progress is made, and when this end has been attained, the chink of night air with a gentle circulation created by the hot-water pipes must regulate the temperature through the hours of darkness. If properly managed and sudden external changes do not take place, the lowest point will be touched about daybreak the following morning. Night air must then be shut off and the trees duly syringed, but not until the temperature begins to rise, when the method adopted on the preceding day must be repeated.

THE ORCHARD HOUSE.

If good progress has been made, the fruit in the early forcing house will now be stoning, and, as I

have often observed, making but little apparent progress. Good work is, however, going on, and when the formation of the stones is complete, a process which, by the way, should not be hurried, there will be a rapid move forward. When this takes place, not a day must be lost in making the final thinning, as every fruit that starts away freely under ordinary treatment may be considered safe, whilst those which do not move may at once be pulled off to save them from falling. Many amateurs who dictate to their gardeners are often, I am sorry to say, guilty of over-cropping, but if quality be the object, the practical man in the performance of this important operation should not be interfered with. When the crop is properly reduced, robust trees will require daily attention to regulating and stopping, not only to prevent waste of force, but also to keep them compact and evenly balanced. Commencing at the highest part of the tree, pinching to six or eight leaves on each strong shoot should be steadily continued downwards. All the shoots must not, however, be so treated, as many, especially those near the base, will not make more than a few inches of growth, and when it is borne in mind that these only produce two wood buds, one at the base, another at the point, the removal of the latter, it is hardly necessary to say, renders them useless.

Top-dressing.—If all the trees were well top-dressed as soon as the fruit was thinned and the surface-roots have taken full possession of the material, further supplies will now be needful. Indeed, a good store of rich, heavy loam, old manure, and bone-dust should be kept constantly on hand for use whenever the feeders show upon the surface. In order to secure room for these repeated applications, the balls should be kept well below the rims when the trees are potted in the autumn, but old ones which cannot be so treated must be managed differently. To these I apply bands of old sheet lead 3 inches or 4 inches in width, which fit tightly inside the rims, and at once make room for the top-dressing, likewise for the quick supply of water. Strips of zinc answer equally well, and, with care, last a lifetime; but when large, old trees get beyond 16-inch pots, I prefer tubbing and reducing the balls annually. Fortunately, under this system there is no fleeting limit to age, as I now have trees wearing out their second set of Oak tubs, and the fruit they produce is equal to the best I gather from ordinary Peach houses.

Water.—From the foregoing remarks readers will gather that I set great value upon top-dressing, but this is of no use where the trees are stinted for water. When plunged out of doors during the winter, pot trees do not require frequent attention, but when taken into the house the soil must be kept constantly moist by the judicious use of pure water. When the fruit is set and swelling, stimulants, always on the weak side, may be used at every watering. Good diluted drainage from decaying manure and guano water used alternately supply all the elements needful to the formation of wood and fruit, and answer better than the constant application of one stimulant only. Each tree should be examined every day, and whenever water is needed, sufficient to moisten every particle of soil must be given, otherwise the surface will appear moist, whilst the crotch roots are languishing. The same is also suitable for damping down the house and filling the evaporating pans: but pure, soft water, free from lime, should always be used for syringing, as it does not leave a deposit on the woolly coats of the Peaches. This operation must now be vigorously performed twice a day, the first time when the temperature begins to rise, the second when the house is closed for the afternoon swelling.

Ventilation for the present should be very carefully managed, for much as the Peach enjoys fresh air, cutting draughts must be avoided. Before orchard houses became an institution it was not unusual to find pot trees swelling off crops of fruit in Pine stoves and vineries, but the less said about

the quality the better. Colour and flavour are now sought, and the two generally not always run together. In Peach houses proper we aim at 55° to 60° on mild nights after the fruit is stoned, and 70° to 75° by day, with a circulation of air. In the orchard house, especially where the roots have the benefit of the slightest bottom-heat, a trifle more will do no harm on bright, sunny days, but 60°, with the usual chink, should never be exceeded through the night.

Mixed collections of Peaches, Plums, Cherries, and Pears in late houses will now be in full flower. Formerly it was the practice to keep these structures very dry, and to allow sharp currents of air to rush through them, but then many of these were minus the benefit of gentle fire-heat so essential to a sure set in damp, foggy weather. Now we can sustain the delicate organs of fructification by the use of moisture on bright, sunny days, as the flow-and-return pipes enable us to set sharp morning frosts at defiance. The proper temperature for these miscellaneous collections is 40° to 45° through the night, 50° to 55° on dull days, and 60° to 65° with sun heat. Fertilisation after this date is not an absolute necessity, as the hive bees are excellent allies, but the operation takes up very little time, and if it be true that cross-fertilisation increases the size and safety of the fruit, the application of the brush on fine days should not be neglected. If well fumigated before the trees came into flower, aphids, to which Plums, Cherries, and Strawberries are so subject, will hardly put in an appearance; if it does, the new system of steaming, so highly recommended, might be tried on a small scale, as we are told the most delicate flowers pass through the process uninjured.

PINES.

If the potting of successions and young stock generally has not been brought to a close, this work should now be finished without delay. Formerly, when Pines were grown in quantity we always made an effort to get all the beds renovated and rearranged before the thinning of Grapes and other spring work became pressing. This, at the present time, is of less consequence, as, practically speaking, the English Pine grower's occupation is gone. Still, we have a remnant left, and that remnant, be it only a score of plants, should receive proper attention.

Fruiting plants.—These should have two neat sticks placed in each pot to keep the fruit and crowns in a perpendicular position as soon as they are out of flower. All gills, too, should be rubbed out and suckers of Queens, if not wanted, reduced to one, or at most two, on each stool. Some growers make a point of plunging their plants after the fruit is up as close as they can be placed together, but the system has little to recommend it, a few more fruits perhaps may struggle upwards, but to my eye they look very uncomfortable, and I always think the growers should be punished for cruelty to the suckers. Glass now is cheap enough, and Pines are good in proportion to the breadth of foliage exposed to air and sunlight. Late winter fruiting plants, now full size, may be plunged in this way, as time only is needed to finish them off. Moreover, their space may be required for fresh batches of spring starters or successions. As the season advances light dewing overhead may be more frequent, provided it can be done without wetting any of the fruits that are in flower, and each plant will take more water of a generous nature at the root. Indiscriminate watering will not, however, do; therefore each plant must be carefully examined and liberally supplied with diluted liquid or guano water when the roots actually require it. The watering of Pines is a matter which requires great tact and judgment, as we find them in some soils filling the pots with a mass of white roots, whilst in others they make very few. The first, as a natural consequence, take copious supplies with impunity, but the second take very little, and that principally in an atmospheric form when they are swelling off their fruit. Early maturity being important, the bottom heat in this department may now range from 85°

to 90°; the top heat 70° by night, 80° to 85° on fine days, and 90° after closing with vapour. In very bright or fiery-roofed houses, a little light shade from 11 to 1 o'clock may be necessary, but with plenty of roots beneath them the less shade the better.

Succession houses.—The beds in these should now be examined, and if hard spring firing has not made them too hot or too dry, the leaves or tan may now be levelled down and pressed firmly about the pots. If the material is found dry, then a good soaking round the outer edges of the pots will restore moist fermentation and reduce the necessity for frequent root-watering. Maintain a growing atmosphere in all succession pits by damping every available space twice a day and give the plants a light dewing overhead after the pits are closed. The greatest danger at this early season is getting newly-potted plants too wet at the root, and the better to avoid this, the dewing of which I am now writing should not be so heavy as to charge the axils of the leaves to overflowing. When this overflowing is frequently repeated the soil about the collars of the plants becomes sour and pasty, and free varieties throw up a profusion of premature suckers. A bottom-heat of about 85° from fermenting leaves will favour the rapid formation of roots and greatly assist in keeping up the air temperature, which may range from 60° to 65° through the night and 75° to 80° by day. A little air should be given at 70°, not to lower, but to sweeten the atmosphere, and gradually increased as the temperature rises until it touches 80°. When the sun begins to lose its upholding power the pit should be closed and allowed to run up to 85° or 90°. If late suckers have not yet filled their pots with roots they should be shaken out and repotted in fresh compost. Newly detached suckers may also be potted and plunged with them, as the two sets will require similar treatment. If plunged in a sharp bottom-heat obtained from fermenting leaves they root quickly without the aid of much water, and thoroughly enjoy the humid atmosphere of a close shallow pit, which does not require shading.

W. C.

GARDEN FLORA.

PLATE 590.

THE OLYMPIAN ST. JOHN'S-WORT.

(HYPERICUM OLYMPIOUM.*)

We have already given in THE GARDEN coloured plates of three of the shrubby St. John's-worts, viz., *H. triflorum*, *H. Hookerianum*, and *H. patulum*, which are unquestionably the finest of the larger growing species, while *H. olympicum* herewith figured has no rival among the dwarfier kinds. It is indeed a showy and most valuable garden plant, and it is singular that it is so little known in gardens, and this is the more remarkable because of its being one of the oldest among cultivated plants, having been introduced so long ago as 1706.

H. OLYMPIOUM is of dwarf growth, its usual height being about a foot, and is at once known from all the other St. John's-worts by its very glaucous foliage and large flowers—about 3 in. across, of the brightest yellow, and produced in summer. It is spreading in habit and a rapid grower; a cutting soon makes a dense tuft a foot or more across. Being perfectly hardy and indifferent as to soil, its value as a border or rock garden plant can scarcely be over-rated. It succeeds best on light warm soils, and especially if well drained, as rock gardens usually are. It is not such a shrubby species as *H. oblongifolium* and *patulum*, but more so than the common *H. calycinum*, or Rose of Sharon. It is a native of Mount Olympus, and is among

* Drawn for THE GARDEN by Miss Low at Woodcote, August 15, 1886, and printed by G. Severeus.



HYPERICUM CYMOSUM

the first 2000 plants figured in the *Botanical Magazine*.

A selection of the finest St. John's-worts for general cultivation would include, besides olympicum, the following shrubby species: *H. Hookerianum* (also called *oblongifolium*), the most beautiful of all the shrubby kinds, having large cup-shaped flowers of a deep rich yellow produced in clusters at the ends of shoots a yard or more in height. It is perfectly hardy, and flowers continuously in late summer. It is a native of Nepal, where it forms a bush from 6 feet to 8 feet high. Another species from the same region, *H. uradum*, is showy, but the flowers are much smaller, and the growth is more slender and not so tall. *H. patulum*, a native of Japan, is scarcely inferior to *Hookerianum*. The flowers are smaller, but of the same rich yellow, and produced in large clusters on slender shoots during September and October. It is not an old introduction, having been brought to this country about twenty years ago, though Thunberg, the great Japanese botanist, discovered it a century ago. Its growth in this



Flowers of *Hypericum Hookerianum* (*oblongifolium*); full size.

country varies from 2 feet to 3 feet high, according to locality, but in Japan it grows considerably taller. *H. nepalense* is a graceful little plant of slender growth, bearing cup-shaped flowers about an inch across, but it is not so desirable as those previously named, though we should include it in a selection, as it is so hardy.

All the foregoing are shrubby plants, natives of the East, and it is remarkable that though there are several species natives of America, not one of them can be called a really good garden plant. There are *H. Kalmianum*, *prolificum*, *virginianum*, and *pyramidatum*, but these are only fit for planting as undergrowth in rough places. There are several European species, but only one of them, the invaluable *H. clycinum* (the Rose of Sharon) can be called a first-rate garden plant, and indeed this vigorous, creeping under-shrub is worth more than all the rest of the dwarf St. John's-worts, seeing how indispensable it is for clothing with beautiful evergreen growth dry banks and other spots where it would be folly to plant anything else.

But there is no need to dilate upon the value of such a well-known plant as the Rose of Sharon. The Olympian St. John's-wort is somewhat similar in habit, and we should like to see it clothing sunny banks, like as the Rose of Sharon delights to spread over a shady bank.

There are a few other neat little evergreen St. John's-worts natives of Europe, but these are scarcely to be recommended for general culture, as their hardiness is questionable. Among these are *H. balearicum*, *egyptiacum*, *Coris*, and *orientale*. All are pretty plants, and particularly interesting to those who give personal attention to their rock gardens. W. G.

STOVE AND GREENHOUSE.

T. BAINES.

CHOROZEMAS.

For elegance in habit of growth, combined with the brilliant colours of their flowers, several of the *Chorozemas* stand unsurpassed. These plants bloom freely, the flowers opening in succession so that they keep up a gay appearance for a length of time. Neither are the different kinds difficult subjects to deal with, as with reasonable attention they are not liable to die or get out of condition. That these and numbers of other distinct and beautiful hard-wooded plants are not more generally met with in greenhouses and conservatories is more than likely due to the insensate cry that has been raised against trained plants. The same plants when only required for home use need no more ties than will just support them and prevent their branches assuming the straggling, half-procumbent position which in a state of nature they take. As many sticks as would suffice for an ordinary well-grown *Pelargonium* will be enough for any of the kinds of *Chorozema* when the plants have not to be moved further than from the house where they are grown to another in which they may be required whilst in bloom. There is so much difference in the character of growth natural to the different sorts of *Chorozema*, that some may be used as climbers, whilst others are dwarf and bushy,

not often attaining a height of more than 3 feet; still, they may all be grown bush-shaped by attention to stopping the shoots. There is also much difference in the rate of growth in the various species and varieties and in the size they attain, such kinds as *C. Henchmanni* and *C. varium nanum* not often reaching more than 2 feet or 3 feet in height, by as much in diameter. Like other Pea-blossomed genera, the *Chorozemas* are not open to the objection sometimes raised against plants with flowers of a more formal shape. The *Chorozemas* are so nearly allied to *Mirbelias*, *Podolobiums*, and *Dillwynias*, that some of the species of each have frequently been ascribed to the others.

Much of the distinct appearance which the plants under notice have is owing to the marked difference in the character of their foliage from that of other hard-wooded greenhouse subjects. In most of the kinds usually met with in cultivation the leaves are large and are furnished with spines like a Holly, so that even when out of bloom the plants are interesting. The time of flowering of the different sorts to some extent

depends on the way they are treated in the matter of warmth. *Chorozemas* are not subject to mildew, like some greenhouse plants, if kept during winter with no more warmth than necessary to preserve them from frost, but it is not well to keep them in so low a temperature as this for any length of time, as if under such conditions the soil happens to get a little too wet the roots are liable to perish, which means death to the plants. Unless there is some special object in retarding the flowering when they are wanted for ordinary decorative use, it is better to keep the plants at 40° or a little over in the night through the winter, in which case they will begin to open their flowers early in spring, at which time before many of the spring blooming subjects come in they are very serviceable, and when kept a little warm the flowers are much larger and more brilliant in colour. They keep on blooming for several weeks.

The taller growing kinds are very effective when trained round a pillar in a greenhouse or conservatory, or attached to wires fixed to the side or end lights of the house; but when so used it is not advisable to plant them out in a border in the way usual with stronger-rooted things, especially if the roots of stronger-growing subjects have access to the border; in place of this I prefer keeping them in pots, as large examples of even the freest growing kinds can be kept in a healthy thriving condition in smaller pots than would be required by many hard-wooded plants.

When they are used as climbers, strong-growing sorts, such as *C. varium Chandleri* and *C. Lawrenceanum*, should be selected; these, when well managed, often make shoots 4 feet or 5 feet long in a season. Another matter of importance when to be trained round a pillar or similar position where they will be at a long distance from the roof is to grow the plants in a house where they will get plenty of light until they have attained sufficient size and strength, as if small, weak examples are thus used, they rarely grow away freely. Those who like to propagate their own plants will not find *Chorozemas* difficult to increase. Cuttings root readily in sand, treating them in the ordinary way in the matters of heat, moisture, and shade in a confined atmosphere. Shoots of moderate strength that are not too long, taken off with a heel when the wood is in a half-ripened state, should be chosen; these are generally obtainable in spring or summer from plants that have had some of their branches cut in more or less. Several may be put together in pots large enough to hold them. When well rooted, move them singly into small pots, stopping the points as soon as they begin to move. Keep in a growing temperature for a time, giving shade when the weather is bright. The atmosphere should be kept moderately moist until autumn, for, with these, as with young, newly-struck stock of most hard-wooded plants, it is well to treat in a way that will induce free growth until they have made some progress. With this view it will be better to winter them in a house or pit where they can have a temperature of something like 50°. In this they will keep moving gently, which is preferable to letting the plants get into a dormant state; and so treated they will be ready for shifting into larger pots as soon as the days lengthen. Some growers use loam for the stronger-growing kinds, but where peat of good quality is obtainable, I should give it the preference. The smaller-growing varieties, such as *C. Henchmanni* and *C. varium nanum*, should have peat. The shoots will again require stopping after the re-potting; how far this opera-

tion is to be carried with the strong growing sorts will depend on the use to which the plants are to be put. Where to be grown as climbers, no more stopping will be required than necessary to secure the requisite number of shoots to clothe the pillar or space they are intended to occupy. If these stronger growers are to be grown in bush form, the stopping will need to be repeated two or three times during the season. All that will be required afterwards is to give larger pots each spring, but, as already intimated, it is well not to overdo them in this respect, particularly as their roots are not of a character that will bear much or any of the old soil being taken away at the time of repotting. Each year after flowering, the freest-growing kinds should have their shoots shortened in moderation; if this is not attended to, they will naturally get straggling and bare at the bottom, conditions that must be avoided. The syringe should be used freely to all the sorts during the growing season, or red spider may be troublesome. T. B.

ACACIAS IN BLOOM.

EVEN in a small greenhouse some of the Acacias may be grown very successfully, while others require a large structure to attain a sufficient size for flowering. Of small-growing kinds, *A. Drummondii* with very deep green pinnate foliage, and bottle-brush-like spikes of pale lemon-coloured blooms, is one of the best when in a flourishing condition; but, unfortunately, such is not always the case, as it is by far the most difficult of all the Acacias to keep in a healthy state. The reason for this is by no means easy to discover, as however successful a person may be in one spot, he often fails if the same mode of culture be continued in a different place. A more vigorous plant in all respects is *A. lineata*, which can be flowered in as small a state as the last-named, though if allowed full development it reaches a height of several feet. In this the slender branches are thickly studded with little orange-coloured, ball-like flowers, and in this state they remain a considerable time. A great merit in this Acacia is that, whether 2 feet or 6 feet high, it is equally floriferous. The same may be said of *A. armata*, a species with bright yellow flowers and very dark green leaves, which are so thickly arranged along the branches that, generally speaking, a specimen of it presents a dense mass of foliage. It is one of the kinds that are grown for the London market, as it possesses the great merits of flowering in a small state, and of being in no way fastidious as to its requirements. A very curious species of Acacia is *A. platyptera*, whose winged branches at once mark it out for notice. Besides this character, equally prominent whether in or out of flower, it is also noticeable from the fact that it blooms throughout the winter, while the others do not commence to flower till the new year. *A. verticillata*, which was so well shown at the last meeting of the Royal Horticultural Society, is a handsome kind, but requires to attain a good size before it will flower well. For planting out in large conservatories it is one of the best; indeed, it is about the finest of all the large collection of Acacias in the temperate house at Kew, where every year a couple of large specimens of this kind are the admiration of everyone.

The large-growing *A. dealbata*, or Silver Wattle, forms a very handsome specimen regarded from a foliage point of view alone, and when laden with golden blossoms it is, of course, additionally attractive. This species requires to attain quite a tree-like size before flowering. One very different in habit from any of the above is *A. Ricciana*, with small needle-like foliage and sulphur-coloured blooms. It is a slender-growing shrub, and requires some support. For a rafter or roof plant it is well suited, as the long cord-like branches hang down for a considerable distance and dispose themselves in a very graceful manner,

so that the effect of a good healthy specimen when laden with flowers is most charming. The propagation of Acacias is by no means difficult, for seeds of many kinds can be easily obtained, and, as a general rule, they retain their germinating power for a long time. Regarded from some points of view, seedlings are preferable to cuttings, while in other respects the reverse holds good. When desired for planting in the sub-tropical garden, where it is often used in company with the still more vigorous *A. lophantha*, the Silver Wattle is best raised from seeds, and the plants grow more freely during their earlier stages than if struck from cuttings. If, on the other hand, it be the intention to flower the plant as soon as possible, cuttings are to be preferred. For this reason those that are required to bloom in a small state are best propagated from cuttings, and any required for foliage effect alone are more satisfactory when raised from seeds. H. P.

Ceanothus under glass.—Among blossoming shrubs, those of a white or yellow tint greatly predominate, and almost the only representatives with blue flowers are the different kinds of *Ceanothus*. If these are grown in pots and brought on during the season in a gentle heat they will be by now in flower, and the bright blue colour of their blossoms causes them to stand out conspicuous from all their associates. The best for this purpose I consider *C. azureus grandiflorus*, which is not only of a very pleasing shade of blue, but also flowers most profusely under glass. The first suggestion of employing the *Ceanothus* in this manner occurred to me by noting how early in the season it bloomed, even in a small state, when protected, for a few plants I had in pots intended for planting out against a wall were wintered in a frame with just a little heat, and in spring they burst out into flower. When needed for blooming in a small state, plants struck from cuttings should be chosen.—H. P.

Toxicophylæa spectabilis.—This is an evergreen stove shrub flowering at this season, and remarkable for the profusion of its blossoms as well as their delicious odour, which is perceptible for some distance. The individual blooms are small, but borne in closely packed clusters, not only on the points of the shoots, but also in the axils of the dark green leaves. When in full bloom the shoots are literally packed with flowers, so that the whole plant is then quite a mass of white. It is a native of South Africa, and can be increased by means of cuttings in the same way as many other stove shrubs, *Ixoras*, for instance. Though generally known under the above name, by the latest authorities the awkward sounding title of *Acokanthera* has been bestowed upon it. There is another species, *T. Thuubergi*, of more rambling habit than the last named, and inferior to it in beauty. This is seen at its best when allowed to ramble over part of the roof in a sunny position in the stove.—T.

Magnolia Campbelli and M. fuscata.—I think your correspondent "T. B.," whose letter about the above-named plants you print on page 280 of your last issue, cannot be personally acquainted with either of them, or he would never have recommended them for planting against a back wall of a high conservatory, for which, in my opinion, they are neither of them in any way suitable. As far as regards the first-named variety, which I consider the most magnificent of all flowering trees, as seen on its native hills at Darjeeling, in the Eastern Himalayas, he evidently knows little or nothing about it, as he says its flowers are white, instead of, as they really are, a lovely deep rose colour; and then he proceeds to state that it is a native of China, instead of Darjeeling. It has, I believe, never bloomed in Europe, save in the shrubbery of Mr. W. H. Crawford, at Lakelands, near Cork; and its lofty stature, reaching 80 feet on its native hills, makes it quite unfitted for restricted house or wall culture. Then, as to *M. fuscata*, its flowers are by no means fine, as stated by "T. B.," but small, dull, and insignificant in appearance, their only merit being the powerful and delicious perfume they exhale from time to time, as they are at other times absolutely scentless. The perfume, when ex-

haled, exactly resembles that of the sweetmeats known as pear-drops, from their shape. It is a low and slow-growing bush in no wise suited for a wall.—W. E. GUMBLETON.

FORCING PINKS.

WHY are not these useful subjects more grown, seeing they are of such a valuable and satisfying character? Everybody who cares for a fragrant flower loves the Pink, but by the aid of those varieties which may be termed early-flowering, they can be had in bloom much earlier than when grown in the open air. To flower them well they should be thoroughly established in their pots; and it is requisite that they be brought on gradually, and not forced in too great a heat—just enough to keep them moving without drawing the plants, as it is termed. It is also requisite to keep them as near the glass as possible, and when they are putting forth a full growth in early spring, give them a little weak manure water about twice a week.

The best forcing Pinks are Alice Lee, creamy white, extra fine for cutting; Ascot, soft, fleshy pink, with deep carmine centre; Derby Day, deep pink, laced with purple; Lord Lyon, deep rosy purple, extra fine; Mr. Pettifer, white and rosy purple; Mrs. Sinkins, pure white, probably the largest and best white grown; and Snowdon, white, but late. Now these are quite distinct from the doris-like laced Pinks, which are rarely, if ever, grown in pots, because they would thereby lose their lacing, which is their chief characteristic. The general rule with these is to plant them out in the open ground in raised and well prepared beds in the autumn, so that they can get well established by the time they bloom in May and June. Many of these fine laced Pinks are very beautiful, and it is a pity they are not much more grown; but they need high-class culture in the open to have the flowers finely laced.

Forcing Pinks should be propagated as soon as pipings or cuttings can be obtained, and they will strike freely in a gentle bottom-heat. As soon as rooted they should be planted out in a bed of rich soil, and then potted up early in the autumn, and placed in a house where they can be kept at a moderate temperature. R. D.

Cytisus filipes.—If for no other reason than the elegant growth of this species, it would be well worth a place in the greenhouse, but when as now the slender drooping branches are clothed with white flowers, very similar to those of the common Broom, it is additionally attractive. This *Cytisus* is a native of the Canary Islands, and is one of those good old plants that has been ousted out of most gardens to make way for novelties, though perhaps possibly inferior to these older introductions. There are several ways of increasing this Broom: it can either be raised from seeds, which are sometimes obtainable, or struck from cuttings. Besides this it can be grafted on the Laburnum, or allied kinds, and when this is done standard high, the long slender cord-like branches display their elegant drooping character to the best advantage. If grafted near the ground or struck from a cutting, and a leading shoot be carried up (at the same time shortening the side branches) till a sufficient height is attained, and then allowing all to grow at will, a pretty effect is produced, the whole plant forming a pyramid of drooping shoots.—H. P.

Azalea roseæflora.—It is now ten years since this pretty and distinct Azalea was exhibited in fine condition from the Tooting Nursery, and received a first-class certificate from the Royal Horticultural Society under the name of *Azalea Rollissoni*. Though introduced so many years, it is not even now cultivated to such an extent as one would have anticipated from its distinct and pleasing features. The cause of this to some extent is, no doubt, to be found in the fact that it is of very slow growth, taking years to form a fair-sized specimen, but as a set off to this it blooms profusely when but a few inches high. It naturally forms a dense, much-branched, globular-shaped bush, while the blooms are

of a bright salmon-pink colour, about 2 inches in diameter, and in a suitable temperature borne freely from November to the present time. They are very double, and when but partially expanded the origin of the specific name is more apparent than when the blooms are fully open. Our specimens have not been without flowers since last autumn, and there is a number of buds still to open. The plants were wintered in a structure that was seldom below 55° by day or 50° by night, and that this is about the most suitable for them was shown by the continuous display of blooms. After the flowering season is over the plants will be kept in rather a close atmosphere, and freely syringed in order to encourage as free a growth as possible, as upon that to a great extent depends the future display of bloom. Cuttings of the young shoots will strike root without difficulty, but as they grow so slowly afterwards the better way is to graft this variety on one of the stronger-growing sorts. When this is done the point of union should be as near the ground as possible, for if stuck on the top of a naked stem its globular habit of growth causes it to bear a good deal of resemblance to a mop. This *Azalea* is a native of Japan, and will pass through our winters in a cold frame, but the most satisfactory results are obtained where grown in a higher temperature.—H. P.

Rhododendron fragrantissimum.—This is a grand-flowered variety, bearing very large blooms of a pure white tint, except a blotch of lemon just at the base of the throat; the edges of the petals are also prettily crisped. The flowers are most agreeably scented, and though the perfume is by no means overpowering, it is very noticeable during sunshine, even in a good-sized structure. This *Rhododendron* is a hybrid between *R. formosum* and *R. Edgeworthii*, but the individual blooms are more showy than those of either of its parents. The habit of growth is rather straggling, and I once saw it treated as a greenhouse wall-shrub, and in this way, being planted out in a prepared bed, it grew away freely and flowered most profusely. The position in which it was placed was by no means heavily shaded, but just sufficiently so to break the full rays of the sun during the summer.—T.

Popular Palms.—Palms are grown in large quantities in the Clapton Nurseries, but the kinds for which there appears to be a special demand are *Kentia Fosteriana* and *Areca lutescens*. The former, from the Pacific Islands, has gracefully arching leaves and long, pendent segments, which render it very effective; its constitution, too, is so robust, that no amount of cool treatment appears to injure it. The *Areca* is a feathery-leaved kind, which, although a little more tender, being a native of the Mascarene Islands, is nevertheless a very useful plant. Its leaves, which are long and arching, are borne upon slender foot-stalks, which are orange-yellow, whilst the segments are bright, shining green. Of fan-leaved Palms, *Livistona borbonica* is grown here by thousands, and appears to be the chief favourite, the next, as regards popularity, being *Corypha australis*, which, although the hardier of the two, lacks the brilliancy of colour possessed by the *Livistona*. Numerous other Palms are grown by Messrs. Low, but none in such vast quantities as the kinds here enumerated.

Bouvardia Humboldtii corymbiflora.—This is perhaps the most valuable of all the *Bouvardias*, and its large heads of powerfully-scented white flowers are a great boon during the autumn and early winter; indeed, it is quite worthy in its season to fill the place of the *Stephanotis* and *Tuberose*. It is advisable to have two sets of plants in hand, viz., one-year-old and spring-struck cuttings, as the former (at any rate, when the planting-out system is followed) come earlier into bloom; in fact, they are quite a sheet of white some time before they require to be taken up. Where the stock has to be increased, a couple of old cut-back plants put into a Cucumber pit in January will soon furnish an abundance of cuttings. These should be taken off with a heel, inserted in a compost into which plenty of sand is worked, and plunged under a bell-glass in a good bottom-heat. The young plants should be shifted as soon as they are ready, and grown on quickly until the beginning of May, when they should be gradually hardened off, and then planted out early in June. A

warm, south border is the best place for them, and a good dressing of sand and either leaf soil or thoroughly well-rotted manure should be forked into the border before planting. Once planted, they will require no more attention, except a good mulching if the summer is very hot and dry. As in the case of all plants lifted in the autumn, it is advisable to run the spade round the *Bouvardias* once or twice prior to lifting, and this latter operation should be very carefully performed with old plants that are well in flower. They may either be placed for a time under a north wall or in a cool house with a little shade, as the state of the weather may require, until they have rooted into the new soil.—E. B.

SEASONABLE WORK IN PLANT HOUSES

TRAINING STOVE PLANTS.—In training the various kinds of stove climbers and twiners that are grown specimen fashion, it is necessary to pay some attention to the character of growth of the plants, without which their flowering is often interfered with. This especially applies to such kinds as *Allamandas*, *Stephanotis*, *Dipladenias*, and *Bougainvilleas*. The natural habit of growth in these and others of a like character is for their shoots to maintain more or less of an erect position. If, then, in a state of nature, the shoots of the twiners cling to the branches of other plants that happen to stand near them, and keep on extending in an upright direction until the time of their flowering arrives, when plants of this character are grown on trellises it is needful, when training them, to keep the points of the shoots well up. If they are bent downwards before the flower-buds are set the sap refuses to run in that direction, the result being that the back buds start into growth, ultimately starving the flowers, so that they generally fail to open. To avoid this mishap, it is better to provide wires or strings, attaching them to the roof, and on these encourage the shoots to cling until they set their bloom buds, after which they may be wound round the trellis. The shoots of *Allamandas* and *Bougainvillea glabra* ought to be kept as nearly erect as may be until the flowers are set and partially developed. To those who have not had much experience in the cultivation of the plants named and others of a like description, this may appear a matter of little importance, but success depends upon observation and attention to small matters.

CUTTING STRIKING.—The free-growing nature of most kinds of stove plants is such that cuttings in right condition for striking may be obtained at almost any time from spring until the latter part of summer, but in most cases it is best to propagate as early in spring as possible. Most stove subjects are proverbially quick growers that attain a useful flowering size in little time, and very often, unless where large examples are wanted, it is better to use moderate sized specimens than to retain the plants until they get old. Where the stock of any particular species or variety is insufficient, cuttings should be put in.

WINTER FLOWERING PLANTS.—Cuttings of the various kinds of winter-blooming plants should be potted as soon as they are sufficiently rooted. To allow the cuttings of quick-growing plants to remain in the pots in which they were struck until their roots get into a tangled mass, as sometimes done, interferes much with their future progress. Any young stocks of the character named that were struck early in the year, and have been growing in small pots, will soon require another shift. In the case of many it is better to now give them 5-inch or 6-inch pots rather than allow them to remain in the small ones in which they were first put until they are transferred to those in which they are intended to bloom.

EUCCHARIS.—Although the newer kinds of *Euecharis* that have made their appearance later than *E. amazonica* have handsome flowers, still they are not so reliable for giving a plentiful supply as the old species. In late years this most useful bulb has suffered severely from an insect that attacks the roots, but which is so small that

in many cases where it existed its presence was not detected. The safest course for those to follow who happen to have the plant in a healthy condition is to confine their cultivation to those they already possess, as from its exceptionally free-growing nature there is little difficulty in getting up a stock in little time. All the plants require is plenty of room and plenty of warmth, giving larger pots as they require them. By alternately growing and resting the plants they can be had in bloom at almost any time of the year, but though amenable to this kind of treatment it will not do to repeat it too often; better to be content with crops of flowers at longer intervals. Extremely free bloomer as *E. amazonica* is, there are some who find a difficulty in getting it to flower; the plants, though healthy and strong, keep on growing with little inclination to bloom, a circumstance that is no doubt attributable to something in the treatment—not unlikely want of rest. Where this difficulty exists it is best to turn the plants out of the pots, selecting a time when the last leaves that have been formed have attained their full size and are matured; the soil should be all shaken away, removing it carefully so as not to break the root fibres but as little as possible. The mass of bulbs ought then to be divided, putting the large ones in separate pots, singly or several together at the discretion of the cultivator, and keeping the smaller ones by themselves. Where this course is followed I never knew it fail to cause the plants to produce a full crop of flowers. In the matter of light the *Euecharis* is exceptional in its requirements to most plants, as it does not like so much as many things. This is apparent by the size the bulbs and leaves attain, and the quantity of flowers produced by plants that are grown in old, badly-constructed houses that do not afford light enough for the generality of things. In such structures, even when the plants are stood on the floor far away from the glass, they may often be seen doing as well as could be desired; whereas when these conditions are reversed the plants not unfrequently refuse to thrive, the leaves turning a sickly yellow colour, and coming gradually smaller until the whole plant, leaves, and bulbs are not half the size they should be. Plants that have recently flowered, or that have had a rest to prepare them for blooming, and that want more room should now be moved into larger pots; if the specimens are already as large as desired they may be reduced in size, dividing each into two or more pieces.

AMARYLLIS.—Bulbs that were started some time back will now be in flower, the leaves having made more or less progress. As soon as the blooming is over, if seed is not wanted, the flower-stems should be cut away and the plants placed where they will have a moderate amount of heat. It is essential that, whilst the young leaves are in course of formation, the plants should have plenty of light, without which the foliage is weak, a condition that prevents the bulbs increasing in size to the extent they should, and is alike opposed to the production of flowers another season. In the case of scarce and valuable varieties especially, nothing should be wanting that tends to increase the strength of the plants, as on this depends their ability to produce offsets, which, after taking into account the greater or less disposition in different kinds to increase in this way, will always be forthcoming in proportion to the strength of the old bulbs. In addition to the roots being kept sufficiently moist the leaves should be well syringed daily, as these plants are somewhat liable to the attacks of red spider.

ASPARAGUS PLUMOSUS.—This elegant climber and other sorts with a like habit of growth may now be increased by the division of the crowns. In severing the pieces, as many roots should be secured to each as possible; for this reason it is well not to carry the division too far. Give pots proportionate in size to that of the pieces, and keep them in a growing temperature until they have recovered from the check. Where seed has been produced they may be increased quickly, as

it vegetates as freely as that of the edible kind. The seeds may be sown at any time as soon as ripe, giving them a little warmth, and keeping the young plants in a genial temperature. Though these varieties of Asparagus have mostly been grown in heat, they will thrive in a moderately warm greenhouse, and where the plants are subjected to fire-heat the temperature should not be too high, otherwise the growth will be thin and weak, and the leaves wanting in the substance requisite to make them last when cut, for which purpose few plants are so well adapted or so enduring when the growth possesses the needful solidity.

AZALEAS.—Where a sufficient number of plants is at hand, there is no difficulty in having them in bloom from the latter end of the year up to mid-summer, but to admit of this there requires to be a corresponding difference in the time the plants make their growth and set their flower buds. There are few hard-wooded greenhouse plants that are so accommodating, or that will bear so much indifferent treatment and still keep living and blooming to some extent. To do justice to them, the plants now as they go out of flower should be moved to a house or pit where they will get plenty of light and can have the benefit of a genial growing temperature, in which they should remain until the buds are large and plump. As the sun gets powerful, a little shade in the middle of the day may be required. The atmosphere should be kept moderately moist, and the syringe ought to be used freely every afternoon. However strong the growth may be it is a mistake to stop the shoots as sometimes done; the plants look none the worse for being irregular in outline, and when the flowers are used in a cut state it is an advantage to be able to gather them with a good length of shoot attached. Where the plants make their growth at different times in the way here indicated, whatever potting is required should be carried out after an interval of three weeks or a month from the time the blooming is over, as then the roots will have begun to move freely, and they will at once take to the new soil; whereas if potted before the roots have started there is danger of the soil getting too wet before the young fibres enter it, a condition that must be avoided. In the case of any plants that show a disposition to make weak growth, but are otherwise healthy, they should be frequently supplied with manure water, or with concentrated manure of some sort. No pot plants with which I am acquainted are more benefited by assistance in this way than those if given when the roots are in an active state. T. B.

BOOKS.

REPORT ON THE EFFECTS OF THE FROST.*

I HAVE this morning received this publication, which I may say is, without question, one of the most valuable contributions to general horticulture which has appeared for many years. When I first suggested at a meeting of the scientific committee of the Royal Horticultural Society, in March, 1880, that such a report should be prepared, I did so on the ground that the summer of 1879 having been one of the wettest and coldest of which we had any record, and followed by a winter of extreme severity, it would be most useful to all gardeners, especially to nurserymen, to know what plants were capable of resisting the worst extremes of the British climate, and as this winter was followed by a second in which some of the conditions unfavourable to vegetation were repeated with even greater severity, we might fairly say that anything which was alive in the summer of 1881 was absolutely hardy. If this report could have

*The Journal of the Royal Horticultural Society, Vol. VIII. The frost report on the effects of the severe frost on vegetation during the winters 1879-80 and 1880-81. By the Rev. G. Henslow, M.A., F.R.S., F.G.S.

been published, as I proposed, six years ago, it would have been of even greater value than it is now, but though the matter has been repeatedly pressed on the council of the Royal Horticultural Society, it has been, for various reasons to which I need not now allude, withheld until many have almost forgotten the fearful devastation which was caused by that most disastrous summer and the two succeeding winters. But though I cannot look upon this report as by any means perfect either in the manner or the time of its publication, the cordial thanks of all gardeners are due to Mr. Henslow for the great pains and trouble he has taken in compiling and arranging this report, which, if I am not mistaken, will have a very large sale, and form an indispensable part of the library of every gardener. The report commences by an epitome of the character and effects of previous severe winters from 1837-38, in which many meteorological and horticultural facts are recorded. Then we have a sort of census of the number of species of plants killed and injured in the various groups of counties, into which, from a meteorological point of view, the country is divided, but I am not able to make out whether the number of plants mentioned as having been lost is the actual number of species, or whether repetitions of the same species in many different places are included. It seems, however, that in the following groups of counties there were lost, as follows:—

Group.	Number killed or injured.		Number of places from which reports were received.		Average at each place.	
	1879-1880.	1880-1881.	1879-1880.	1880-1881.	1879-1880.	1880-1881.
1.—East Coast	1168	1258	65	39	18	32
2.—South Coast	692	851	34	22	18	39
3.—South tableland. (Berks, Bucks Glouce., Oxon)	860	554	13	22	66	39
4.—Gt. central plain (Bed., Cambs, Hunts, Leicester, Northants, Rutland, Stafford, Warwick)	731	657	26	6	28	44.5
5.—Valley of the Severn (Monmouth, Hereford, Shropshire, Worcestershire)	84	247	8	6	10.5	11
6.—Central Highland (Yorkshire, Derby, Nottingham)	389	328	14	6	28	55
7.—N.W. Coast (Cumberland, Westmoreland, Lancashire, Cheshire)	257	648	14	15	18	13
8.—Anglesey and Wales	224	546	11	11	20	50
SCOTLAND.						
1.—S.E. Highlands	503	423	18	8	28	53
2.—West Coast	96	325	11	6	9	54
3.—Cent. Highlands	139	292	10	9	14	32.5
4.—East Coast	225	429	25	9	9	48
IRELAND.						
1.—The entire Coast	251	198	14	23	18	6
2.—Inland Counties	292	121	9	3	32.5	40

This table shows, first the large number of reports which were sent in from every part of the kingdom, viz., 272 in the first year, and 198 in the second, and to a certain extent the comparative severity of the weather both in the different parts of the kingdom and in the two seasons under review, and it will be observed that, though the number of reports is smaller, yet the comparative losses are heavier almost everywhere in the second than in the first winter. But, whether this is really the case, or only appears to be so from the way in which

the table is drawn up, I am not able to judge without a detailed examination of all the reports, though the remarks appended to many of them seem to show that many of the plants and trees and shrubs which just survived the first winter succumbed entirely to the second.

Then we have an index to the minimum temperatures registered. These are not, however, so important in their bearing on the ability of plants to resist cold as might be supposed. It is abundantly proved by the reports that it is not the degree of cold, but the favourable or unfavourable present and previous conditions of soil, climate, and position which determine the ability of plants to resist frost; and we know that many plants which die in England live on the Continent with a much greater degree of cold than they ever get here, whilst many other damp-loving plants live in England and die in Europe, not of cold, but of want of moisture. Then we have an index to the very numerous species and varieties of plants mentioned by the various reports, which has this great value, that it will enable the intending planter to judge of the hardiness of almost any plant (the list extends over forty pages) in many different parts of the country and under very varied conditions. A careful study of this ought to result in an immense saving both to nurserymen and to the public, as both are too apt to forget after a succession of mild winters that many plants which we grow or try to grow out of doors cannot be relied on to stand an exceptional winter.

Then we come to the reports themselves, which, though drawn up on a similar form, vary immensely both in their detail and in their completeness, and we must here remark that it is not in the home counties, for whose benefit the Royal Horticultural Society to some extent sacrifices the interests of its more distant and provincial fellows, that we find the greatest number or best reports, but among those amateur and professional gardeners all over England who ought to be and would be the backbone of the society when genuine horticultural work has to be done if they were properly represented in it. I notice with regret that the county of Middlesex only furnished two reports in 1879-80, of which that from Chiswick itself is one of the most meagre and incomplete, and though Mr. Barron states truly on Jan. 30, 1880, that the full effects of the frost are not yet apparent, yet he does not send in any report at all in the following year, when Dr. Masters, F.R.S., is the only contributor from the county. From Wimbledon and Kew, however, there are two full and excellent reports, furnished by the late Mr. Joad and Mr. Nicholson. Dr. Hogg, who was secretary of the committee appointed to collect evidence upon the whole subject, does not appear either in the first or second season to have sent in any report or otherwise to have taken any particular interest in the subject, and I believe that if the committee had been formed not out of a few of the members of the Scientific Committee, but out of the amateur and professional working gardeners of England, it would have produced a better, and certainly a more timely publication than the present one. But we have a number of reports of great value scattered through the volume, among which may be mentioned those of the late Mr. J. H. Mangles, of Haslemere, on Rhododendrons; Rev. Mr. Ewbank, in the Isle of Wight; Rev. H. Ellacombe, of Bitton; Mr. Shingles, of Tortworth; Mr. T. G. Parry, of Highnam; Mr. R. H. Holford, of Westonbirt, and others in Gloucestershire, which county appears to have

responded very well in this volume, perhaps because it has suffered so severely. From the Botanic Gardens of Edinburgh, Glasnevin, and Cambridge we have most valuable reports. From Mr. Dunn, Dalkeith, from Sir Charles Strickland, in Yorkshire, from Rev. H. Rawson, of Bromley, from Mr. Paul, of Cheshunt, from Sir J. Lawes, of the late Dr. Bull, of Hereford, Mr. Ingram, of Belvoir, and many others will be found reports containing invaluable information which will well repay a careful perusal.

Mr. Henslow concludes his preface by saying that he shall be glad to receive any remarks or corrections which the authors of the reports may desire to make. He does not, however, say whether these are to be published, and if so, how or when. It would also, I think, be well to state whether this volume is for sale to non-members of the society, as, if not, I advise those who wish to have it to get one by becoming a member under the new rules before it gets out of print, as by so doing they may save themselves both in time, money, and disappointment more than several years' subscription to the society will cost.

H. J. ELWES.

Presbon, Cirencester.

ORCHIDS.

W. H. GOWER.

FLOWERING ORCHIDS AT STREATHAM.

IN Mr. Measures' garden, at The Woodlands, these plants are just now superb. Perhaps one of the greatest surprises for an Orchid-grower are the immense specimen *Cymbidiums*. These, either in or out of flower, are both graceful and orna-

mental. So large have these specimens become, that they have quite filled up the house they are growing in, and a new one, built expressly for their accommodation, is now fast approaching completion. The kinds we allude to are *C. Lowianum*, *Hookerianum*, and *giganteum*. These plants are some 12 feet in diameter, with long, graceful, deep green leaves. Specimens of *C. Lowianum* are now bearing eight and nine spikes upwards of 5 feet long, each spike carrying twenty-eight and twenty-nine flowers, the individual blooms being about 4 inches across. The sepals and petals are apple-green (becoming lighter with age and then yellowish), streaked with a few lines of chocolate-brown; the three-lobed lip is creamy white; middle lobe, brownish purple in front margined with yellow. This plant was introduced from Burmah by Messrs. Low, of Clapton, some ten years ago. It belongs to the same section as *giganteum*, which blooms during the winter months. Although these plants are natives of Burmah, which is generally credited with being very hot, they thrive best in an intermediate or *Cattleya* house. They produce large fleshy roots in abundance; therefore ample pot-room should be allowed. The soil most suitable for these *Cymbidiums* is two parts loam and one of peat, adding some sharp sand to keep the material open and sweet. They should not be potted above the rim of the pot in the manner usually adopted for Orchids, but the ordinary system of potting terrestrial plants should be followed, leaving ample space to receive water, of which they enjoy a bountiful supply when growing. The smaller-growing *C. eburneum* is also growing here largely, and is now flowering in abundance. The finest plant has now expanded thirty-five of its large ivory-white flowers upon eighteen spikes; whilst dozens of small plants are equally floriferous in proportion to their size. This species was introduced about forty years ago, when, as it came from the East Indies, it was treated to the hottest corner of the East Indian house. Under these conditions it seldom flowered, and although its beauty was admitted by all, it lost favour on account of its shy blooming qualities. About fifteen years ago, Mr. Williams, of Holloway, obtained some plants from Northern India, with the information that naturally they grew in a cool district. When this treatment was adopted the plants soon began to show increased vigour and to become free flowering, and hence have increased

the roof of a small light house bearing numerous branched spikes, some of which are carrying thirty and thirty-five flowers upon each spike, whilst quantities are still kept cool and dry to flower later on. *O. Rossi majus* has now become a common Orchid, but, nevertheless, none the less beautiful. Among the many forms which have come under our notice none equals the highly coloured variety now in this collection; the sepals are cinnamon-brown, faintly mottled; petals very broad, rich brown, saving a deep marginal border of rosy peach; lip rosy peach, yellow at the base. *O. Herberti* is a hybrid of the crispum type with creamy white sepals and petals, freely mottled and barred with chestnut-brown. Other species now flowering are *O. Sanderianum*, an excellent form; *O. nebulosum* in variety, and *O. Oerstedii*.

AMONGST *CATLEYAS* now opening, the new and beautiful *C. Lawrenceana* stands in the first rank. The plant is quite distinct in its habit of growth, and bears numerous flowers upon a spike in the way of *Skinneri*. In the variety *Lawrenceana* they are double the size of *C. Skinneri*, and quite different in colour. In the plant now blooming with Mr. Measures the sepals are deep rosy purple, and the lip intense magenta crimson. It is a free-growing plant, and thrives under the same conditions as *C. Skinneri*. *C. nobilior* is a handsome dwarf species in the way of *Walkeriana*, and produces its flowers in the same manner upon a leafless stem; sepals and petals soft rosy mauve, the latter very broad, with a central streak of deep rose; lip soft rose; side lobes very large, the centre of the lip ornamented with a central patch of creamy yellow; the blooms are very fragrant. This plant succeeds best grown upon a block of wood, and likes exposure to the light. Examples of the Mexican *C. citrina* are also now flowering; its deep yellow, fragrant blooms, and its habit of growing downwards renders it totally unlike any other species. A few of the best forms of *C. Trianae* are still in flower, but they will soon be succeeded by *C. Mendeli*, one very fine form of which is already expanded, its flowers measuring upwards of 8½ inches across; the sepals and petals are very broad, white, with just a very slight tinge of flesh colour running through them; lip very long, front lobe magenta-purple, beautifully frilled on the edges, and the base stained with pale yellow. The flowers of *Cattleyas* should be carefully preserved from sprinklings from the syringe, or they speedily become spotted and decay.

VANDAS are also a great feature in this collection, numerous forms of tricolor being now in flower, also the distinct and beautiful *suavis*, their flowers yielding a powerful and grateful perfume; here also we noted the superb form of *V. cristata* with its curious flowers, the lip being ornamented with lines of blackish purple. *Angraecum sesquipedale* is also flowering freely, even upon quite small plants, its large ivory-white flowers affording an excellent contrast to its two-ranked, bluish green leaves. This species we have observed, when grown in heavy shade, produces flowers of a creamy white, which are inferior in beauty. Associated with these are examples of *A. citrina*, with numerous racemes of its pearly flowers. *Phalenopsis Schilleriana* and *amabilis* are thriving admirably mixed with other Orchids; numerous *Dendrobies* are also yielding a brilliant display, the most striking being *Ainsworthi*, various fine forms of *nobile*, *crepidatum*, *splendissimum*, *heterocarpum*, *Wardianum*, *suavissimum*, with dozens of spikes of its rich yellow and deep velvety black flowers, *crassinode*, *crassinode album*, and its variety *Barberianum*, which is a more robust grower than the typical form, and produces flowers of greater size and more highly coloured; these knotted stemmed kinds appear to require a thorough season of rest to induce them to produce their flowers in abundance. *Dendrochilum glumaceum* is largely grown on account of the delicious odour of its flowers; we observed numerous specimens bearing forty and fifty of their pendent racemes, and one magnificent specimen carried some seventy or more of its fragrant clusters. *Dendro-*



Cymbidium eburneum.

mental. So large have these specimens become, that they have quite filled up the house they are growing in, and a new one, built expressly for their accommodation, is now fast approaching completion. The kinds we allude to are *C. Lowianum*, *Hookerianum*, and *giganteum*. These plants are some 12 feet in diameter, with long, graceful, deep green leaves. Specimens of *C. Lowianum* are now bearing eight and nine spikes upwards of 5 feet long, each spike carrying twenty-eight and twenty-nine flowers, the individual blooms being about 4 inches across. The sepals and petals are apple-green (becoming lighter with

age and then yellowish), streaked with a few lines of chocolate-brown; the three-lobed lip is creamy white, independent of their agreeable perfume. This species should also be grown as a terrestrial plant, and the same potting material suits it admirably. *ODONTOGLOSSUM CITROSUM* is another plant which is grown remarkably well here. The plants are kept cool and very dry during winter, even to the shrivelling of the pseudo-bulbs, until just before the spikes appear, when they are removed into a higher temperature and bright light, and liberally supplied with water. At the present time there are dozens of plants suspended from

chilums are somewhat delicate plants, and should not be subjected to too severe a resting season. *Cologynas* and *Lycastes* are still yielding a bright show; amongst the former are grand examples of the pure white *cristata alba*, with six and seven flowers upon a spike, likewise *Lemoniana* and *maxima*. These *Cologynas* should be grown in a cool house during the summer months, applying more heat in the beginning of autumn, which causes their pseudo-bulbs to swell up well. The pure white form of *Lycaste Skinneri* has borne the astonishing number of sixteen flowers upon one bulb, including a twin-flowered spike. A superb form of *L. Measuresiana* is now exceedingly attractive, its flowers are erect, sepals spreading olive-green or bronzy brown in some forms, petals large, reflexed at the tips, ground colour creamy white; this, however, is scarcely visible, except on the edges, as the whole surface is covered with close lines of bright velvety crimson, lip same colour, the centre lobe plain creamy yellow in front. This variety is, we believe, an enlarged and highly coloured form of *L. plana*. Under the cool system of growing these plants, *Lycastes* have proved to be free-flowering to an extent never calculated upon by growers in the early times.

THE LADY'S SLIPPER ORCHIDS (*Cypripediums*) are, however, perhaps the most striking feature of the Woodlands collection, as it contains close upon 200 distinct forms in the shape of hybrids, varieties, and species, some few kinds existing only here. Amongst the most notable in bloom just now are *C. villosum aureum*, with seven of its canary-yellow blooms; the typical *villosum*, with upwards of forty flowers; *Boxalli* in numerous varieties; *Haynaldianum*, *hirsutissimum*, *calophyllum*, *Peteri*, and *tonkinensis*, which has most elegantly marbled foliage, the flowers being about the size and shape of *Godfreyae*, the colours and markings of it, *niveum*, and *concolor* appearing to be all combined in one; other kinds are the beautiful *callosum*, *Lawrenceanum*, *Lceanum*, *superbum*, *Fraseri*, *porphyreum*, *nitens*, this last a most showy and ornamental kind, having been obtained by crossing *villosum* and *insigne Maulei*. Many other varieties too numerous to note, except when in bloom, are also grown. This collection of plants is grown cool, and none of the houses are so unpleasantly hot or so wet but that the most delicate might walk through them to admire the beauties of the flowers. Moreover, Orchids grown in this way do not suffer by removal to the dwelling-house, and Mr. Measures uses them to a large extent for indoor decoration.

Pleurothallis scapha.—This belongs to a family of Orchids which some few years ago was well represented in our gardens, the flowers of which, although extremely beautiful when magnified, failed to please the growers of this Order; and immediately the larger and brighter coloured flowers of their relatives, the *Masdevallias*, became known, *Pleurothallis* began to disappear. This species, however, bids fair to reinstate the name in Orchid collections. The spike bears from six to eight flowers, each flower measuring some 4 inches in length, very singular and fantastic in shape. The sepals project forward, whilst the petals stand almost erect, the colour of these being creamy white, tinged with purplish crimson. We noticed this singular plant recently in the nursery of Mr. William Bull at Chelsea. *Pleurothallis*, like *Masdevallias*, thrive in the coolest temperature.—G.

A photograph.—Adverting to what you said in last week's GARDEN on photography, I beg to enclose or your inspection a photo of a fairly good spike of *Odontoglossum Alexandrae* drooped across a basket of *Adiantums* and *Davallia* (I think) dissecta. The variety of the *Odontoglossum* is a good one, almost pure white, and the spike bore fifteen flowers a little larger than they appear in the photo. One unopened bud is not included. The plant was grown in a cold fernery all the summer, and bloomed in the autumn in a cool stove.—GREENWOOD PIM.

* A large and beautiful photograph, too large for our engraving without reduction. Photography will be effective in preserving for us and emphasising,

so to say, one of the greatest charms of these plants—their often fine form.—ED.

Cymbidium Devonianum.—I see in THE GARDEN that you describe and name Orchid flowers when sent to you; I therefore send you by post the stem of a *Cymbidium* with thirty-two flowers. The plant was sent to me with some plants of *C. eburneum* and *Mastersi* by my cousin, Sir Hugh Gough, from Assam, and the remark of the collector was that it was a splendid variety and scarce. The leaves are from 12 inches to 18 inches long, broad at top and tapering to the base; the plant is free-flowering. There are two more stems with the same number of flowers hanging over the side of the pot. Will you kindly name the plant?—G. GOUGH, *Clonmel*.

** The fine raceme sent is that of *Cymbidium Devonianum*. It is a very distinct and handsome species, and rare in cultivation.—ED.

Resting Orchids.—I have a *Laelia purpurata* just finishing its growth with a fine flower-sheath; also a *Cattleya Moesta*, which made one strong growth whilst it was flowering last summer, and before this was completed started a second growth from it; this is now nearly completed, though still making roots. Both are enormous bulbs, being nearly eighteen inches long with leaves. They have both large flower-sheaths. What I am desirous of knowing is, whether these plants should be rested now until the flowers begin to push in the sheaths, or whether it is now too late in the year, and if it would be better to allow them to make further growth. If so, would this prevent the flowers coming? Kindly say also if summer and autumn-flowering *Dendrobiums* ought to be rested until the flowers begin to show.—E. R. WHITWELL, *Barton Hall, Darlington*.

Odontoglossums at Mr. Low's nursery.—It is rather early to see these at their best at Clapton, but from the many thousands of spikes just pushing up a grand display may be reasonably looked for later on; some few distinct and handsome kinds in flower, however, are deserving notice, amongst which *O. baphicanthum* is conspicuous. Some rank this as a variety of *O. odoratum*; the sepals and petals are soft yellow with several chocolate-brown spots, middle lobe of lip lengthened out into a slender recurved point, white or canary-yellow blotched with reddish brown, crests yellow streaked with red. Another handsome form is *O. Willecanum*, originally introduced by Mr. Low, and supposed to be a natural hybrid between *O. crispum* and *O. luteo-purpureum*; the flowers are between 3 inches and 4 inches across, sepals and petals soft yellow blotched and barred with reddish brown, and waved at the edges; the lip resembles *O. crispum* in shape, but the colour is pale yellow blotched in the middle with a large spot of reddish brown, with serrate edges. *O. Halli*, which is perhaps one of the finest of the *Odontoglossums* yet introduced, is also in flower; the panicle is much branched, bearing dozens of flowers upwards of 3 inches across; the sepals and petals are buff, variously blotched with deep brownish purple, lip large, tapering to a sharp point, beautifully toothed at the edges, crest much toothed, streaked with bright yellow, and blotched and spotted with purplish brown. Many fine forms of *O. Roezli* are now in great beauty. *O. Pescatorei* and *O. crispum* are not yet sufficiently advanced to detect extra varieties, and *O. luteo-purpureum* and *O. pulchellum majus* close the list at this time.—G.

SHORT NOTES.—ORCHIDS.

Trichopilia lepida.—What is the difference between *Trichopilia lepida* and *Trichopilia crispata*? The former is unknown to me, and I wish to know if it is a variety of the latter.—ORCHID CORRESPONDENT.

Odontoglossum aspersum violaceum.—A lovely variety of this plant, which Professor Reichenbach supposes to be a natural hybrid between *O. maculatum* and *O. Rossi*; at first sight the flowers of this form may be taken for *O. Rossi*, but a closer inspection shows them to be abundantly distinct. We recently observed this rare and beautiful variety flowering with Messrs. Shuttleworth & Carter, in their nursery at Clapton.—G.

Oncidium cucullatum.—This is one of the easiest grown plants, provided it receives cool treatment, and is admirably adapted for cultivation in a Wardian case. It is essentially a winter bloomer, and its large distinct flowers last long in perfection. Although small in distinct the flowers

are large, the sepals and petals small and dull purple, lip large, deep mauve profusely spotted with violet. This *Oncidium* is found on both sides of the Andes of South America, but whilst the plants on the Atlantic side are found at considerable elevations with large flowers, the form on the Pacific side is found at much lower elevations, and the flowers are smaller and altogether inferior.—G.

KITCHEN GARDEN.

HERBS FROM SEEDS.

SEVERAL of the herbs in common use are herbaceous in character, and are readily increased in the spring by dividing the roots. If there is no stock to divide, the present is a good time to raise them from seed. Winter Marjoram is much in demand. It can be raised from seed if sown now and placed in a gentle warmth. When sown out of doors it is a long time in germinating and sometimes does not vegetate at all. A 6 inch pot will hold as many plants as a large garden requires, and the plants may remain in the pot until large enough to be planted out. Sage.—A hard winter often destroys the whole of the stock of this common plant, especially in a retentive soil. When such is the case a fresh lot of plants may soon be raised from seed, which may be sown either in pans and the plants brought on under glass or in the open. Thyme.—The common Thyme is readily increased from seed, but as the seeds are rather small it is desirable to sow in a pan and raise the plants in the greenhouse or cold frame. If the plants are not growing too thick in the pan they may remain undisturbed until they can be planted out. Tarragon.—The seeds of this herb do not vegetate freely, and it is best to place the pan in which the seed is sown on a hotbed or in a warm house, and as seedlings make long tap roots they must have a deeper soil than the others. As soon as they are large enough plant them out in some rich soil in the open. The first year they may be in lines 9 inches apart, and in the following spring be planted where they are to remain.

Amongst annual herbs, Basil is much used in some families. Sweet Basil is the one commonly grown. There is another form which is called Bash Basil. Both are tender plants, so it is best to sow the seed in April and grow the plants under glass. If sown out of doors a warm border must be provided. When required for winter use the plants should be pulled up when well in flower, and tied in small bundles and dried in a cool shed. Borage.—This is a coarse growing subject, which if not wanted early in the summer may be sown in any odd corner of the garden; but if required in the month of June, a few seeds had better be sown in a 9-inch pot, and the plants grown on in a cold pit. Chervil.—This is a hardy annual, and may be sown out of doors, but as the spring sown plants quickly run to seed, a second sowing should be made at the end of May and another in August to stand the winter. Dill.—Although this herb is not much called for, it is so easily grown that no one need be without it. A little seed scattered thinly on the surface and raked in will furnish a supply from July until late in the autumn. Fennel.—Seedling plants of this are better than root cuttings, as they do not so quickly run to seed. Any number may be raised by sowing the seed now in pans, or in the open. If time is an object, a few seeds may be sown in an 8-inch pot, and they will quickly afford a supply. Parsley.—Although this is an herb which is so universally grown, there is hardly another subject cultivated in the garden that causes more trouble and anxiety. This arises from various causes. In many gardens the soil is too rich, and then it continues growing so late in the autumn that the first severe frost terribly cripples it, if it does not kill it outright. In some cases an insect attacks the roots, causing the whole of the plants to die off. In our case a retentive soil and a damp climate cause a great loss of plants during the winter, and had we not ample room in a cool Peach house in which to plant it out during the summer, reserving them for winter and spring use, we should not have any left. Whether the ground is rich or poor, I am satisfied

that damp is as great an enemy to it as frost. If I had no convenience to provide a supply under glass, I should sow the seed on a dry bank in June. The bank of earth should be 1 foot high at the back and facing the south. If the bank is formed about the end of July, strong young plants may be dibbled in about 9 inches apart, when they will get well established before winter, and afford a supply when plants on the flat have been all killed by damp or frost. J. C. C.

LETTER FROM BURGHEY.

TO THE EDITOR OF THE GARDEN.

SIR, —You ask why I do not raise a hardy Broccoli. I answer, because we have plenty. A hardy Broccoli is not wanted. What we want is men who know how to grow Broccoli. Now I will give you in writing a photo of your Broccoli at Gravetye Manor: Great big plants from 2½ feet to 3 feet high, with a green bunch at the top of each. Well, you will see, the frost always kills the stems of Broccoli between the soil and the head simply because it has no protection; this is called in garden language, catching them between wind and water. The reason is, that your Broccoli was sown too soon; 10th of May is your time for spring Broccoli. What I mean by your time is, your locality being south, that date is soon enough. Doubtless yours was sown in April, and allowed to grow into leggy plants before being planted in their final places. You should have in your case laid them down with their heads to the north. I never do, because I always have short stems, the leaves touching the ground. Here is the system of growing Broccoli: Sow first week in May. Immediately the plants have four or five leaves, plant them out finally from the seed bed into good firm soil; an old Strawberry bed is a capital site. Cut up old plants at the ground line, rake off rubbish, set your line, make holes with a crow-bar, put in the plants, and make the hole full of mud by pouring water all round it. You then have still plants close to the soil, stem protected by Nature's own protection, and plenty of Broccoli. Whereas, plant them in manured and trenched land you have a mass of good plants, but no firmness or sinew in them. The first frost, down goes the Broccoli never to rise any more.—R. GILBERT

* * * This is excellent advice, but we have noticed this year that some Broccoli not strongly grown, including some of our own, were almost killed by the winter: whereas, the Purple Sprouting under the very same conditions was in perfect health and quite pleasant to look at compared with a ragged remnant of the best Broccoli. Therefore, some kinds of Broccoli being uninjured by the weather, we thought a vegetable improver of our friend's ingenuity would be able to give us a really hardy Jubilee Broccoli. What he says about cultivation is worth everybody's consideration.—Ed.

SHORT NOTES.—KITCHEN.

Wanted, a hardy Broccoli—I quite agree with Mr. Record in his article on p. 289, March 26. My own are dreadful to go near.—ONE WHO SMELLS THEM.

Dells Crimson Beet—We have tried many kinds of Beet during the last ten years, but none of them have proved so satisfactory as this variety, and as a main crop variety I consider it the best in cultivation. It has a compact top, not too large a root, and the quality is first-rate.—J. MERR, *Michigan*.

Spinach—A bed of the ordinary round or summer Spinach, sown the first week in September last, has stood the winter better than three other beds of the prickly sown at different times. We have not gathered any quantity from this bed, but as soon as we have warm, growing weather I have no doubt it will be a long way ahead of the others. The plants on these beds have been gradually dying away since autumn, and the late cold weather finished more than half of the remainder; while the summer variety has not suffered in the least from frost. A bed of this will be sown for the future to stand the winter.—W. HOWARD, *Robt.*

Onions and frost—It is strange that whilst really ripe, matured, hard Onions will soften and rot under the influence of winter frost if so exposed, yet old growing bulbs or plants stand through the hardest of weather in the open ground comparatively unharmed. Both last and the preceding summers being

dry, I found a quantity of plants in a bed refusing to bulb or ripen, though the earlier ones did so well. Left standing all the winter in each case the plants, though very strong and the bulbs full of sap, stood the weather admirably.—A. D.

KITCHEN GARDEN NOTES.

ASPARAGUS—Spring has burst upon us suddenly, as did the late storm, and vegetation is making rapid progress. The first heads of Asparagus in the open plots we observed when giving the plantations a dressing of salt and soot on the 22nd ult. This application we give as much for the prevention and destruction of weeds and slugs as we do for its fertilising properties, as before we adopted this practice slugs, in a wet season, worked sad destruction by taking out the points of the shoots almost before they had emerged from the soil. The plot—two years planted—though not intended to be cut this season, we have served exactly the same, as we like to keep every stem that shows from getting crippled or weakened in any way, and with that intent we sometimes have recourse to tying to small sticks those stems that seem likely to come to grief by a wind storm. We have a new plantation to make, and this we hope to accomplish in a day or two.

SALSIFY AND SKORZONERA—The demand for these is very trifling. We prefer to sow both early in March, but being hindered at that time they have this week been sown on deep sandy soil, and in drills 14 inches apart, and the seedlings will be thinned out to about 9 inches apart in the row. Salsify is the most in favour, and a proportionate larger space is therefore devoted to it. I fancy that both would be more popular but for the trouble involved in preparing small roots for the table. If we were to bestow greater pains on their cultivation, so as to get the roots clean and half as thick as one's wrist, they would be used more frequently, and thus the season of other vegetables would be prolonged.

CAULIFLOWER AND CABBAGE—It is now safe to plant out all Cauliflowers that have been wintered in frames. They should have the richest soil, be planted in drills, and each plant be lifted with soil adhering to its roots, and if there should be any cause to fear "clubbing," surround each plant with sifted mortar scraps, and if mixed with soot, it will be all the more effective; well water in the plants and they will show no signs of having been moved. Cabbages do not require the same care in transplanting, but even these repay the extra labour involved in digging up the plants carefully with a fork, to make certain of securing all the roots, which, if large or spreading, should be planted with a trowel, as in the case of Cauliflowers. A dibber will do for planting them, provided the roots are small and the soil loose and friable, but in heavy soils the use of trowels is always to be preferred. Our first sowings of Cauliflowers and Coloworts that was made in warmth and pricked out in frames are nearly ready for planting in the open ground, the final preparation being the gradual inuring them to bear without check full exposure to the open air, by leaving some continually on the frames, except in frosty weather. Others will be pricked out from seed pans in the frames shortly to be vacated by planting out the autumn-sown Cauliflowers; and in these frames also will be pricked out our first sowing of Celery.

SEAKALE—As we are nearing the end of forcing, we have had the ground prepared for making a fresh plantation, principally of the medium-sized pieces of the forced roots, which have been preserved by laying them in sand as soon as the Kale was cut. These pieces are cut into lengths of from 4 inches to 6 inches, and the side rootlets rubbed off; when they are ready for planting, and the ground being deep and loose, the handiest way is to dibble them in, the top of the set being about an inch under the surface. Sometimes we plant in rows as close together as 18 inches and a foot apart in the row, but this is only when we

expect that rich ground and good sets warrant the hope that the roots will be ready for next season's forcing. When conditions do not favour such a prospect it is better to plant in rows a yard, or even more, apart, and the first year take a catch crop of Lettuce or French Beans from the intermediate space. The Kale will require the whole space in the second season. If it is intended to raise plants from seed, now is the time to sow on highly manured ground in drills 20 inches apart, thinning them out to 9 inches from plant to plant as soon as the seedlings are 2 inches high. Seakale will appropriate and return with good interest any amount of high feeding in the way of manurial mulchings and manure water that can be spared, and, lacking this, frequent deep hoeings should take place throughout the summer and flowers be kept regularly picked off.

BROCCOLI—The slaughter amongst these in this not always favoured southern district has not been greater since 1879 and 1880. The only varieties that have escaped are about half the plants of Snow's, Lauder's Goshen, Late White, about 80 per cent of Model, Safeguard, Late Queen, and every plant of Purple Sprouting. The season is an exceptional one, and may not be repeated for years, so that we do not intend to give up growing other varieties, otherwise we should have but a short season, as, except Snow's, none of the kinds named are ready for use till the middle of April; but we shall take special care to have the varieties named in quantity. There is little doubt but that in some degree we are sometimes ourselves to blame for the winter collapse of Broccoli by sowing so early, that the plants get so large and overcrowded that hardening or ripening is hindered, as sun and air cannot reach them. If, when it is thought this error has been made, the plants in early autumn are gently lifted with a fork, the check thus produced will probably have the desired effect, that is, of hastening the hardening of the plants. Laying down the plants with their heads to north or west, with a view to safe wintering, we long ago discontinued as being of no avail, as on comparison quite as many plants survived that were not thus treated, and in other respects were superior, the heads finer than the laid-down plants, so that from choice we should never again revert to the practice.

FORCING—The first batch of Tomatoes intended for fruiting in pots has now been given their final shift into 9-inch and 10-inch pots, a short stake is placed to each, and for the present they are placed in the second vinery, which is kept at a minimum night temperature of 60° and 65° by day. The plants to be grown outside are now in 3½-inch pots, and are being kept stocky by giving them just sufficient warmth to keep them quietly on the move. Cucumbers sown at the new year, and planted in a house with hot-water pipes for bottom-heat, are beginning to fruit, and the main shoots require stopping once a week; the side laterals we keep regularly pinched at the joint in front of the cluster of fruits that we intend to leave; such clusters are in most instances reduced to a single fruit—sometimes two are left—as soon as the best-formed fruits can be discerned. The border space is only 2 feet in width and of about the same depth, including the drainage, so that it is necessary to give rich top dressings frequently so long as the plants continue in full fruit, which, if kept free of spider and fly, they will do till we can get supplies of fruit from frames at so late a period as to enable us dispense with, at least, part of the labour that frequent renewals of linings entail. The temperature of the house ranges from 60° to 80°, according to the state of the weather, and both plants, floors, and walls are well syringed in bright and drying weather, but we are very sparing with moisture when the weather is cold and wet; otherwise, that worst of all pests, mildew, would quickly put in an appearance. French Beans do well in this kind of structure, the heat and moisture required for Cucumbers being every way suited to them. The last sowing for this season's forcing has been made on a bed of soil in a heated pit. Potatoes, Carrots, and

Radishes in manure frames now demand increased attention as to airing, and, if time can be spared, the linings will once again be renewed. Celery will very shortly be ready for pricking out, and the plan most in favour with us is to set a frame on a hard surface, into which is put from 4 inches to 5 inches of light soil—leaf-soil principally; this is beat down firmly and well watered, which further consolidates it, and it is then ready for the plants, each of which is afforded 3 inches of space. The merit of this plan of treatment is that the plants lift with such balls of soil that they transplant without the slightest injury.

TREES AND SHRUBS.

W. GOLDRING.

THE LARCH AS A LAWN TREE.

MR. MARNOCK was not singular in his opinion when he said some time since that "the Larch as an ornamental tree is much neglected." It is indeed a neglected tree in ornamental planting, even in parts of the country where it is not grown in plantations for timber. Perhaps it is because it is such a common plantation tree that it is ignored by planters, yet in the whole range of ornamental trees there is certainly none more beautiful than a vigorous young Larch, particularly when seen in early spring just as its tassels of new foliage unfold accompanied, may be, by strings of tiny cones brightly



Coning branch of Larch and winter twig.

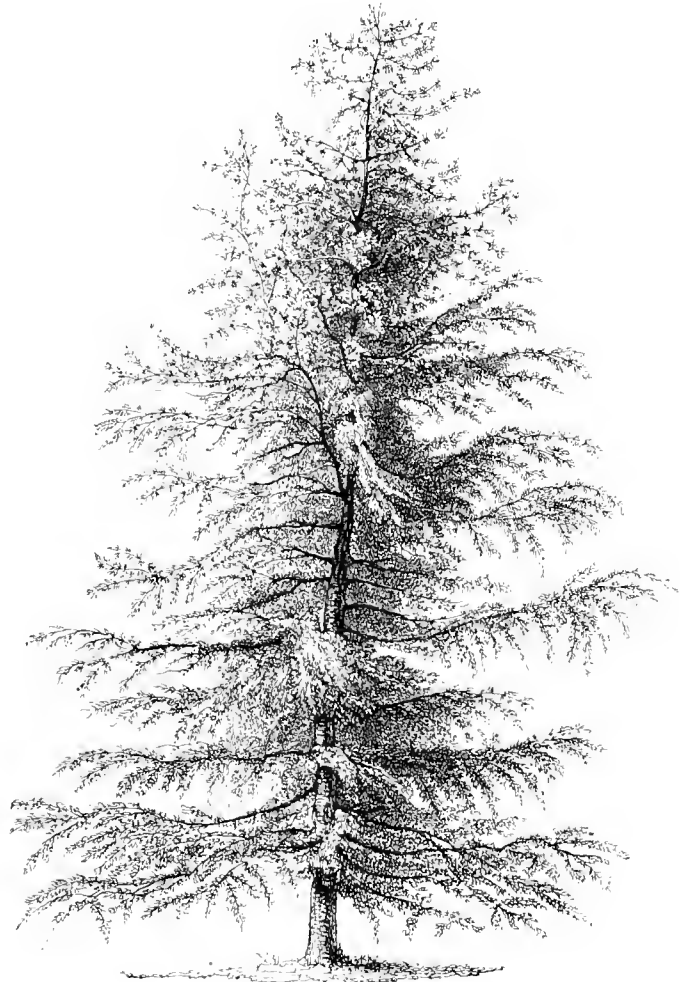
coloured and fragrant. The Larch, like the deciduous Cypress (*Taxodium distichum*) seems to burst out suddenly with the freshness of its young leafage, but the exquisitely graceful growth of the Larch makes it the most beautiful tree of the only two deciduous Conifers commonly cultivated. To be really beautiful as a lawn tree, a Larch must be young, vigorous, and well cared for from its youth upwards, and must always have plenty of room about it to develop itself fully; otherwise, it soon loses its branches, and then half its beauty is gone. An old plantation Larch is not a lovely object, not even picturesque, as an old Scotch Fir generally is; but, planted in good soil in a sheltered spot on a lawn, and perfectly isolated, a Larch may be kept in perennial youth, so to speak, and produce a finer effect than half the modern Conifers which crowd every garden. I remember seeing last year a grove of young Larches on a lawn that greatly impressed me by their elegant growth. They were of different sizes, the tallest being about 30 feet, the shortest about 10 feet, and they were so grouped that the whole mass, numbering about a score, looked as if they were Nature-sown seedlings, so informal,

yet so effective, was the outline of their tops. The spot was sheltered by a plantation from the prevailing winds from the south-west, and the soil was good, so that the trees were in favourable circumstances. A grove of Larches, including besides the common, the American, Japanese, and others, should be planted in every good garden, on a lawn, or in the pleasure grounds.

Portugal Laurels by the seaside.—For general planting near the sea the best shrubs are to be found among Evergreens, though some of these do not appear to thrive any better than the deciduous trees, and among the worst is the Portugal Laurel. Within the shelter of the low walls in front of the villa gardens facing the beach it grows, but above the shelter of the wall it makes

florim, and other winter and early spring-flowering plants. It is perfectly hardy; its blossoms are succeeded by its very handsome variegated leaves, so that the plant is an exceedingly interesting object at all seasons of the year, and it deserves to be more extensively planted than appears to be the case. It is well suited for a lawn plant or for the shrubby border. It naturally forms a spherical bush some 6 feet or 8 feet in height, and can readily be made to assume a pyramidal or standard form, and will succeed in any description of soil. It is a native of Austria, but has long been introduced to this country.—P. G.

The Minorca Box.—I look upon this as the handsomest of all the Boxes, and its large leathery foliage makes it distinct from all the varieties of the common kind. *Buxus balearica*, as it is botanically called, is indigenous to the Balearic



A young European Larch.

no progress, and the tops look as if they had been scorched by fire. Beside the Portugal Laurel, and fully exposed to the blast—and we should say within reach of the spray from the sea—the *Laurustinus* thrives amazingly, making a large and densely-furnished bush, such as is seldom seen in inland situations. It is quite a substitute for the Laurel.

Cornus mascula variegata.—The male Cornel or Dogwood among hardy flowering shrubs may be regarded as one of the earliest harbingers of spring, its numerous small umbels of unexpanded yellow flowers being sufficiently forward to render the plant very ornamental even as early as the middle of February. The flowers, however, remain long in the bud state, and being produced in great abundance render the plant a suitable companion for the *Chimonanthus*, *Jasminum nudi-*

and other islands in the Mediterranean, as well as to Italy and Turkey, where it forms a magnificent tree of from 60 feet to 80 feet in height. It was first introduced into Britain in 1780. The leaves are similar in form, but nearly four times as large as those of the common Box, and when grown exposed to the sun, of a much lighter green. They are thick and leathery in texture, and very abundantly set on the branches. The flowers are small and inconspicuous, of a light yellow colour, and generally expand in July. In our gardens it is only seen as a moderate-sized shrub: and, though very properly classed among hardy Evergreens, it only succeeds well in the milder districts or in well sheltered situations. Its habit of making late autumn growths renders it peculiarly susceptible of injury from frosts, by which the points, and sometimes the whole of the young

shoots, are destroyed. It is, notwithstanding, such a distinct and handsome species, that it should have a fair trial wherever a favourable situation is at command. As it thrives well in the shade, it is found useful for clothing walls or other buildings with aspects in which, from want of sun, few other Evergreens or flowering shrubs would succeed. It requires a dry porous soil and a warm subsoil. I met with some very fine bushes of it the other day, the largest, in fact, I have ever seen growing in a garden in Sussex, near Chichester, where the soil is of a chalky nature, yet warm and well drained. —G.

THE BEST EVERGREEN BARBERRIES.

Now that the planting season for Evergreens is at hand, it may be well to direct attention to the best kinds of Barberry to plant, as they are so indispensable in every shrubbery. Of the many species of *Berberis* in cultivation, which number over half a hundred, only about half a dozen amongst them are what may be termed really handsome shrubs, and although they differ widely in structural peculiarities, many of them possess a striking resemblance to each other. The genus is divided into two sections, the *Berberis* proper and the *Mahonia*, which sometimes ranks as a distinct genus. Among the true Barberries a few are really beautiful shrubs. The finest, no doubt, is *B. Darwini*, first discovered by the late Mr. Charles Darwin in Chili, and than which no more beautiful hardy shrub exists. This species is now too well known to need description. This year it has been very beautiful, the winter having been favourable to it, though even this season it has not been so fine as it was in the spring previous to the two disastrous winters of 1879 and 1880, which crippled it severely. Being a native of Chili, it will not stand any great degree of cold, and it is all the better for a mild spring. Next to *Darwini*'s Barberry in point of beauty is *B. stenophylla*, a garden hybrid between *B. Darwini* and *B. empetrifolia*. The long slender branches of this Barberry droop gracefully on all sides, making the bush, when profusely laden with blossoms, look like a fountain of molten gold. It is, moreover, a shrub that is not at all fastidious as to position, for it grows in shade as well as exposed, but it flowers most freely when in a good light soil in a warm, sunny situation. It is much hardier than *B. Darwini*, and seldom suffers from severe frosts. *B. empetrifolia*, though a fine shrub, is not equal to either of the preceding in point of floral beauty, but its habit of growth is elegant and it is very hardy. *B. dulcis* and *buxifolia* need only be grown where a variety of Barberries is required. Of the *Mahonia* section the commonest and most useful is, of course, *B. Aquifolium*, perhaps the most beautiful of all evergreen shrubs. As it is, or ought to be, in every garden, there is no need to describe it. Similar to it, but different in foliage and dwarf in growth, is *B. repens*, which makes a capital margin to larger groups. Less common kinds are *B. glumacea* and *fascicularis*, but they are not so desirable as *B. Aquifolium*. Even without reckoning the many varieties of the *Mahonia* section which are more or less rare, there is quite a wealth of beauty in the evergreen Barberries alone, and they can be obtained cheaply in nurseries. —W. G.

Hedges of False Acacia.—When the common Hawthorn cannot be got to grow as a hedge in dry arid soils, where one often sees the most miserable of stunted Moss-covered fences, common *Acacia* should be planted; it will thrive in such soils, and quickly form a strong fence. In very moist situations, in which the Thorn is equally a stranger, good fences may be made by planting Willows. The Willow rods should be crossed lattice fashion, as then a denser hedge is made in quicker time.

The Golden Arbor-vitæ.—The variety known as *Thuja occidentalis aurea* is a fine form of a well-known and one of the hardiest of all Conifers. It has a robust growth, an upright habit, and a suffusion of golden colour over the foliage. In autumn it

assumes a bronzy hue, and gradually changes to a golden one, retaining this till late in spring. The variegation being of a partial character, it does not decay in parts like the various variegated Conifers in which portions of the shoots are wholly blanched. —G.

Cupressus Lawsoniana filifera.—Like the intertexta variety, recently described, this is an extremely graceful variety, quite distinct from the various beautiful forms of the Lawson Cypress, inasmuch as it throws boldly out slender, undivided, drooping branches to a length of nearly 2 feet. In the second season of their growth these become tasselled at the points, and again throw forth slender branchlets—a peculiarity which will make it one of the most desirable and picturesque of evergreen trees. —W. G.

The Japanese Kerria.—The double-flowered variety of *Kerria japonica* is common enough, being a familiar shrub even in cottage gardens, but the single-flowered form of it, though a very pretty shrub, is uncommon; indeed, in but few gardens can it be seen. The variegated variety of it is also a charming plant, as everyone will admit who has seen the plants of it in full bloom—dense bushes covered with golden blossoms intermixed with silvery foliage. It is, however, decidedly less hardy than the double variety, and it is only as a cool greenhouse shrub that it develops its real beauty of foliage and flower. The major double variety and the variegated single variety of *Kerria* or *Corchorus japonicus* are well worth attention. —G.

Prunus triloba.—This delightful shrub will soon be bursting into a glow of coral-red buds and rosy pink-rosetted blossoms under the influence of the present mild weather, and a more beautiful sight in the spring garden cannot be found, and it is to be regretted that one only finds it in botanical gardens or in the best nurseries. As a standard it forms a low bush 3 feet or 4 feet high, and produces before the leaves appear fine, large, double, pale pink blossoms; the leaves are somewhat large, wrinkled, and of various shapes, some being broadly oval, with three acute lobes towards the apex, while others are oval and free from any lobes, but they are all coarsely serrated on the edges and bright green. It is a native of the north of China and quite hardy, but suffers from the spring frosts when in bloom and planted in the open border. It is seen to the best advantage and really thrives best when grown against a warm wall and pruned and trained as a Peach tree, except that, instead of every little shoot being nailed close to the wall, they should be allowed to hang free, as they are then most beautiful when wreathed with bloom. It has been named *Amygdalopsis Lindleyi* by a French writer. It is a very beautiful shrub. —W. G.

Insects on Peach trees (H. G. Bunnister).—The insects on your Peach tree are the Vine scale (*Pulvinaria vitis*). Brush the parts attacked by the insects with soft soap and water, and then scrape them with some blunt instrument, or rub them well with a stiff brush, to remove the insects and their eggs. Then dress the shoots with $\frac{1}{2}$ lb. of soft soap, 1 lb. flowers of sulphur, $\frac{3}{4}$ oz. of black pepper, boiled in 4 gallons of water for twenty minutes, thicken with lime until of the consistency of paint; or, sixteen parts of kerosene, three parts of condensed milk, and six parts of water: mix the milk and the water together before adding the oil; then churn until the whole solidifies, add fifteen times its quantity of water and use at once, or the butter rises and the solution is imperfect. —G. S. S.

HEREWITH I enclose some leaves of Marguerites, which are, as you will see, affected with something like the Celery fly. Can you give its name? Also a hint how to destroy it. Our plants are large, 3 feet to 4 feet through, and were in perfect health before this visitor put in an appearance. Kindly reply in your next issue of THE GARDEN. —T. WEAVER.

Your Chrysanthemums have been attacked by the grubs of a small fly (*Phytomyza albis*). Pick off all the infested leaves and burn them. If the leaves are held up to the light, the position of the grubs will be clearly seen. —ET.

I FORWARD a few tiny insects which I should be glad if any of your correspondents could identify. I should like to know their name, and if harmless. They have been very plentiful in the hair seating of my sitting-room furniture. What means could be used for their eradication? —HELVETIA.

* The small insects you forwarded for examination are

mites. They probably feed on the hair or wool with which your furniture is stuffed. The best remedy would be to remove the stuffing and bake it thoroughly. I do not think any fumigation would reach them, and liquid insecticides would give more trouble to apply than baking. —G. S. S.

SOCIETIES AND EXHIBITIONS.

CRYSTAL PALACE.

MARCH 26.

THIS, the opening show of the season, held last Saturday, was rendered very attractive by the miscellaneous groups of spring-flowering plants, comprising the *Narcissi* sent by Messrs. Barr & Son, Mr. Thomas S. Ware, and Messrs. Collins & Gabriel. *Cyclamens* were also well represented by fine collections sent by Mr. Odell and the St. George's Nursery Company (Mr. H. B. Smith, manager). The *Hyacinths*, *Tulips*, *Narcissi*, &c., staged by Messrs. H. Williams & Son and Mr. H. R. Wright were also very good. Messrs. Paul & Son exhibited a beautiful group of *Roses* and alpine plants, notices of which were made last week in the reports of the Royal Botanic and Royal Horticultural Societies' meetings. Mr. Rumsey, Joyning's Nursery, Waltham Cross, staged a very meritorious group of standard and bush *Roses*, noticeable being *Duc de Montpensier*, a highly-coloured variety; *Madame Montet*, pink, a fine full flower; *Prince Camille de Rohan*; *Madame Gabriel Luizet*, pink; and *Magna Charta*, a large full flower.

Messrs. John Laing & Co., Forest Hill, staged a very pretty group of *Orchids*, intermixed with *Palms*, *Asparagus plumosus nanus*, and other fine-foliaged plants. Worthy of note among the *Orchids* were fine examples of *Cattleya Trianae*, *Dendrobium Wardianum*, *Angraecum citratum*, *Dendrobium crassinode*, and several others. A fine plant of *Clematis indivisa lobata* was also conspicuous; as also a variety of *Imantophyllum*, named *sulphureum*. Messrs. Laing also exhibited a basket of beautiful blooms of *Marchal Niel Rose*.

Messrs. Cheal & Sons, Crawley, sent a collection of a hundred varieties of *Apples*, very good for the season. Conspicuous were *Sturmer Pippin*, *Beauty of Kent*, *French Crab*, *Claygate Pearmain*, and *Leathercoat Russet*, an unevenly-formed, dark russet variety.

Messrs. Wood & Son, Wood Green, and the Horticultural Company, Tunbridge Wells, exhibited samples of their manures and horticultural requisites.

In the class for *Cinerarias*, Mr. James was an easy first with large, well-grown specimens, measuring about 2 feet in diameter, the individual flowers being large and of fine form.

Messrs. Paul & Son staged the only group of *Amaryllis*, conspicuous being a fine dark variety, named *Lord Wolseley*.

First-class certificates were awarded to the following plants, viz.:—

Rose Princess Beatrice, a Hybrid Tea, with flowers of a creamy yellow, the flowers when young with a slight shade of pink; this will no doubt become a very useful variety. Shown by Mr. Bennett.

Cineraria Monarch, a large, dark, purplish violet variety; *Blue Bonnet*, distinct blue edges and white centre; *Stella*, purple, with narrow white disc; *Dante*, a very large flower, the outside of the petals purple shaded with magenta, the centre white; *Admiration*, white with lilac-shaded edges. All shown by Mr. James.

Imantophyllum sulphureum, a bright-coloured variety. Shown by Mr. John Laing.

Brownea coccinea hybrida, a bright coloured variety of this uncommon, yet when in flower very handsome, class of plants. Shown by Mr. Head, garden superintendent.

Cyclamen Royal Jubilee, a dark purple variety. Exhibited by Mr. Odell.

A detailed prize list will be found in our advertising columns.

WILL any reader kindly give in these columns the treatment of *Vallotas*, so as to produce large plants as sometimes seen at exhibitions?—ONE ANXIOUS TO GROW THEM.

I SEND you a photograph of a house with a specimen of *Clematis indivisa*. It does not do it justice, but it gives

some idea of its exquisite beauty. I have too in full bloom in the same house an *Akebia*, and its rich chocolate blooms contrast well with the white of the Clematis.—REGINALD KELLY, *Kelly Linton, Devonshire.*

A charming idea. The reduction of the photograph would be so great to suit our purpose, that we are unable to engrave it. Perhaps Mr. Kelly may one day have a smaller photograph done, of which, if suitable, we shall be pleased to make an engraving.—ED.

NOTES OF THE WEEK.

Frost report.—From a notice in our advertising columns it will be seen that Fellows of the Royal Horticultural Society can obtain copies of this on application to the assistant secretary, South Kensington.

M. Bergman—In reference to the testimonial to be presented to M. Bergman mentioned in THE GARDEN (p. 271), we note that all subscriptions may be paid to M. Chouveau, 84, Rue de Grenelle, Saint-Germain à Paris. The subscription list will be closed on May 1.

I SEND you a few coloured Primroses. They are now coming into flower fast since the snow cleared away. The high coloured Primroses are quite as early if not earlier in flowering than the common yellow one.—R. D.

A fine variety of this favourite flower, the flowers very highly coloured.—ED.

We have received from the director of the Royal Botanic Gardens, Kew, the March number of the Bulletin of Miscellaneous Information, containing notes on fibre plants, and dealing with the fibres derived from plants yielding what are known in commerce as Sisal Hemp, Manila Hemp, Bowstring Hemp, and Mauritius Hemp.

Cinerarias.—We have received from Messrs. Oakshott and Millard specimens of the flowers of their strain of improved large-flowering Cinerarias.

The flowers sent were large, of fine form and substance. The colours also were very rich, more especially in the case of the purple-flowered varieties.—ED.

Amaryllis Dr. Masters.—This variety has bold, showy flowers, which should render it popular with all lovers of plants. The flowers of this variety are upwards of 6 inches across, of excellent form and substance, whilst the colour is deep carmine-scarlet, entirely free from any tinge of green. We noticed this in great beauty recently at The Woodlands, Streatham.

Narcissus Ard-Righ or Yellow King.—This is now flowering here, from bulbs received from Mr. Hartland, Temple Hill, Cork. *Narcissus obvallaris* is also in flower. They are both growing under the same conditions as regards soil and situation. Bulbs of Ard-Righ received from Rev. Wolley Deol are not yet in bloom.—J. WALKER, *Whitton, Middlesex.*

Camellia Lady Clancarty.—From Mr. Gordon, Twickenham, we have received blooms of this pure white *Camellia*, in which the petals are curiously superposed. Mr. Gordon also sends blooms of a Japanese *Azalea*, named *hikae*, with flowers of a pale blue colour.

The *Camellia* on arrival had fallen to pieces, and we were unable to form an opinion regarding it. The *Azalea* was of a whitish lilac colour, and rather thin in petal.

Narcissus show.—The Scilly Islands Bulb and Flower Association held its annual Narcissus show on Tuesday, March 22, and, judging from the number of entries, 540 as compared with 360 of last year, it was a great success. The exhibits occupied 400 feet of staging. Mr. J. A. Dorrien-Smith, the proprietor of the Islands, contributed, not for competition, 162 varieties of Narcissi. All the flowers were grown in the open air.

Arisæmas.—These highly interesting plants belong to the Arum family; they abound in the moist forests of Northern India, in similar situations throughout the Indian Islands, and in various other localities. One or two kinds are now in flower at Kew, amongst which may be noted *A. præcox*, from Japan. This has trifoliate leaves, the leaflets of which are oblong-ovate with tail-like points, strongly nerved and deep green. The spathe is erect and rolled round the spadix at the base, the hooded part bending over the throat. The outside is conspicuously banded with bright green and white, the inner portion and the throat being purplish black. A speciosum comes from the Himalayan forests. In this the stems of the trifoliate leaves are green, mottled and banded with dull purple, somewhat resembling a serpent's back. The spathe is hooded, with the tapering point reflexed; purplish black within, striped with white; the spadix extends into a slender reddish purple tail some 18 inches or more long. Another species from the Philippine Islands which we recently saw in Mr. Bull's nursery at Chelsea has trifoliate leaves, and ovate-acute, deep green leaflets. The spathe is cylindrical at the base, the open portion being brownish purple, netted and streaked with white; the tip of the spadix is about a foot in length, densely clothed with long, purplish

filaments. Other remarkable and beautiful kinds are *A. concinnum*, from Sikkim, with a digitate leaf, and a large, hooded spathe, the upper part of which is very acuminate, and bent over the throat, alternately striped with bands of purple and white; *A. papillosum*, from Ceylon, with green spathe, banded with white; another Ceylon species, *A. Wightii*, having a light green spathe, banded with deep green, and the end of the spadix 6 inches long, erect, greenish white.—G.

British Primroses.—Mr. G. F. Wilson, of Weybridge Heath, charms us with his handsome British Primroses; they are later this year than usual, but still they are welcome on the last day of March. It is surprising what rich and varied colours these native Primroses show already. Certainly there are no other Primroses so good. Mr. Wilson also sends us some pretty single Hepaticas, of which we shall probably have more varieties than of old and the more the better, for they are hardly little things that, if they get a chance among low bushes, will always reward the planter.

Tinnea æthiopica.—This is a neat, bushy plant belonging to the Sage family. It first flowered in this country some twenty years ago, having been introduced by Mlle. Tinne, who gathered it during her Nile journey a few years previously. It is a compact, twiggy shrub, bearing somewhat ovate, smooth, deep green leaves, and attains a height of 5 feet or 6 feet, but commences to flower when not much more than 9 inches or 10 inches high. When young the flowers are produced singly from the bases of all the leaves on the upper branches, but as the plant increases in size and age the blooms are produced on long terminal spikes, and also on shorter ones from the axils of the leaves. The flowers are deep purplish maroon, and yield a grateful perfume, somewhat resembling that of Violets. We recently noticed this plant in Sir Trevor Lawrence's garden at Dorking.—G.

Azalea mollis.—A large group of this useful Japanese plant is just now very ornamental in Mr. Cutbush's nursery at Highgate, the colours ranging from soft primrose to yellow, orange, and reddish orange. This is a plant which well deserves the attention of those desirous to possess showy flowers during the dull winter months. They may be grown in the open ground during summer, lifted and potted in autumn, when the protection of a cold frame should be given them. If a few plants from time to time are placed in the cool stove a continuance of their showy flowers may be had from Christmas up to the time when the open-air plants expand naturally. There is a great variety in the colour of these plants, as they are reproduced by seeds. Some few, however, have been obtained by the Messrs. Cutbush, which are undoubtedly deserving distinction. Of these the most notable are The Queen, very compact in habit, with large pale primrose-coloured flowers; Lord Shaftesbury, rich golden yellow; Alphonse Lavallée, orange, shaded with scarlet and blotched with pale yellow; Consul Pécher, brilliant rose, blotched with orange; and Ernest Bach, pure salmon

Amaryllids at Holloway.—These plants have for many years been steadily worked upon by Mr. Williams, with the view of improving them in the colour, size, and form of the flowers. The numerous fine forms which have from time to time emanated from this establishment bear ample testimony to the success of these endeavours. Mr. Williams says Amaryllids are best potted just after they have done flowering, and the soil should be composed of three parts good turfy loam, one part leaf-mould with some sharp sand added. They should be placed in an intermediate house during the growing season, and treated liberally to water, and to liquid manure more sparingly. After growth is completed, the supply of water should be gradually decreased until it is entirely withheld, when the plants may be removed into a lower temperature, and stored away until required. Amongst the most notable kinds now flowering and contributing their quota to the spring show are Dr. Masters, a fine, bold flower, upwards of 6 inches across, the colour being wholly deep crimson-scarlet; Empress of India, rich crimson, flaked, and having a green base; Harry Williams, flowers very large, reddish purple, flaked with white; Joseph

Broom and Guiding Star are also two very fine forms; so also is Mrs. Rawson, deep reddish crimson, margined with white; Miss E. Holford, crimson, netted with purple, base light green, flaked with rose; Beana, crimson, veined with black, and a green centre; Dr. Bernardo, Marshalli, and many others.—G.

Marguerite Cloth of Gold.—I send for your inspection a few blooms of my new Marguerite Cloth of Gold. This is a chance seedling, raised by sowing seed from several varieties grown together. It can be had in bloom all the year round, and for cut blooms it lasts ten to fourteen days. It grows in pots from 18 inches to 24 inches high. Planted out, I have no doubt it would form a handsome bush and throw abundance of blossom.—ROBERT OWEN, *Mouthhead.*

** The flowers sent were large, of a very bright yellow, and no doubt will be much prized for cutting when their merits become known. A useful addition to this class of plants.—ED.

White Daffodils.—These certainly are worthy of notice when seen in all their beauty, as they are here at present—such lovely forms as Leda, Bishop Mann, Gladys, Colleen Bawn, Minnie Warren, Mr. Barr's tortuosus, and others. But the subject to which I wish to draw attention is the difference between Leda and tortuosus. The distinguishing character of Leda is the foliage, which is erect and narrow (not spreading, as tortuosus), of a glaucous colour on the surface, whilst underneath it is pale, amounting almost to white. The flower-stem is fully 18 inches long; the segments are white, and the trumpet comes out a beautiful cream colour, and in the course of a few days tones off snow-white.—Geo. HAGGERTY, *Tenple Hill, Cork.*

Imantophyllum miniatum at Holloway.—These plants are grown extensively by Mr. Williams, and the grand display made by a large houseful of specimens in bloom is just now a striking feature of the establishment. Many contend that the variations in size and colour here represented are simply brought about by good culture. This theory, however, is disproved by the fact of the typical plant which has been grown under the same treatment, and which may be seen flowering side by side with varieties which fully prove the inferiority of the type. These improved varieties have been obtained by Mr. Williams in various ways by cross-fertilising and selecting the finest forms arising therefrom, and by the introduction of various fine forms from Continental growers of this plant. A few of the most notable kinds now to be seen at Holloway are Meteor, cruentum, Martha Reimers, Baroness Schreder, Van Houttei, miniatum splendens, and Ambroise Verschaffelt. These are all remarkable for their large, dense heads of flowers, and for the size and colour of their individual blooms. The colour of all the varieties is orange-scarlet or orange-vermilion, with a yellow base of more or less intensity of shade; they vary also considerably in the depth and width of the perianth. These plants should be potted in somewhat rich sandy loam, and as they form large and thick fleshy roots, ample pot-room should be given them. They grow well in an ordinary greenhouse, but thrive best and flower most freely when treated to the warmth of an intermediate house.—G.

Names of plants.—*H. M. L.*—*Ornithogalum arabicum.*—*G. T.*—1, *Iris reticulata*; 2, *Collinsia verna*; 3, *Jasminum multiflorum*; 4, *Hepatica trilobata*; 5, double form of same.—*T. J.*—A flowering spray of *Asparagus plumosus.*—*Flora.*—1, *Sparmannia africana*; 2, *Habrothamnus elegans*; 3, *Correa cardinalis.*—*T. G. Bolton.*—1, *Lastrea decomposita*; 2, *Davallia filix-avis*; 3, *Arostichum aureum*; 4, *Trichomanes trichoides.*—*A. H.*—*Lycaste Hartsonae.*—*H. T. M.*—1, *Dendrobium Jamesianum*; 2, *D. crissalode*; 3, *Dendrobium filiforme*; 4, *Dendrobium linguiforme.*—*R. Smith.*—1, *Epiphyllum truncatum violaceum*; 2, *Selaginella viticulosa*; 3, *Blechnum occidentale*; 4, *Phymatodes peltica.*—*A. T.*—*Bacon.*—*Lycaste Hartsonae.*—*J. R.*—Cannot name varieties of *Camellias.*—*F. R.*—*Cymbidium sinense*; 2, *Lycaste gigantea*; 3, *Dendrobium Johannis.*—*Cap.*—1, *Leucodendron argenteum*; 2, *L. grandiflorum*; 3, *Erica Banksii.*—*C. H.*—1, fruit of the water Caltrop (*Trapa bicornis*); they are largely eaten in China.—*G. T.*—*Ripley.*—1, *Selaginella Lyallii*; 2, *Gymnogramma sulphurea*; 3, *Dictyogramma japonica*; 4, *Trichomanes crispum.*—*Ramsd.*—1, *Boronia megastigma*; 2, *Epacris pulchella.*

Names of fruits.—*R. Smit h.*—Pears not recognised.

WOODS & FORESTS.

"YORKSHIREMAN."

USELESSNESS OF TRENCHING FOR
TIMBER TREES.

THE following examples will show what little benefit arises from trenching the ground to the extent practicable in the case of forest trees. Almost everywhere near here the top soil is extremely shallow, just a plough's depth and no more. Below, the subsoil consists of brashy, yellowish rock, much disintegrated and loosened, but preserving the formation. Under this, a good many feet from the surface, but varying in that respect, comes the "bind," a blue clayish-looking shale that lies above the coal. It is in the upper strata that the trees grow, the brashy loose rock containing no soil in the proper sense of the word whatever. Some years ago in sinking for water this rock was found permeated with the roots of the timber trees to the depth of 10 feet and 12 feet, they having penetrated the seams in every direction. At one place an immense worm was found at that depth. There was no top soil worth speaking of; the trees grew in the rock above and drew their nourishment therefrom. Yet the trees grown in this poor stuff are large and healthy, from 100 to 200 years old, and consist of Spanish Chestnuts, with more than 150 feet in them; Beeches, a little less; Oaks, Walnuts, Ash, and Elms. To look at the subsoil, it is, perhaps, about as unlikely a medium in which to grow timber trees as could be found, but the facts are as I give them, and apply to almost the whole of the estate, which is well wooded to the extent of several thousand acres. Trees seem to have a far greater power of accommodating themselves to soils than vegetables. On several estates here, the "pit hills," as the mounds of blue bind or shale sent out of the pits are termed, have been planted just as they were with mixed collections, consisting of Larch, Firs, and the usual deciduous trees, all of which grow freely in material that cannot be called soil at all. We thinned the other week a plantation of this sort—cutting out the smothered weaklings for stakes and Pea sticks—that was planted about twenty-three years ago, and many of the trees are between 20 feet and 30 feet high. The Larch and Spruce do worst, but the deciduous trees seem as if they would make useful timber by-and-by. Curiously enough, however, neither the subsoil before mentioned nor this shale suit farm or garden crops, and whenever the subsoil has been brought up in either case in order to deepen the tilth the result has been bad for all kinds of surface crops, until the soil had been worked and manured for several years and incorporated with the surface layer.

FORESTRY MANAGEMENT.—Reverting to the growing of timber on those estates near the borders, the praises of which were sung at the forestry exhibition, and the results of which have been published under the title of "Timber-growing as an Investment," I am reminded that, although the plantations in question and many others of the same kind are mostly from 30 to 130 years of age and comprise Spruce and Scotch Fir, which would be easily and cheaply transported to the Yorkshire, Durham, Cumberland, and Scotch coalfields if necessary, yet the Norway Spruce poles hold the market, not a foot of home-grown Spruce being disposable for the same purposes, viz., pit props, which alone are imported annually to the value of hundreds of thousands of pounds. These Norway and Swedish props are, I am told, grown without any scientific management whatever, and at

such a quantity to the acre as would pay home growers on a scale they never dreamt of in their wildest moments of scientific enthusiasm. And why are these Scotch and border Spruces shut out of the market? Because they have been grown on a wrong principle, and are too rough and unsuitable for any purpose but wild pigeons building their nests on. I stumbled the other day on a small quantity of English common Spruce laid down for odd purposes at 5d. per foot beside a pile of Norway props delivered on the same spot at 9d. per foot, and which foresters in this country could get for the same if they could grow them. I was so struck with the contrast between the two samples of the same kind of timber—the one, an example of English forestry management, and the other, of Nature's management—that I fetched two props away with me, and I have them now drying in my office, and I purpose sending them to your office for you to see, after which you might try the two as firewood.

USEFUL FENCES.

SPRUCE HEDGES.—In Northern England, at least, these are not at all common, but travel through some, indeed most, of the Scotch counties and you will see them in abundance, every farmer knowing well how admirably adapted the Spruce Fir is as a shelter-giver to his house and steading. Perthshire, in particular, abounds with beautiful, well-kept Spruce hedges—hedges, or rather wind barriers of from 20 feet to 30 feet in height, evensided from repeated and careful pruning, and in every way well fitted for the important purpose intended.

At first, the young Spruces are planted at 4 feet apart, and after a few years every alternate one is taken out, the remainder headed down or deprived of their leaders, thus inducing a bushy, stunted habit of growth, and well-branched stem down to the very ground surface. Every year afterwards a certain length of the topmost shoots is removed, until the fence is of the desired height, when all it requires is an annual cutting or trimming of the side branches. Thus treated, it is wonderful how dense and thick the fence becomes, and what an amount of shelter it affords is just as surprising. At a distance, a well-kept Spruce Fir hedge cannot be distinguished from one made of Yew, the foliage, colour, and density of growth being almost akin in both plants. The poisonous qualities of the Yew quite preclude its use for farmers' fences, else no better plant as a shelter-giver can be found; but the Spruce Fir has several qualities that justly entitle it to fill the place of the latter, such as the great height to which it can be trained as a hedge plant, the amount of shelter it affords, as well as the remarkably pleasing appearance it presents when well managed and kept in bounds. Few soils come wrong to the Spruce—wet or dry, loamy or peaty—indeed, it has, as a hedge plant, special peculiarities in this way, for even in water-logged ground it grows away quickly, and puts on a richness of colour that few other plants can imitate.

ARBOR-VITE HEDGES.—Perhaps there are few evergreen plants that are not adapted in some way or another for the formation of live fences, but some are decidedly superior to others, and the American Arbor-vite may be ranked in the latter class. To those who have only seen the plant under notice as a straggling, limp-branched standard specimen the above recommendation may seem somewhat out of place, but "seeing is believing," and I had the satisfaction not many days ago of being shown as nice and densely compact a hedge of this Arbor-vite as any hard-to-please gardener would care to see. The plants had been placed about 15 inches apart and in single line, the ground being well prepared previously by deep digging and enriching with nursery compost. At present the fence is 5 feet high, and in shape a round-shouldered wedge of

barely 2 feet through, as dense and strong as could be well desired, and with a pretty bronzy green tint that one does not meet with in live fences every day. I do not think that I would recommend such a plant as this Arbor-vite for the formation of farm fences, or of those to which cattle would have access, but for a screen fence in ornamental grounds, such as on the lawn, in the home nursery, or similar places it has certainly all the good qualities that are necessary for hedges in such places. Trimming and pruning it bears well—better, indeed, than a person who is well acquainted with the plant as a standard would be led to infer. Another useful Arbor-vite that one unfortunately sees far too seldom is a variety of the above, named *Vervaeana*, a dense, upright-growing tree with light green, almost golden, foliage, and a remarkably robust constitution. For hedges it is even preferable to the species, having a far more fastigate habit of growth, being of less size, and in colour of foliage decidedly preferable. It stands rough winds in a very satisfactory way, grows vigorously in either peat or loam, is of easy nursery management, and bears the pruning-hook or shears with impunity.

GORSE HEDGES.—How seldom we see the Gorse treated in anything like a proper manner, either for underwood or as hedges. For planting on dry ridges raised a little above the general level of the ground and in high-lying districts it is particularly well adapted, but to preserve it in anything like a satisfactory condition either as a fence or for covert purposes, yearly cutting over of the plants must be attended to. By cutting the Gorse plants over in early spring they soon send up abundance of shoots that are clothed to the ground with a dense green growth, this latter being wanting entirely in old plants, and which gives to them such a lank, bare appearance, and renders them quite unsuited either as a fence or for covert purposes. To raise hedges or banks of the Gorse is simple indeed, for all that is required is to sow good seeds in spring, and by the following season a dense growth of young plants will be observable all over the surface. We frequently, when forming plantations at high elevations, prepare a strip of ground—say a couple of feet wide—all along the line of fence that surrounds the wood and sow Gorse seeds upon it, and when the plants have attained to 3 feet or 4 feet in height they afford a wonderful amount of shelter to the young trees as well as impart a clothed appearance to the exterior of the woodlands. In preparing the ground in such situations little expense or trouble need be expended, all that is necessary being to dig over one spade deep along the intended line of fence, level the surface with a rake, and sow the seeds. No weeding is usually required, for the dense growth of the young plants is sufficient to kill out any rivals in the shape of Grasses, &c. By thus forming a screen or belt of the Gorse around the wood seedlings soon spring up all over the interior, but principally in such places as an abundance of light and air is admitted to, and thus underwood is cheaply and effectually got up.

A. D. WEISTER.

Destroying stumps of trees.—The following recipe is reported to have proved very successful in the backwoods of America: In the autumn bore a hole 1 inch or 2 inches in diameter and 18 inches deep, put in 1½ oz. of saltpetre, fill with water and plug up close. In the following spring put in the same hole half a gill of kerosene oil, and then light. The stump will smoulder away without blazing, even down to every part of the roots, leaving nothing but ashes.

Hedges are undoubtedly going out of fashion everywhere. At one time they were preferred to dry walls on gentlemen's estates because of their more ornamental appearance, but a Quick Thorn hedge, however well trimmed, is not now regarded as the most useful, the cheapest, or the best looking fence. On farm lands fences of some kind—it does not matter much what—will always be necessary; but in parks around mansions the tendency is to abolish fences altogether, or at all events to keep them out of

sight as much as possible. Some years ago it was suggested to a nobleman, who took much interest in planting and landscape gardening, that the prospect in many instances was marred by the trim hedges which enclosed even the smallest patches of wood or copse from the parks, giving a stiffness and formality to the landscape which was noticeable even by those who did not always detect the cause itself. Wherever possible the hedges were removed in time, and strained iron fences substituted instead with the most marked improvement. At a distance these fences were hardly noticeable, and the absence of visible barriers tended to give a much opener and more natural aspect to the landscape.—S.

PARK AND OTHER ROADS.

THE remarks in last week's issue on park roads by "J. S." were very good, and if they are followed by all those who have roads to make, I am sure the estate roads of the future will be far better than many now used.

Following "J. S.'s" instructions, a few remarks on the materials suitable for covering roads may not be out of place. The following is an enumeration in order of fitness, with the specific fitness of each for the purpose:—

1. *Green whinstone* is undoubtedly, of all other materials, the best adapted for the covering of roads. It combines great hardness with toughness; it breaks with clean, solid angles in its fracture—a property which adapts its particles for binding into a solid mass with a smooth surface. This stone, when of the right variety, possesses every property for forming the best and most durable road covering. There is, however, a variety of whinstone or basalt of a very dark colour which, although very hard when quarried, speedily disintegrates into a soft, powdery substance by the action of the atmosphere, and is, therefore, unfitted for the covering of roads subject to heavy traffic.

2. *Granite*, equally as tough, if not tougher than the best whinstone, is coarser in texture, not so hard or the fracture so clean as whinstone, from which it will readily be understood not to have an equal property of binding into a solid mass with so smooth a surface as whinstone.

3. *Flints* are extremely hard, but deficient in toughness, and therefore easily break down into sand under heavy traffic, although, to the extent of their durability, they form a smooth surface when properly prepared.

4. *Limestones*.—With the exception of soft chalks, which are unfitted for the covering of roads, all bind well into a smooth surface; but all being affected by atmospheric action, even the hardest is less durable than any of the materials previously noticed.

5. *Gravel*, by which term is to be understood the mixture of various sizes and descriptions of water-worn stones, frequently found in beds of various thicknesses near the surface of the soil. These, of course, partake in their leading properties of the character of the nodules which mostly prevail in the mixture. When the gravel is clear of soil, and the nodules of a homogeneous character—which is seldom the case—broken into angular pieces, it frequently makes an excellent and durable covering for roads.

6. *Sandstone* has its particles too slightly cohering for the purpose of road-making where there may be a considerable amount of traffic. It is, however, a most suitable material for the pitching or rough pavement for underlaying the surface when a road is so constructed.

Besides the natural stones noticed above, the slag from the smelting of iron ore makes excellent roads in summer and in dry weather; but, it being frequently a soluble silicate of lime, it generally dissolves into viscous mud in winter and in wet weather. In order to avoid the expense of cost of carriage, the material for road-making will generally be what can be obtained in the neighbourhood of the road to be made.

A matter of much importance in road-making

is that hard and soft materials should never be used in mixture, but should be used in separate strata or in different parts of the road, for the harder crushes the softer when used together, and causes the road to be more speedily worn than when it is made entirely of soft material. It is best when circumstances compel the use of a portion of soft material, or of materials of different degrees of hardness, in the construction of a road, to spread the softest in the lowest stratum, and the hardest at the surface, using that of intermediate quality between. A. T. PATERSON.

Grafting Conifers.—The grafting of choice Conifers may be performed early in spring or about the month of August. For this purpose two-year-old stocks are preferable, as it is desirable that the stock and scion should be as near of a size as possible. They should be established in 3-inch pots, and if it be intended to use them early in the spring they should be kept during the winter in cold frames. There are several methods of grafting Conifers, but ordinary side-grafting is in most cases the best. This operation consists in making a clean cut in the stem downwards about an inch in length, then at its termination making a transverse cut, thus removing a piece of the bark-wood clean away from the side of the stock. The scion should be cut off clean and square at the end, and a piece of the wood should be shaved off about equal in length to the cut on the stock. The butt-end of the scion should then be placed upon the notch cut in the stock, taking care that the bark on one side meets exactly the whole length of the cut. The great aim in this operation is so to cut the scion and stock that the former when fitted on nearly replaces the piece removed. The scion being thus fitted must be held firmly in its place by the thumb of the left hand and tied on with bast or wool so that it does not afterwards shift. When the scion is very small, or the stock much out of proportion to it, another method may be practised. This consists in simply making an incision obliquely in the stock, the scion being so cut that one side of it forms a sharp edge, in order that it may be easily inserted therein, the bark of the scion thus coming level with that of the stock. This is a neat and expeditious method, as when united it is difficult to perceive the union. The cuts must be cleanly made with a sharp knife, and the incision in the stock and the cut on the scion should correspond in length as nearly as possible. This latter method scarcely needs tying, as if properly done the scion will not easily move, and it quickly unites to the stock.

How wood is made.—In many trees the annual layers are so regular, and seem to be placed so nicely, that one not a botanist might be pardoned for believing that the sap was changed to wood matter in the leaves, and the new-formed matter sent down, sliding over the old layer like the section of a telescope; but, though the food was prepared by the leaves in a great measure, the actual growth was made by the germination of some of the cells along the whole outside wall of last year's wood beneath the inner bark. The germination of the cells takes place about the middle of June. Take a healthy Cherry tree and strip it entirely of its bark to any length desired. At that season a viscid liquid will be found covering the woody surface in abundance. The stripped part is covered with a cloth to prevent evaporation, and in a few days numerous dots, like needle points, will be seen about the sixteenth of an inch apart all over the surface. These are the young cells which have germinated from those of last year. They continue germinating, one from the other, until they meet, when they unite and form a complete surface. In the autumn a layer of wood will be found just as thick as in the part of the tree not disbarked, and a single layer of liber, with its outer coat of cellular matter—perfect bark—will have been formed over the whole. The entire formation of wood and bark can thus be seen by the ordinary observer without the necessity of any nice microscopical work. Other people have tried the experiment with other trees. We have seen large Apple trees that have had their bark peeled wholly off from their trunks, at the season named, make an entire new layer of bark and

wood, not only with no injury to the tree, but to its manifest enjoyment; but our own experiments were confined exclusively to the Cherry. By this experiment we learn that there is no difference primarily in any part of the annual covering. The same cell may become permanent tissue or generative tissue, and from the generative tissue may come, before the season of growth closes, every form of structure known to anatomists, from pure wood to the outermost cuticle of the bark. How these cells become differentiated may be passed over here. We know that cell-growth is not always uniform in its operations. The law that changes the outermost series of newly made cells into liber need not necessarily operate so exactly as to make them perfect to this end—a few may be thrown off into the liber as generative tissue—and, granting this possibility, we see how the woody granules in the Apple are formed.

SEASONABLE WORK.

FINISH thinning plantations before the buds begin to expand, as a sudden admission of cold air to a plantation after the trees have commenced leafing is injurious, especially to Larch growing on exposed situations at a high elevation. Arrange felled timber into lots, each of which should be numbered and valued, and the particulars recorded in the forester's note-book which will be useful as a reference at the time of sale. Finish planting deciduous and other trees on dry situations as soon as possible, if not already done. Peat bog and soils that retain excess of moisture, and are apt to swell by frost and eject the plants, may be successfully planted at the end of March and beginning of April. Examine all recently-formed plantations, and have all failures and vacancies carefully re-planted, and in doing so extra care is necessary at this season not to expose the roots to the influence of drying weather.

In favourable weather finish the sowing of seeds of all deciduous trees. Plant out seedlings into nursery lines, and transplant the stock to be retained in the nursery for another year, which will encourage the formation of fibrous roots; such plants as are not to be removed should be dug between the lines in order to keep down weeds and stimulate healthy growth. Dig and prepare ground for seed-beds of Conifers, and in places where the ground is poor and exhausted, a dressing of vegetable mould or well-rotted manure may be applied with advantage.

Nursery ground that has carried a succession of trees for a number of years, and thereby become exhausted, will be much improved and renewed by planting it for one year with Potatoes or Turnips, which is the best preparation for ground to be sown with tree seeds in autumn. In favourable weather commence to graft those kinds of forest and ornamental trees usually propagated in that way. Gather seeds of the common and hybrid Rhododendrons, and in places where the latter have been growing in groups of different kinds and colours, the seedlings raised from their seeds often produce new varieties which are more attractive, and much more valuable than such as are raised from the seed of the common *R. ponticum*.

Clean drains where necessary, and collect the leaves in heaps to rot, which will be useful as manure. As March and April are the best months for drying and seasoning timber, no time should be lost in having a suitable quantity cut up into boarding, planking, and scantling of different sizes for the requirements of the estate. Examine and mark Oak trees in forest, field, and park that are to be removed, so that there may be no delay when the barking season commences. Secure trees so as to prevent wind-waving, and mulch such as have been recently planted. J. B. WEBSTER.

SHORT NOTE.—WOODS AND FORESTS.

Trees to succeed Scotch Fir.—What kinds of trees would be most likely to succeed if planted after the Scotch Fir, and without the ground being cleared? The situation is high and exposed.—S. N.
Beech, Sycamore, and Ash will form as good a succession to any of the Fir tribe as can be found; these are three quick-growing and profitable trees, and none stand exposure better. They attain to large dimensions, 1200 feet above the sea in Yorkshire, fully exposed. Plant thick.—YORKSHIRE MAN.

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"This is an Art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—*Shakespeare*.

FRUIT GARDEN.

W. COLEMAN.

THINNING FRUIT BLOSSOMS.

A CORRESPONDENT says the thinning of the flowers on Peach trees is not so much practised as it might be. Why is this important operation neglected? It is not new, for I learned it many years ago from a very old friend, who, nearly a century ago, was forcing foreman at Woburn Abbey. It is not unknown, as I have frequently advised readers of the calendar to rub off all the pendent blossom buds before they open. Vigorous trees in the heyday of their youth do not require this attention; in fact, they often set best when all the flowers are allowed to expand, but once settled down into a thoroughly fertile condition, it is not unusual to find them producing 80 per cent. more flower-buds than are needful for the crop of fruit. Heavy cropping, poor soil, unkind stocks, one or all check the growth of wood and favour the formation of flower-buds. These often set as thickly as Peas in a pod and swell to a certain size, when the weakest make a dead stand, and those produced from the finest and strongest flowers push forward, and are selected as the fittest. Thinning in accordance with ordinary practice is then commenced, and although there prevails an impression that flowering and setting does not weaken the trees to any serious extent, the fact that the fruits left on the shoots at once start away with a rush goes far to prove that their size and safety might have been increased by thinning off the inferior blossom-buds. To disbud a set of large Peach trees as plantsmen disbud their Roses and Chrysanthemums would be a ponderous task, which few might care to undertake, but this method I do not consider necessary, as the removal of the two guard buds from all triples would involve much care and patience. Floriferous Peach trees under glass produce complete whorls of buds from 1 foot to 2 feet in length, those on the upper sides of the shoots being most valuable. These I always leave intact, but remove all pendent buds by drawing the finger rather sharply down the undersides of the shoots as soon as they begin to swell. By this means probably 30 per cent. of the least valuable flowers are taken, and the frequent temptation to leave a promising drooping fruit whose point could never colour is avoided. Wall Peach trees do not often receive, although they would be the better for this attention, particularly when they become aged and produce a predominating number of blossom-buds. Many of the new, especially the large-flowered, varieties do not, however, produce a damaging profusion of flowers; why this is so it is difficult to say, as it is hardly possible the first remove from their sturdy parents can have made any perceptible difference in their hardiness; and yet some of them, notably Early Grosse Mignonne and others of its race, are apt to get more or less cut during sharp winters. Few Peach growers ever saw the old Noblesse or its offspring, the Alexandra Noblesse, overloaded with flowers, and yet they seem to enter into the winter carrying a plentiful crop of silvery buds. A few only of these survive the mildest seasons,

but fortunately those that do escape the frost or damp invariably set well—a fair proof that floriferous sorts may be freely thinned not only with impunity, but with advantage to the health and longevity of the trees. Plums, Pears, and Cherries are difficult subjects to deal with, and yet I have no doubt bud thinning, especially on wall-trained trees, would lead to equally satisfactory results, as we invariably find trees that have set profusely thinning themselves sometimes to an alarming extent. The first and last, in forcing houses and all three on walls, in course of time become one mass of spurs with hardly a wood bud to draw the sap, and although we cannot well undertake the thinning of the buds on each individual spur, we get over the difficulty by cutting out a quantity of the oldest spurs bodily at the winter pruning. Whoever has been engaged in the forcing of Plums and Cherries knows how necessary it is to use a fine-bladed knife amongst the trees, especially where they are grown in pots, and they will corroborate my statement that liberal spur-pruning, which is bud thinning on the broad gauge, is antagonistic to insects, whilst the flower-buds left on the trees are bold and strong and invariably set well. This practice might, no doubt, be carried out with great advantage upon many fruit trees of moderate size in the open air. Pears, for instance, on the Quince, and Apples on the Paradise stocks, which literally flower themselves if not to death, certainly to premature old age, might be so treated, and I question if the fruit would not be much finer and the trees more vigorous than others which are allowed to expand all their blossoms and cast their fruit by the thousand. Last year I took five out of every six fruit off a Stirling Castle Apple as soon as they commenced swelling, but I was too late, as others which had been bud-thinned were much finer, and showed no signs of self-thinning. Many large growers cannot perhaps spare the time, but those who can and wish to have extra fine quality may safely try this plan.

GRAFTING AND INARCHING VINES.

MR. IGGULDEN deals so well with this subject, that I hesitate in sending a few lines describing what I have done in this way, especially as I am not quite in accord with him. Without doubt any Vine will be benefited by either grafting or inarching, and if I had a Vine of any kind subject to shanking for instance; by inarching, even without cutting back the old scion, I could secure a marked improvement the following year. Again, supposing I graft or inarch, say, at 2 feet or 3 feet high, the Grapes below the graft will be good. I have demonstrated this here so many times, that it is now well known. Now for a few lines on varieties. Muscats are the only stocks I have used so far for inarching. As for the most noble of all the black Grapes—Gros Colmar—all who have tasted this so worked admit that flavour is gained. Colour, again, is good, unless I overweight with crop. Foliage is much stronger and not so given to curl. In no one case do I find Muscats shank below the graft. I should say this stock is used by me because I am gradually reducing Muscats, the Gros Colmar being more profitable. I used one Gros Colmar to graft Madresfield Court with very unsatisfactory results, flavour being all gone, without any increase of size in berry. Last summer I inarched a Gros Colmar on Barbarossa, and shall look forward with interest to the result.

Hamburgh I have used largely for grafting on Alicante, which does well; the mistake I made

last year was in the heavy crop (18 bunches, 40 lbs.) on one-year-old rods, besides having a few Hamburgh bunches below the union. I was afraid the stock would be against its keeping; but, no, it is all right; however, I hope by lighter cropping to have finer Grapes this season. Hamburgh as a stock for Gros Maroc (a Grape which for early autumn up to Christmas for selling has no equal) makes a very great improvement in flavour, and the berries are large, but their shape is somewhat altered. Buckland Sweetwater I have used for Alicante and Gros Maroc, and this is undoubtedly the best stock for these two Grapes. My best Gros Maroques were grown on this stock.

While I am writing these few lines from a market point of view, I trust I have not lost sight of my taste for quality. So much could be advanced from my side of the question—that is, improvement—but I fear to say more. It would be folly for me to run down the high quality of Lady Downes; but notwithstanding I get a good crop, neither weight nor price are equal to Alicante, which is much behind Gros Colmar. I enclose photo of crop of Lady Downes.

Scald, I am thankful to say, does not trouble me; this in the majority of cases can be avoided by ventilation, though excess of moisture, low temperature, and allowing the Grapes to steam will often cause it. Some people say that this is a disease; if so, it may be prevented. Again, some affirm that the sun is the cause; this is not so, though it may be brought about by the sun shining forth suddenly, more especially after a dull time. I suppose two dozen berries would cover my losses for last year from this cause, and in no one case was there one berry that the sun could touch by shining on. These scalded berries were in the shade, and were generally touched on the north side. I think before coming into bloom that a rise of temperature with increase of ventilation is necessary, and this rise must be maintained until the time when the fruit begins to colour. As soon as scalding is detected, more fire and ventilation should be given, and a little chink of air may be left on at both top and bottom with advantage during the night. Foster's Seedling, highly praised though it is, is not equal to Buckland Sweetwater, although the former is the white Grape for this locality, and I see every year very heavy crops of fine fruit grown and sold for 9d. per lb. With me, growing with Muscats, if it hangs any time after it is ripe the appearance is gone. I purpose using this variety for inarching Gros Colmar.—STEPHEN CASTLE.

— It is gratifying to me and satisfactory to readers of THE GARDEN to find an accomplished Grape grower like Mr. S. Castle corroborating all that I have recently said in favour of this excellent system, as his remarks go far to prove that I preach that which I practise. Knowing that the character of a viney can be changed in the course of a single season, nay more, that a set of fruit-bearing canes can be run up from bottles without sacrificing the crop, I was in hopes that my paper would induce the masses to try experiments upon a few surplus rods, as this is the only way in which the young beginner can gain confidence. One or two experienced Grape growers intimated that they gave preference to inarching, a method to which I did not think it necessary to allude, because it is as old as it is simple—consequently thoroughly understood by the veriest tyro in Vine culture. My leaving this method untouched must not, however, be misconstrued, as I look upon it as the best and safest mode of introducing new or fresh varieties, especially when the young wood is very small, over-worked, or in a growing condition. The white Gros Colmar, for instance, which is to be sent out during the coming summer, will no doubt

be worked by many as soon as it is received, and I shall certainly adopt this method. But if I could have button-holed Mr. Roberts, the fortunate raiser, I should have preferred paying him for a bottle-graft, and I venture to think Messrs. Nash, Castle, and other skilled workmen would have followed suit, that is provided they have a Muscat house in which they might wish to work it. Grafting I still maintain is a method imperfectly understood, but it can be learned without detracting from the older system of inarching, and I trust the day is not far distant when every British Grape grower will set about grafting a house of Vines with as much confidence as he now brings to bear upon grafting an Apple tree. As forced fruit producers we can defy the world; why should foreigners beat us out of the field as propagators?—W. C.

OUTDOOR PEACHES AT HOWICK HALL.

MUCH has recently been written anent outdoor Peach culture, but, like most questions, there are several sides to look at. In dealing with the subject many, perhaps too hastily, assume that Peaches cannot now be grown successfully outside; yet there is no doubt but that, although we have not had quite so favourable seasons of late, by careful management good Peaches may be grown in this way. We are informed that fifty or sixty years ago good Peaches were grown in many places where now they will not grow at all. "J. S. W." in THE GARDEN (p. 252), March 19, says that while the outside cultivator is fighting against frosts, mildew, blight, &c., the under-glass man is far in advance of him with a much better chance of securing a good crop. But where glass houses are not available and Peaches are required, open-air culture is the only alternative.

Even in the south of England I have not seen Peaches grown outside better than they are at Howick Hall, where, on the bleak coast of Northumberland, they have the cold east winds from the German Ocean to contend with. The Peach trees in question are growing upon a south wall, 150 yards long by 12 feet high, built of red brick. The wall is flued and is supplied with furnaces, but fire-heat is never used, with the exception of a fortnight in the autumn, when, if a cold and wet season, it helps to ripen the wood. The trees are well shaped and full of young wood to the bottom, and special attention is paid to them as regards keeping their roots in check, also in having them near the surface, which is undoubtedly the great secret in successful outdoor Peach culture. When in bloom—as at the present time—the trees are merely protected by canvas, which is rolled up in the daytime. Great attention is paid to summer pinching, thinning out, and nailing in the young wood, all of which are essential to the ripening and colouring of the fruit. Another important item is to keep the leaves free from red spider, aphid, and mildew, which, if allowed to increase, will quickly ruin the prospects of a good crop. The trees are thoroughly drenched on every fine afternoon, and by these means they are kept in a perfect state of health, and great credit is due to Mr. Inglis, the head gardener, who informed me that some years ago he gathered ripe Peaches from the wall the third week in July. As a rule the first fruit is gathered about the middle of August, and from that time hundreds of dozens of well-ripened fruit may be seen. Royal George, Acton Scott, Dymond, Prince of Wales, Princess Louise, and Sea Eagle are the principal varieties grown, Acton Scott generally coming in first, followed by Royal George and Dymond, the other varieties following in succession. All the sorts are well flavoured, with the exception of Sea Eagle, which, although it ripens fairly well, rarely attains flavour enough to fit it for the table.

I may also mention that on the same wall there is growing the noted Howick Fig, which is figured in Thomson's "Assistant." It is similar to the Brown Turkey, but appears far superior to that variety. It has been distributed over America under the name of the Howick Fig. The old tree covers a space of wall 60 feet in width by 12 feet in height. Although receiving no protection whatever during the winter, it bears annually a good crop of remark-

ably fine fruit, which generally ripens about the first or second week in September.

OLIVOR.

SHADING MUSCATS.

IN some vineries it is absolutely necessary to shade the foliage of Muscat Vines to preserve them in anything like a satisfactory condition throughout the summer and autumn. The need for this operation, in my opinion, is caused chiefly by the roots of the Vines not being in the best possible condition, owing perhaps to various causes. There may be too great a depth of soil in the border, and that of a nature not suited to this Grape. Roots cannot run so freely in a close, heavy, retentive soil as they will in a border composed of lighter material. Where the soil is of a tenacious character, it is a mistake to make the borders so deep that they require more than 2 feet thickness of soil; if the soil is light, 6 inches more in depth should be allowed. Some may say, why not add other kinds of lightening material, such as wood ashes, charcoal, and lime rubbish? A case came under my notice a few years ago. When taking charge of my present situation, one vinery, amongst others to be planted, was to be devoted entirely to Muscats. A large quantity of turf, varying in thickness from 2 inches to 3 inches, was cut. This was quite a mass of fibre, having lain undisturbed for over seventy years. It was chopped up into pieces about 3 inches or 4 inches square, and with it was incorporated a quantity of lime rubbish and half-inch bones, but no manure. The whole mass was trodden down firmly, the depth being about 3 feet, with a liberal drainage underneath and a free outlet for superfluous water. In due time the Vines were planted and broke strongly, making growths the first season over 20 feet long. The roots were liberally supplied with water during the summer and the Vines freely syringed overhead, their appearance being very satisfactory at the end of the season. The following December they were pruned back to three eyes above the first wire under the roof, *i.e.*, one pair of side shoots and a leader. These all showed fruit; one bunch to each cane was retained just sufficient to prove the variety. The following season they grew away very fast and bore a good crop of fruit, which finished well; but in May the next season, which was the fourth year of growth, the border was one morning thoroughly soaked with weak liquid manure, and about mid-day several leaves showed strong symptoms of having been scorched. This could not have happened through the usual cause—that of insufficient air, because, being a hot day, the house was freely aired, and had been so during the time the water was being used. The scorching continued as the season advanced and generally after the border was watered, which we did on dull days. This, however, availed little, as the scorching went on, and always when there was plenty of ventilation. The consequence was that the Vines were denuded of their largest and best leaves, which were of most service. The crop of Grapes too was large in bunch and the berries of fair size, but they did not finish off properly, and shrivelled early, almost as soon as ripe. Many were the opinions advanced as to the cause; but the right one was obtained by digging down into the border in several places and examining the soil. The fibrous part of the turf had decayed, leaving the whole quite an inert mass, excepting the part where the lime rubbish was used. Of course, the water, which had been freely given, was not able to pass so quickly away as would have been advantageous to the Vines, and it was clearly proved that the turf was lacking in lasting powers. Circumstances would not then admit of the border being thoroughly overhauled, the top roots were simply freed from this soil, and fresh material added of a lighter character. When the house was closed, the following February a good soaking of tepid water was given. The Vines were watered until the middle of July following when the Grapes were commencing to colour, and water was withheld; only a light sprinkle over the border and pipes twice a day in favourable weather.

In May, about the time the foliage had previously shown the first sign of burning, a thin shading was put over the glass by mixing together some lime and water, adding a little milk, and applying it with the syringe on the outside of the glass. The Vines that year bore an excellent crop of Grapes, the berries swelled to a good size and coloured well; the foliage, by the assistance of the shading and a limited supply of water at the roots, was in a more satisfactory condition, thus proving that Vines growing in strong, retentive soil do not require so much water at the roots as some might imagine. The Grapes so much improved that year, that it was not deemed advisable to remove the whole of the border, but the surface roots were improved by the addition of lighter soil and timely mulchings of stable manure. When any water was required liquid manure was applied in a warm state; added to this, occasional sprinklings on the roof with limewash to lightly shade the foliage from strong sun have now assured a good annual crop of well-finished Grapes. Towards the end of August the shading was allowed to be washed off by rains, and no more was added, so that the wood became thoroughly ripened. In such a case as the one herein described shading is an advantage.

S.

WHY PEACHES FAIL IN THE OPEN.

SOME would have us believe that Peach culture in the open air is a forgotten or unknown art, and that the majority of modern gardeners know nothing of the wonderful skill possessed by our forefathers in perfecting Peaches in the open air, but in my opinion modern gardeners will practise and accomplish everything that will pay and please their employers best, and if Peach culture in the open was as remunerative as it invariably is under glass, good examples of it would be found wherever Peaches were desired; but when all the uncertainty and expense of out-door culture is placed against the excellent results obtainable under glass, I am not surprised that gardeners should adhere to the most certain way of making culture profitable. Our climate here is about the average of what it is in other parts, and some years we have a fine lot of open-air Peaches, while in others we have few or none. I am not inclined to attribute this to inferior culture, but to other causes over which I have little control. As an instance of this, some of our early trees, particularly Hale's Early and Dr. Hogg, on an east wall began to show signs of flowering during the last week in February. To protect them as usual three lots of herring-nets were suspended in front of them, and by the 10th of March they were almost in full bloom. The prospects of a crop then were very bright, but we had 15° of frost on the morning of March 13th, 12° on the following morning, and 7 inches of snow on the 15th. This was accompanied with a bitter cold wind, and the snow was driven everywhere. It found its way through the nets, and as there was no thaw for several days the blooms were hidden under the snow, and when we inspected them on March 19 they were quite brown and withered, and now our prospect of an early Peach crop in the open is destroyed. I cannot tell what practice would have been introduced by the advocates of open-air Peach culture under these circumstances, but I felt very keenly that it was a boon of the greatest value to be able to protect them with glass, and I am not at all surprised that Peach culture under glass should meet with so much favour. As an instance of the advantages of it, I may say that we have an unheated Peach house here. It is very old, and has cost nothing for many years excepting what is necessary to keep the roof in repair. It is a most profitable house, as the trees in it invariably produce a heavy crop, and at the time the open-air trees were being starved, and probably permanently injured, those in the cool house were perfectly snug, and the small fruits are now showing in abundance all over the trees. Here, then, we have the two systems tested fully at a time when the whole season's success of the trees depends on the treatment it is possible to

give them, and the result convinces me more and more of the great uncertainty of the one and the decided advantage of the other. Most of us know how much the success of the fruit crops depends on the state of the weather at the time the trees are in blossom. The early-flowering ones are the most liable to be injured, and then is the time when nothing but a covering of glass will save them. J. MITCH.

Margam.

SPUR-PRUNING PEACHES.

A CORRESPONDENT, "X." (p. 301), inquires if spur-pruning is out of the question when a healthy tree of Early Grosse Mignonne which has been root-pruned refuses to bear a crop. If "X." will explain what he means by spur-pruning, also if his Peaches are growing against a wall or under glass, a satisfactory reply may easily be given. The variety in question is not a difficult tree to fruit, as I have forced it for many years, and consider it the very best of all the early Peaches. It also does well on open walls, but being slightly tender as compared with Royal George and other small-flowered varieties, it should have a good aspect, where the wood can be thoroughly ripened, otherwise many of the flower and wood-buds will perish and drop during the winter. Assuming that the tree, in good health, is growing under glass, it is only reasonable to suppose there is something radically wrong in the detailed management, such, for instance, as an insufficient supply of water to the roots, or too much heat when forcing is commenced. If either of these defects exist, this or any other variety will cast its buds, and spur-pruning whatever that may mean will not ensure a crop of fruit. The spur system is inapplicable to trees on open walls, but shy varieties, notably the beautiful Belle Beauce, a member of the Grosse Mignonne family, when forced early, are often made more fruitful by pinching a few of the side shoots on strong growths instead of rubbing them off. The better to carry out this system, the wood of the preceding year should be laid in extra thin to allow for the full development of the spurs and foliage, then all the strongest growths can be treated as we sometimes treat cordons; but this method has little to recommend it, and unless the cause of sterility—be what it may—is corrected or removed, I am afraid this untidy system will not help "X." out of his difficulty. Has "X." tried extension training—a system peculiarly applicable to all the members of this section, as many of the shoots only carry a minimum of wood-buds; a few at the base and one at the point? Remove the latter and the shoot eventually dies back, as there is nothing left to draw the sap. Lay in all the growths full length, allowing plenty of room for tying in young wood and the full development of the foliage; give plenty of air and water, and this superb Peach will give entire satisfaction in early and mid-season houses, also upon open walls. No early house, in fact, should be considered complete without it, as it starts quickly, ripens early, and the quality of the fruit is exquisite.

W. COLEMAN.

Grapes from South Africa. Many people being interested in the attempts which have been made to send over from South Africa Grapes for the London markets may like to know that I have at the present time in my window a bunch brought over by Mr. W. R. Murray. It has now been in the window for ten days, and is still in first-rate condition, thus showing that with due care in the packing, &c., it will be possible to bring them over in saleable condition. I shall be pleased to show the Grapes to anyone interested in the fruit-producing question.—ARTHUR ROBINSON, 8, Leadenhall Street, E.C.

SHORT NOTE.—FRUIT.

Peach trees losing their leaves.—[H. R. C.] will be glad to know the reason why some branches of the Peach trees on the walls of the vinery have lost all their leaves, and if her gardener is right in waiting to thin the fruit till it staves. As he says it always drops off them, may it not be that the fruit falls from being too crowded?

SEASONABLE WORK AMONG FRUITS.

STRAWBERRIES.

WHERE proper Strawberry houses are provided the successful management of these plants will now depend upon the two elements—air and water—which must be admitted and administered with a liberal hand. A thorough change to bright spring-like weather has already made a wonderful change in forcing houses in general, and Strawberry plants in particular, and the latter being such moisture-loving subjects, the watering-can and the syringe must be kept constantly going, not only to secure full crops of fruit, but also to prevent them from injuring more valuable occupants with which unavoidably they may be brought in contact. Good forced Strawberries are a great acquisition to the dessert, but they are a very expensive luxury, and unless they can be had in plenty it is questionable if in these days of economy it would not be better to give up the risk of introducing spider amongst our Vines and Peaches for the sake of a few ounces of early fruit when later on the same plants would give many pounds worth eating. Light shelves in Peach houses and vineries are tempting to many men who have to make bricks with a very small quantity of straw, but they pay dearly in the end, and for this reason I again repeat the assertion that full crops from light, airy pits through April and May whilst costing least will give most satisfaction. When the fruit in pits and houses is set and thinned, the Pine stove, or what used to be the Pine stove, is generally selected for swelling and ripening, and quickly the berries attain their largest size, but heat and moisture alone are not conducive to flavour; therefore a second, but still a warm house with plenty of ventilation should be provided as a ripening and retarding store. Into this the pots should be transferred as soon as the fruit is fairly coloured; water to the roots should be gradually reduced, sun and air should have full play, and the delicious aroma should be the first indication that the fruit is fit for use. Nin-tenths of the early Strawberries and Grapes are used before they are enjoyable or fit for use, but by adopting the dry, airy shelf system, a few days—a few hours even—make an immense improvement in the quality of the fruit, whilst the move forward favours the introduction of fresh batches from the general store. If plants of the early sorts are intended for autumn fruiting, this passage through the airy house fits them for the cold pits, where, after being dipped in sulphur water, they should remain to harden off before they are planted out.

GENERAL CROPS.

Plants from which general and late crops are expected will now be in every stage from the bursting of the crowns to the setting of the fruit. To secure the greatest weight the plants are capable of giving the soil should be well rammed and top-dressed to ensure the even passage of water through the balls, and if dry and exposed shelves must be occupied, thin sods of turf, Grass side downwards, form an excellent foundation for the pots. Many people use saucers, but of the two I give preference to turf, as the latter, whilst absorbing liquid and throwing up a continuous stream of moisture, is always free from stagnant water. Moreover, when the plants and turf are introduced together and do not part company until after the crop is gathered, these richly charged sods form a fine feeding ground for the crotch roots when the fruit is swelling. Read's patent from this time forward will play a very important part amongst shelf plants not only subject to spider, but also to mildew. The two, fortunately, can be settled with sulphur water, which may be freely used after the sun has left the roof in the afternoon. As these plants come into flower the trusses should be propped or secured with forked sticks to prevent eventual injury to the stalks and fruit, and all weak and superfluous buds should be pinched off before they open.

Latest crops.—As these are to shake hands with the Vicomtesse, La Grosse, and that excellent early Strawberry, Prince of Wales, the plants should be made, or rather kept in presentable condition by carefully plunging in leaves, old tan, if free from

worms or some other moisture-absorbing material. Late sorts should not be disturbed if it can be avoided, as the roots creep through the apertures during the winter and perform good service when the fruit is swelling in May, and watering becomes a heavy operation. To avoid this, I draw every alternate row for succeeding forced plants and leave the others to fruit where they have been plunged during the winter. As the plants give heavy crops of fruit, a plentiful supply of Birch twigs should be stuck into the pots to carry the trusses well above the bed before they rise. Mulching, too, in the form of short manure or leaf-mould may be placed all over the surface, and water in abundance must be given on fine mornings. If likely to get too forward the lights may be thrown off the pits every morning, especially in mild, showery weather, and closed before nightfall. On the other hand, late, unheated pits may be pushed forward by shutting up with sun-heat and moisture when ordinary forcing houses are closed for the day. Being impatient of confined or condensed moisture, cold pits so treated should always have a little air through the night.

VINES.

The fruit in early houses started last November will now be taking the last swelling, and possibly the most forward berries will be colouring. If the roots are likely to require more water before the Grapes are cut, a substantial supply that will carry them through should be given without delay. The ripening period being yet some weeks ahead, clear diluted liquid at a temperature of 80° may be used with advantage, especially where the Vines are aged or carrying heavy crops of fruit. The same liquid may also be used for dampening the floors and filling the evaporating pans until a drier atmosphere becomes necessary. As days increase in length, and bright, sunny weather prevails, a liberal circulation of warm air will be found an important factor in laying on colour and bloom, but great care must be observed in the admission of this element, as depressing checks, although of short duration, are often fatal to perfect finish. If the laterals have been closely pinched, free growth, provided they do not reach the glass and so impede the circulation of air, may now be allowed to develop, as good black Grapes cannot be obtained from Vines that are not well furnished with plenty of healthy leaves and active laterals. The temperature may now range about 65° to 68° at night with air, and 75° to 80° by day, but much as colouring Grapes require and enjoy fresh air, the house must always be closed for a few hours in the afternoon to swell up the berries.

Vines in pots still more forward than the preceding must also have more fresh air with just sufficient fire-heat to keep it moving and also to prevent a sudden decline in the temperature. If the roots have found their way into the plunging material, as may easily be divined by the vigour of the laterals, there will be less danger of flagging, but this aid must not be traded upon by allowing the compost in the pots to become dry, at least for the present, and when the Grapes are ripe just sufficient to keep the foliage fresh and the laterals growing must be given until the crop is removed. Hamburgs in pots do not often suffer under liberal watering quite down to the finish, but that excellent early forcing Grape Madresfield Court Muscat, also Foster's Seedling require a little more care, otherwise they may crack when nearly ripe. Cracking does not, however, often attend pot Vines whose roots are active; still, it is well to be ever on the alert, as I have known a sudden change from a high and dry temperature to converse conditions the most common cause of cracking later in the season.

Midseason houses.—Growth in these is now rapid, and daily attention to stopping, tying, and thinning will keep all hands fully occupied. Tying down may sometimes be deferred with advantage, but stopping should always be performed as soon as the points of the shoots can be caught with the thumb-nail, as checks and waste of force, independently of bleeding from unsightly knife cuts, are then avoided

The thinning of the bunches is another operation which should not be delayed a day longer than is absolutely necessary. It is usual to allow Muscats and other shy setters to carry a few superfluous clusters beyond the flowering stage, but this practice may be carried to excess, as quantity does not secure success unless other conditions are right, and all the bunches come into flower simultaneously. Inside borders will now take copious supplies of tepid water, and a good layer of fresh stable litter should be laid over the external roots to protect them from drought. The rainfall this season has been light, and a covering of this kind, whilst letting in solar heat and air, will prevent them from descending to the drainage. It rarely happens that the outside borders require artificial supplies so early in the season, but unless we have a steady fall of rain by the time the Grapes are set, a good supply through the hose will do no harm.

Late houses.—The Vines in these should be well syringed twice a day until the Grapes come into flower; the borders, too, should be well mulched inside with short manure; outside, as I have just observed, with fresh stable manure well charged with ammonia to be washed in by spring showers. Late Vines which make all their growth during the summer months, and whose roots are carefully protected from October to Christmas, do not, as a rule, receive enough water, especially when the borders lie high and dry upon a foot or more of clean drainage. To counteract the effect of drought these sandwiches are not infrequently soured and soddened by thick coverings of rotten manure which poisons the late and half-ripened roots and fibres, when shanking, or want of colour, or both follow. When this does not happen a plethora of rich animal manure is more conducive to a rank growth of wood and foliage than rich vinous fruit; therefore, notwithstanding the fact that we cannot have Grapes without leaves, rich phosphates, in the form of bone-dust, Thomson's Vine manure, or the like, should be sown on the borders and moderately covered with fresh stable litter, but not to an extent that will exclude sun-heat and fresh air. By this mode of treatment the borders will soon attain our average earth temperature, root action will be early, and when, after the turn of midsummer, the Vines are feeling the weight of their load, a good mulch of manure washed in by copious supplies of water from the hose, if not from the clouds, will sustain lateral growth—the best of all indications that the Grapes will colour properly.

PEACHES.

The fruit in the earliest houses will now be passing through the tantalising stage of stoning, and as well may we try to move the Pyramids as venture on the disastrous attempt to start them on the last swelling before this process is complete. The daily routine of watering, syringing, and airing must be carried on in the usual way, and tying down, if absolutely necessary, may be performed, but unless the shoots are getting up to the glass, I always prefer giving the trees a little freedom until the Peaches begin to swell. When this unmistakable stage sets in, the final thinning, pinching where necessary to the proper balance of the trees, and tying down must be performed. If fine and perfect fruit is wanted, the trees should be under rather than overcropped, and all pendent fruits as far as is practicable should be removed. These, however, where blossom-thinning is practised, will not be numerous, or where they exist and are wanted an effort should be made to turn and support them with their points to the sun. An adept at this work will raise almost every fruit, and by the use of short pieces of lath laid on or tied to the trellis will fix them in their places. A pale Peach by some is considered as good as a dark one, but Peaches in the eye of a good judge are not considered perfect at every point where colour is wanting. If old trees were heavily mulched as soon as the fruit was thinned, copious supplies of warm diluted liquid will complete their bill of fare. Young ones whose behaviour at the outset was doubtful may or they may not require manure. If strong and the crop is light, the liquid will be found sufficient; if carrying full crops, a moderate mulch will do them no harm.

Upon this point the grower must be the best judge; but it must be borne in mind that trees under glass, although they make shoots more than 3 feet in length, can always be ripened to the points, and once properly ripened something must be radically wrong if they do not carry full crops of fruit. If early maturity is important, more heat may now be given to the trees, especially by day, when the temperature may run up to 80° after closing, with plenty of moisture. The chink of fresh air should, however, be admitted at nightfall, and the figures through the hours of darkness should not exceed 60° to 65°.

Succession houses.—The most pressing work in these will be the final disbudding, heeling down, and more thinning. If properly set, a very small surplus will suffice for dropping, as well-managed trees should not cast their fruit after this date. Unless Strawberries have been started in this house spider will not yet be present; indeed, there is no excuse for its appearance at any time; but should it crop up, a small piece of soft soap and a handful of sulphur added to the syringing water will check its course in a very short time. Pure soft water, it is needless to repeat, should always be provided for syringing purposes, as it is not only best for the foliage, but being free from lime or sediment it leaves nothing that is objectionable upon the fruit. Twice a day should now be the rule—the first time soon after night air is shut off, the second when the house is closed for the day. If plied backwards and forwards every leaf will be bathed, and the old wood will be thoroughly moistened. Aphids, too, must be watched. So far this promises to be an aphid season, but timely attention before the leaves become curled is the most economical course to pursue. Cheaper still is the weekly puff with Bloxham's patent fumigator, whether fly is present or absent.

Late houses.—The trees in these are marvels of fertility, and appear to be setting well. We ply the syringe pretty freely in this department throughout the season, allowing the spray to fall lightly during the height of inflorescence, and every flower seems to set well. As these trees are generally planted in external borders, the latter should be repeatedly hosed and well mulched, for once allowed to get dry, insect pests will be more plentiful than the fruit. Having a few healthy pot trees more than twenty years old, some time ago they were transferred to tubs and placed in a glass shed. When these became the worse for wear the sides were taken away and replaced with a 9-inch wall of turf. In summer we bury the balls in long litter and hose the tops and roots with cold water copiously. The heads are about 9 feet through and always carry enormous crops of good fruit, not uniformly high coloured, but equal to the general run of market Peaches. Growers who do not succeed well with pot trees, or cannot devote time to watering twice a day, will do well to try this plan, as the trees crop like Apple trees, and are as easily managed. W. C.

NOTES OF THE WEEK.

Hardiness of Acacia dealbata.—We have received a flowering branch of this from a plant which has been growing outdoors at Kingswear, Dartmouth, for the past five years. It blooms freely every season, and is a grand object when in full flower.

Chionodoxa Luciliae.—I send you a spike of this bearing nineteen flowers. The flowers individually are not so large and beautiful as when fewer in number.—L.
* A very fine spike of this favourite spring-flowering bulb.—Ed.

Salvia Heeri.—This is probably one of the very best for winter flowering. We recently saw it in good condition at Plawhatch, Sussex. The flowers are borne in great profusion, and their bright scarlet colour is highly effective at a dull time of the year.—A. HERRINGTON.

Narcissi Horsfieldi and Sir Watkin.—I send you blooms of Horsfieldi and Sir Watkin, also var. Leedsi. Horsfieldi has been in bloom about a fortnight here. Bishop Mann set standards inches high as white Daffodil, and is nearly out of bloom now, and I cannot send any more blooms to next conference.—W. B. H., *Cork*.

* A beautiful gathering; Horsfieldi, very large; Leedsi, very chaste and pretty.—Ed.

Daffodil committee.—Members and growers of white Daffodil will very much oblige by bringing out blooms of Narcissus tortuosus to the next meeting of the Daffodil committee on April 12. The blooms must be from the guaranteed

* stock as known by that name prior to the 1884 conference, and in their possession for three years.—A MEMBER OF THE DAFFODIL COMMITTEE.

Japanese Camellias.—We have received from Mr. W. Gordon, Twickenham, several varieties of Japanese Camellias. They are all semi-double. Worthy of note were the following: Lady Jane, bright red, the petals of good substance; Lady Vansittart, the flowers profusely splashed with red on a white ground; Lady Clara, pinkish shaded; and Lady Vere de Vere, white, splashed with red.

Primula cashmeriana.—I send you blossoms of seedling *Primula cashmeriana*, gathered out of doors the last day of March, to show how effective they are in early spring-time. The plants commenced to bloom four weeks ago, passed unharmed through all the sharp frosts and snow showers of that month, and are now a soft mass of lilac, each plant bearing from six to ten flower-heads. The young plants were pricked out in their present quarters, a cool, somewhat shaded border, last summer.—L. ST. BRIDGD.

* * Large and handsome spikes of flower. We have scarcely ever seen this variety bearing so large trusses.—Ed.

Hardy Polyantheses.—I forward you blooms of two hardy Primroses, viz., Faust and Sovereign. They are taken, of course, from plants grown under glass. The former has hose-in-hose flowers of a very rich crimson shade, which show up well in the sunshine; the latter is a fine yellow variety. I also enclose blooms of Polyanthus William the Fourth, an old red ground, gold-laced variety. These were gathered from plants grown in the open ground all last summer.—A. D.

* * A very fine gathering. That named Faust is very striking, the colour of a deep crimson, with a bright yellow eye. Sovereign, clear yellow, also is very pretty. The Polyantheses were good, the gold lacing being very even and distinct.—Ed.

Arctotis undulata is one of the less common plants among the crowds of showy flowers that now adorn the greenhouse at Kew. Its uncommon look attracts the attention of those who take an interest in the plant. It has flowers the shape of those of a pot Marigold, but much larger and of a glowing bright orange colour. They are borne singly on tall stalks rising above the foliage, which is deeply lobed and silvery beneath. It is a half-hardy plant, and really only suitable for pot culture in a greenhouse; in some places it may be grown outdoors as well as other species of *Arctotis*.—W. G.

Spring flowers at Weybridge.—The late trying winter seems to have made the early spring flowers late, but more beautiful even than usual. At Oakwood we have a bank of loam covered with brown and green Moss; through this small plants of *Hepaticas* have thrown up their flowers; I counted eight shades of pink and as many of blue; these, with two sorts of white, give an effect which could hardly be beaten in Switzerland. In some bays of the rockwork *Chionodoxa Luciliae*, *Scilla sibirica*, a *Galanthus* called *Redoutei*, but as I am told incorrectly, *Narcissus nanus*, and *Helleborus purpurascens* side by side look very pretty. *Chionodoxa sardensis*, when in good chumps, and *Scilla taurica* are, I think, equal in beauty to the favourite *Glory of the Snow* (*Chionodoxa Luciliae*); *Anemone fulgens* is very late, and will not bloom for some days; *Narcissus minimus*, which I owe to the kindness of its collector, is much admired.—GEORGE F. WILSON.

The Neapolitan Allium is a bulb not half enough grown as a pot plant for the greenhouse or conservatory in early spring. All who see the glorious masses of the white *Allium*, which for the past few weeks have been in perfection in the greenhouse (No. 4) at Kew, are charmed with it, and very few visitors know it. We have never seen it better grown than it is at Kew this year, for the slender flower-stems are in some cases over 2 feet high, and have broad heads of pure white flowers which are quite devoid of any Garlic odour. The bulbs have, of course, been forced into bloom, and this needs to be carefully carried out, for if too hurriedly done the result will be a paucity of flowers. One of the most beautiful groups of plants to be seen in this house now is composed of this white *Allium*, the glittering scarlet *Anemone fulgens*, also forced pot plants, and a pale yellow *Hyacinth*—a charming harmony of colour.—W. G.

FLOWER GARDEN.

LENTEN ROSES.

THE real value of this class of Hellebores for decoration at this early season of the year can hardly be over-estimated, and seeing how distinct they are from all other plants used for that purpose just now, the wonder is that they are not more largely represented in some of their many forms at least in every garden. This will be more apparent when we remember that they also have come under the magic influence of the improver or hybridiser; the variety of form and colour already in cultivation is indeed most striking, the large majority of them being highly ornamental. Their value as commercial plants will, of course, be regulated by the supply and demand, but there can be little doubt that if they are brought forward at the right time, they will be as fully appreciated as their merits warrant them to be. Not having had experience, we are unable to say whether they will stand forcing, but we have gathered them early enough for market purposes, simply grown under the protection of a cold frame, dispensing even in severe weather with all artificial covering whatever.

Unlike *H. niger* and its varieties, about which it is needless to speak, so well are they known and appreciated in gardens, the Lenten Roses seem to try the patience of the cultivator to a very large extent, especially in the neighbourhood of London. Out of doors and under similar conditions to *H. niger*, they are very difficult to manage without some means of protection; the prevalent east winds, combined with an impure atmosphere, render their success very doubtful, unless indeed under specially favourable circumstances. At this early season the young growths are most active, and of course very susceptible to injury; the fresh tender leaves and the unopened flowers are often blasted and rendered useless for decoration if exposed to the bitter winds for a single night. In choosing a site for these Hellebores, one completely sheltered from the north and east should be selected, and even then it may be found necessary to use portable lights for their better protection. We have never yet seen their cultivation attempted in the conservatory, where doubtless they would yield a good return, provided a light situation, and one not too far from the glass could be given them; they could be planted out in the borders as an edging, or mixed with other flowers, such as Hyacinths, Snowdrops, &c., with good effect, and without any fear of their suffering. The following are a few of the best distinct types:—

H. ABSCHASICUS.—This plant we believe to be the same as *H. atropurpureus* of the *Botanical Magazine*; it has a fine robust growth, forming neat clumps and numerous rose-purple flowers, prettily shown up by the pure white stamens; unfortunately, it is amongst the first to suffer by the winds, which turn the buds black, their entire destruction only being a matter of time.

H. ANTIQUORUM is one of the most floriferous, not even excepting orientalis. The blooms are produced in great quantity, pale purple with beautifully imbricating sepals; the leaves are also handsome, forming dense tufts of bright green all through the summer months.

H. COLCHICUS is one of the best as regards colour; the flowers are deep plum-purple, covered over with a glaucous hue, enhancing their beauty wonderfully. The young leaves are purple when opening, losing little indeed until they are full grown. The varieties *coccineus* and *punctatus* are really charming, and amongst the best in cultivation. They stand well in the open, with slight protection at night.

H. GUTTATUS with its spotted flowers is very ornamental. It is a free bloomer, comparatively robust, producing large, well-formed, white flowers, with scattered purple spots about half-way up the sepals. This species has had much to do with very many of the hybrids cultivated in gardens; it

crosses freely with *abschasicus*, *colchicus*, and others, the presence of the spots indicating its parentage.

H. OLYMPICUS is a rather weakly-growing kind, with greenish white flowers. Professor Schleicher is a good variety.

H. ORIENTALIS, next to *antiquorum*, is the freest of this section. It produces flowers in great abundance, pure white, large, and well formed. It stands the cold better than most of the others, forming fine, fresh green tufts of leaves.

H. PURPURASCENS, deep purple, dwarf, and very ornamental. Other species or hybrid varieties worthy of notice are *Apotheker Bogren*, rich purple-rose; *Inspector Hartwig*, plum-purple; *Gretchen Heinemann*, rosy purple; *Mrs. Irene Heinemann*, pale purple, spotted carmine; *Councillor Benary*, snow-white, with large purple spots; *Willy Schmidt*, pure white, one of the best. Others are *torquatus*, *luridus*, *dumetorum*, *graveolens*, *Bocconi*, &c., all nearly related to *H. viridis*. K.

THE MOUNT PARNASSUS SCABIOUS.

(PTEROCEPHALUS PARNASSI.)

THIS very neat little plant is valuable for rock and alpine gardening in warm soils in our southern counties, but in other parts its hardiness would be doubtful. Where it does well it is one of the best of plants for covering spaces



The Mount Parnassus Scabious (*Pteroccephalus parnassi*).
Engraved for THE GARDEN from a photograph.

where it is desirable to have a low, close-growing and pretty carpet. It likes a free, open place in full sunlight and a light soil, and grows fast under these conditions. The leaves are a light grey-green and the flowers flesh-coloured.

Soldanella alpina.—This plant, as it may be seen at present in full flower on the rockery at Kew, is an interesting as well as a beautiful hardy alpine. The flowers can hardly be said to be brilliant, but they are produced in such quantities on small plants that it is well worth a place in the rock garden. The flowers droop like a Snowdrop, of a bluish colour, open bell-shaped, and prettily fringed at the mouth with narrow bands of the same tint. In mild localities and in sheltered spots, where water can be given or withheld at pleasure, this plant will do well and flower profusely, and even in exposed localities, where it can be protected from the late spring frosts, it will thrive. A mixture of peat, sand, and a little loam suits it admirably. Almost the same treatment will do for *S. pusilla*, *minima*, *montana*, and their forms, among which the white ones are really handsome, and well worth being cared for in pots.—K.

Hypericum olympicum.—In the article on the above St John's-wort in THE GARDEN, April 2 (p. 302), it is stated to be "perfectly hardy and indifferent as to soil." The same statement as to hardiness is, I see, made in the catalogues of some of the nurserymen. We must, all of us, of course, speak for ourselves, but I can only say that in my own garden, in the favoured county of Kent, considerably south of London, I have entirely failed to keep this plant,

either in common soil or in specially prepared soil, or well-drained and warm situations on the rockery. I have lost it from cold rains and frost. This I much regret, for it is in my opinion the most beautiful of the family, the glaucous foliage giving a softness and richness to the plant which are lacking in other species with which I am acquainted.—J. C. L.

THE FORTUNATE ISLES.

AT this season the delightfully green slopes of the steep hills on the northern side of Santa Cruz Bay, the chief port of the island of Teneriffe, do not belie their promise of flowers on closer acquaintance; indeed, it is hard to imagine anything more interesting to a flower-loving and somewhat botanic student than the flora of these seaside cliffs.

The first thing that claims attention, even while still at sea, is the curious growth of what proves on examination to be the well-known *Euphorbia canariensis*. This *Euphorbia* is so like a Cactus, that it deserves description, being leafless, upright, and closely branching, with four-angled, thick, and fleshy stems, which show short spines at each angle, and of a pale green colour. It is at first hardly possible to believe it aught but a Cactus, but in summer when the small and green Spurge-flower is to be seen, it is, of course, easily identified. Now, the only test is to wound with a knife one of the fleshy

branches, when the white, milky, and viscid juice that oozes out proves its relation to the genus *Euphorbia*. This juice is very acrid, and blisters the skin if allowed to touch it, as one of our party found out to his cost. Sometimes this bush grows to a large and almost tree-like size, but here its upright stems do not rise above 5 feet or 6 feet, and its abundant growth produces a very weird and desert-like effect. Just now, however, the ground is bright with flowers and flowering shrubs that recall summer gardens in England. The Marguerite or Paris Daisy bush (*Pyrethrum fruticosum*) is native here, and grows and flowers most abundantly, being dwarfer and more floriferous than under cultivation. Growing with it, and also in full flower, bushes of Lavender (*L. abrotanoides*) make a pretty contrast by their lavender-coloured and branched spikes of bloom, rising on tall stems from the low-growing and finely-divided foliage. Orange Calendulas of large size are very cheerful on the bare spaces; and nestling among the rocks is a pretty Scilla, with lilac buds and small, whitish flowers in long scapes. A Myrtle-leaved Thyme grows here so exactly like the small-leaved Myrtle in habit and scent, that had I not spied one small twig with a few lilac Thyme blossoms open, I should never have suspected such a mistake. Perhaps the greatest surprise was to find quantities of a small white single Dahlia, apparently identical with our garden plant, save for its diminutive size; how this should be naturalised all over the island in dry and rocky places, and when introduced, would be most interesting to ascertain. Then a wild and sub-shrubby *Celosia*, with woody root-stock and long, thin spikes of pinkish flowers, recalls the brilliant heads of the cultivated Cockcomb, though far inferior to them from a gardening point of view; and here is a curious little Composite, also apparently of American type, with grey-green leaves and yellow-rayed flowers smothered in long, leafy bracts. Behind a big rock, a Hemlock, with pale green leaves divided to Fern-like tenuity, is the only representative of the Umbellifers on this eastern coast; but on the western shores *Sampere* grows freely in company with *Mesembryanthemum crystallinum* (our familiar Ice plant) and a dainty *Arenaria* with shrubby

growth and pinky white blossoms. Perhaps the two most beautiful flowers on the rocks near the sea are the bright pink form of *Statice spathulata* and the grand lilac panicles of the Tenerife *Statice canariensis*, whose neater form, *Statice profusa*, is so much grown in our warm greenhouses. *Echinus*, though not in flower, promise a great variety of beauty, rivalling the stately Madeira form, *Echinus fastuosus*, whose sky-blue panicles and shrubby growth will not stand our northern climate or lend themselves to pot culture.

Leaving the seashore and climbing some two thousand feet up, the Tenerife form of *Cineraria vulgaris* is abundant by the roadside. Here it is almost always red-lilac in colour, with three or at the most four large, but thin-rayed flowers in a head, and with a decidedly pleasant smell, quite distinct from the Canarian form, which is so like that grown in gardens, with large heads of flower with shorter petals and a rather coarse smell like Ragwort. Pale yellow single *Oxalis* and orange *Nasturtium* have naturalised themselves everywhere, and with the *Cinerarias* make every bank gay—a happy feeding-ground for swarms of Red Admiral and Painted Lady butterflies.

One charming feature is the way in which the Hare's-foot Fern (*Davallia canariensis*), *Sedum tubiforme* or a form very closely akin, and a handsome *Sonchus* (*S. squarrosus*), cover the file-topped walls in every village, and grow boldly on the barest possible surfaces in a remarkable way. *Sonchus squarrosus* is so handsome, with its slender flower-stem crowned with a large flat head of clear yellow flowers rising out of a green rosette of leaves, that it is well worthy of cultivation on wall-tops in warm situations, if perchance it be sufficiently hardy. Violets are still sweet in shady and damp ravines, and send up whiffs of scent which mingle gratefully with that of another garden favourite, the well-known *Genista*, or *Cytisus*, which we grow in pots in England. *Genista canariensis* is here growing wild on the cliffs, and as full of flower as possible—a most welcome friend to greet a gardener in a strange land.

But this is the land of Brooms, indeed, and it would be difficult to find a season of the year when no Broom was in flower, so another is soon added to the list. *Genista prolifica*, a Broom from the beautiful isle of Palma, has been introduced here, and is grown largely both as a fence and also as a forage plant. This is now flowering freely, and has quite the effect of a Hawthorn bush in the month of May, for its creamy white blossoms, clustering amid the large bright green leaves, are quite unlike any other shrubby Broom. Although it grows to a height of 10 feet, it seems also to bear cropping or mowing down, and in the hot and dry summer the natives find it more useful than even Lucerne, which dries up more readily. *Genista monosperma*, the white Broom grown in gardens, and the beautiful weeping *Genista filipes*, the pride of Palma, which is all but lost to cultivation, are now and then to be seen, but the latter seeds so rarely that its propagation is difficult. *Genista hispanica*, our Spanish Broom, with its golden spikes of bloom, is, of course, here abundantly wild and more or less in flower. By the roadside it attains a very considerable height, with a trunk 5 inches in diameter. The wood is very hard and useful as fuel.

Yet two more Brooms are peculiar to this island, and seem to refuse to grow elsewhere; both grow high up on the great Peak of Tenerife, where for a zone of 3000 feet they almost

monopolise vegetation. As they do not flower till late in spring at such an elevation, I did not see their blossoms, but their growth, which I was able to see, deserves remark. *Cytisus*, or *Genista*, *nubigenus*, the *Retoma* of the natives, in habit resembles the Spanish Broom, but grows still larger, forming bushes 15 feet in height and at least as much through. Its woody trunks and stems are valued as fuel, and when its small creamy white flowers cluster over the naked twigs of the previous year's growth it is said to be beautiful, while the honey is so abundant, that hundreds of hives of bees are sent up there just as we at home send the hives to the moors in August. The peculiar grey-green of the bare twigs rising out of the snow when I was there was so unusual, that it would be prized for its winter effect could we grow it in English gardens.

The second Broom peculiar to this peak is called by the natives *Codeso*, and is in botanical works now called *Adenocarpus frankenioides*. It is quite distinct from the last. It forms low, close bushes quite like stunted Gorse, but without any prickles. It is evergreen, or "ever brown," with tiny trefoil leaves clustering like Moss on the stems, and its orange flowers, large in proportion, are much admired by natives in summer. Another *Adenocarpus*, *A. viscosus*, is also found in the islands, while *A. decorticans* seems confined to Spain.

The wealth of beautiful shrubs and trees peculiar to these volcanic islands is most remarkable when to these is added the Canary Pine, which still remains here and there in pristine beauty, with rich brown-red bark and long pale green needles, and flat, Cedar-like side branches. Various Hollies and Laurels, not widely differing from known types, grow in the ravines, but on the dry slopes a most beautiful *Cistus* with shining evergreen leaves and aromatic scent is found, and as its blossoms are large and bright rose in colour, it is a most desirable plant for English rock gardens, if seed has been imported. I believe it is now to be placed in a genus apart and called *Rhodocistus canariensis*. *Cistus monspeliensis* is said to grow here, but I did not observe it. *Asphodelus ramosus* seems ubiquitous, and grows everywhere, just as it does in Italy, but other bulbous plants are few, save *Arum Draunculus*, which, in company with *Davallia canariensis*, clothes acres of volcanic boulders that are piled up on every side.

Before leaving the wilds and descending to the gardens and Dragon trees of Orotava, so famous in bygone days, there is one more native plant so beautiful and so rare, that had it not been preserved and propagated in one garden, it might have been lost to us for ever: this is the beautiful *Pico di Palma* of the native, or *Lotus Pylorhynchus*, which grows in one solitary ravine on the southern slopes of Tenerife.

A deep scarlet, trailing Pea, perennial, with slender grey-green leaves, and showing masses of flowers large in proportion, hanging in festoons 3 feet and 4 feet down the terraced walls of a garden facing north, is a treasure that will, I hope, be pictured ere very long in the pages of THE GARDEN. It is represented as being nearly or quite hardy, and will in any case be of the greatest value in a garden, where it will be useful as a dwarf edging to summer beds, or the glory of a sunny rockwork, if our atmosphere allows its crimson and silver sheen to retain its brilliancy. Still, until carefully tried, it is hard to say how it will succeed, though the fact of its flowering on a northern aspect in

winter at Orotava is in its favour; but when Coffee trees, Oranges, and Bananas are growing in the same garden, it is difficult to believe that it can thrive really well in England. The quaint old Dragon trees round which the villages have clustered; the treasures of the botanic garden to which Mr. Wildprecht has devoted so much care; the roadway sides with *Wigandias*, blue with blossom, or *Ferdinandias*, gay with corymbs of orange and white Daisy heads, or *Oleanders* already opening their first rosy flowers; above all, the almost virgin islands of Palma and Gomera, which another year will be accessible to travellers, each and all deserve so much admiration, that I can but say, "go and see;" do not trust merely to the hurried description of a lover of sunshine. E. H. WOODALL.

ANNUAL DOUBLE MARGUERITES.

I AM, of course, alluding to the *C. coronarium* section, and I often wonder these are not more grown for cutting purposes, for they are easily cultivated, very free, and also continuous in bloom. When the Sicilian *C. coronarium* first began to develop the double forms is probably not recorded, but they were known in English gardens three-quarters of a century ago. It is a remarkable fact that it would be difficult to find the single form of *C. coronarium* in any seed list, and it would seem as if it had quite gone out of cultivation. Some three or four years ago I had sent to me some seeds of an African Daisy so-called, and it turned out to be the very subject.

The double forms of *C. coronarium* are white and yellow, and they have flat petals, recurring like those of a Victoria Aster, and there is also a variety of each in which the petals are quilled. Being fertile, they can be readily raised from seed, but they are found to vary—some are semi-double, others are fully double, and the best thing to do is to make a good selection from the latter and then propagate it by means of cuttings, which strike readily enough. Cutting plants are found to be dwarfer and more floriferous than those raised from seed, and therefore better adapted for pot culture. Of the varieties that have been selected and distributed by means of cuttings there are *Aurora*, bright yellow, the flowers small, and wonderfully neat and pretty; and *The Bride*, a white counterpart of this, and equally valuable in all respects. The best double yellow is *Yellow Perfection*, a larger flower than *Aurora*, fuller, and even more symmetrical. A new Continental variety has appeared named *conchiflorum flore-pleno*, which bears white flowers and broad shell-like petals, and is said to be remarkably free-flowering.

Though originally classed with the half hardy annuals, *C. coronarium* and its varieties are really hardy annuals, and grow freely when seeds are sown in the open ground. The soil should be fairly light and rich if good bold branching plants and fine flowers are desired. The seeds should be sown thinly and the plants thinned out as they increase in size, that they may have ample space in which to develop. Those who have to furnish quantities of cut flowers during the season will find these annual *Chrysanthemums* invaluable for cutting from, and should grow them in quantity. R. D.

SHORT NOTES.—FLOWER.

Sea sand for plants.—We have, about 14 miles from this place, a sea sand depot, which is let at £100 a year, and in this way we have a good opportunity of testing the value of this article; we use it largely for all purposes where sand is required, and find it excellent for all kinds of plants. Cuttings root freely in it, large plants are much benefited by it, and Carrots and other crops in the kitchen garden do exceedingly well in it. I prefer it to any other kind of sand. —J. MUR, *Margem*.

Wachendorfia thyrsoiflora and Orthrosanthus multiflorus.—Your correspondent "K." has done well in calling attention to and recommending the former of these beautiful plants in THE GARDEN (p. 295), April 2, and he would confer a further benefit on some of us if he can tell us where it is to be procured. Can he or anyone else also tell us whether *Orthrosanthus multiflorus* is also procurable? I saw these two plants growing side by side in a damp place on the Kew rockery some years ago, and was struck by both

of them. Both are apparently hardy, though the latter comes from N. Holland. I have never seen either of these plants offered in any tradesman's catalogue.—J. C. L.

SOME USEFUL CLIMBERS AND SUITABLE PLANTS FOR WALLS.

As all of the following plants are cultivated in pots in nurseries, they can be planted at any time of the year, but this is the best season in which to do it. Such plants grown in pots are generally what is termed well established, and the roots have coiled themselves round the balls of soil. When, therefore, a plant rooted in this way is turned out of the pot, the outer roots should be carefully unwound, at the same time taking care not to loosen too much of the soil forming the centre of the ball. The outer roots should be carefully spread in the hole dug for their reception. To dig a small hole, and put into it a ball of roots, such as that just described, without unwinding any, is useless. The place in which to plant should be of sufficient dimensions to admit of the roots being spread out as above directed. More than that. Climbers are generally gross feeders, and especially is this true of the varieties of Clematis. In all cases where permanent planting is done, the soil should be dug out to the depth of 2 feet, and a good dressing of well decomposed manure applied, mixing in some good soil with it until enough has been put in to enable the plant to be placed in position, not burying it too deep, so that mulching can be added. The soil also should be trodden firmly about the roots, and, of course, every planter who knows his work will make due allowances for the inevitable sinking of the soil.

The most suitable plants are Virginian Creepers—*Ampelopsis hederacea*, the old North American Virginian Creeper, and its congener from Japan, the elegant *A. Veitchi*. This last clings to the wall or whatever it grows against, and therefore saves a lot of trouble in the matter of nailing. Then comes *Aristolochia Sipho*, a tall, twining plant of rapid growth, with large heart-shaped leaves and flowers of curious form, bent like a syphon, brownish yellow in colour and sweet-scented, but not abundantly produced. *Berberidopsis corallina* is an evergreen shrub of a rather scandent habit; the coral-red flowers are abundantly produced in terminal pendulous racemes on long red peduncles. But it should have some protection during frost, as when it blooms it makes a gorgeous sight. *Berberis dulcis* is a very pretty, early-flowering shrub, quite hardy against a wall, and worthy of being grown in every garden. The flowers are of a deep yellow colour, and followed by edible, globular black berries. *B. stenophylla* is also a most ornamental shrub, profusely laden in April and May with brilliant blossoms, and subsequently with berries; the colour of the flowers is a bright citron yellow. *Bridgesia spicata* is a fast-growing evergreen climbing plant; the blossoms are abundant, but not showy. It is one of the few climbers that are evergreen, and it quickly covers a wall. Who would not plant the fragrant *Chimonanthus fragrans* against a wall? This is all the protection it requires. As a modern writer remarks: "Midst frost and snow, bunches of deliciously fragrant flowers can be gathered each Christmas Day from this winter-loving bush."

Ceanothus azureus and *C. dentatus* are two delightful blue flowering shrubs that bloom abundantly when well established. Of Clematises there are many varieties, spring and summer-flowering, double and single. It is scarcely necessary to give varieties, but this fact should be borne in mind, that the spring-blooming or patens section must not be cut back, because they flower on the ripened wood of the previous year. The vigorous-growing summer-flowering varieties will admit of being cut back close to the ground, much depending, of course, upon the space the plants are required to cover. *Crataegus Pyracantha* is so well known that it simply needs to be described as trailing or climbing against a wall, and as bearing an abundance of red berries through the winter in

large clusters. *Cydonia*, or *Pyrus japonica* makes an excellent wall plant, doing much better in this way than when grown as a bush. Trained against a wall it will grow to the height of 12 feet or 15 feet, and form a really beautiful object. The flowers are bright red, abundantly produced, and expand early. There is a pure white variety also, and one known as *grandiflora* varicolor, that has very large pink and white blossoms. *Wistaria*, or *Glycine sinensis* is a vigorous and rapid-growing climbing plant, and a magnificent ornament to our walls and trellises. It should be planted where there is a good space of wall or fence to cover. Ivies, and especially the common Irish, make excellent wall plants. *Argentea*, silver-blotched; *aurea*, golden-leaved; *palmata*, deeply lobed; *maculata*, mottled; and *tricolor*, various colours, are the best. *Humulus lupulus*, the common Hop, can be used in suitable places with excellent effect. *Jasminum nudiflorum* is one of the most showy of winter-blooming plants, expanding its bright yellow flowers all along its leafless branches from December to February, even midst frost and snow. The common white Cape Jessamine (*J. officinale*) is also a charming subject; and the evergreen *J. revolutum*, a plant that succeeds best against a wall, and produces bright yellow and deliciously fragrant flowers. *Solanum jasminoides* is a pretty climbing plant bearing clusters of white flowers, but it requires a south wall and a sheltered situation, being rather tender. Then there is *Tecoma radicans*, a Virginian climbing shrub, with scarlet and orange trumpet-shaped flowers, which fixes itself to trees or walls by rootlets from the branches, like the Ivy; it is of rapid growth, and soon covers a large space of wall. It is hardy in the south-west and up to the midlands of England. I find I have omitted *Lardizabala biternata*, an evergreen climbing shrub from Chili; the flowers are dark brown, produced in pendulous racemes, expanding in winter. It is a beautiful climber, well worthy of a wall on which to train it, and deserves to be better known. R. D.

Corbularias. The distance between what we have been in the habit of considering typical *C. citrina* and typical *C. nivalis* is wide enough for all practical purposes to warrant the separate names, but from what we have already seen of the variation of the former in the direction of the latter it does not appear difficult to fill all the links in the chain between the two so-called species. Indeed, I should not be surprised that among the recent importations sufficient material to accomplish this will be found before the season is over. Typical *C. nivalis* with us is always dwarf, scarcely rising its pretty flowers above the dwarf, sturdy foliage, the corona orange with slightly deeper-tinted sepals or spurs. In *C. citrina* the corona is as large again, citron-coloured, and no difference between that and the spurs. One variety in the direction of *nivalis* has deeper tinted spurs; and in the other, which I should say is almost intermediate between the two, the flowers are small, two-coloured, as in *nivalis*, about the same tints, the scape being half as long again; the leaves are long and flat, being entirely those of typical *C. citrina*; the habit being altogether more robust than that of *C. nivalis*. The latter is just opening its flowers on the rockery, and we are looking forward to a real spring treat.—K.

White Trumpet Daffodils.—As the season has again come round when we can make progress with the arrangement and classification of our white Daffodils, I should like to ask all growers of them, and especially Irish growers, who have old gardens in which they are established, and who may not previously have paid any very special attention to them, to notice the blooms very carefully, and note down any particulars in which they appear to them to differ from the ordinary common. We have talked a good deal about a trial of white Daffodils, which no doubt will be a very excellent thing when we are ready for it, and have collected all possible materials to ensure its being as successful and as complete as possible. "Eile mit weile" is

a safe rule, and one which in this case we must follow if we do not wish to be compelled to undo each year the work of the preceding. I specially wish gardeners to notice their white Trumpet Daffodils because several beautiful forms which appear to have become extinct in, or may never have existed in English gardens have been found established in old Irish gardens, and I believe that there are still forms which have not yet come into the possession of those who have made a speciality of this section. But although I make the request specially to Irish growers, I by no means limit it to them; I have had several good forms of white sent to me from gardens in different English counties, and I have no doubt but that they are to be found in old English gardens as well as in Irish ones. If the owners of any forms which appear to them to be distinct would be kind enough to forward blooms of them to the Narcissus committee, which meets on April 12, 26, and May 10, they will confer a favour on all who are specially interested in these very beautiful flowers; or if they prefer to send blooms to me, I shall be glad to receive them, and will let the sender know whether they are forms which we already have, or not, and whether they are worth sending on to the committee. Differences might be looked for in the following particulars: Flowers either unusually large or small; trumpets very wide or very narrow; perianth longer than the trumpet or much shorter; perianth divisions very broad or very narrow. H. M. WHITE, *Charleville, Roscrea*.

Spring flowers.—Amongst spring flowers suitable for planting in the semi-neglected or wild garden, none equal, and few are more suitable, than the Glory of the Snow. Where the Grass is not over-rank it does exceedingly well, every year becoming more robust, and sending up stronger flower-stems covered with its charming blue white-eyed blooms. Some Scillas, such as *S. campanulata*, also do well planted in this way. *S. sibirica* and *S. bifolia* are so dwarf that they can only be planted in thin, almost bare spots, where, however, they seem to thrive very well. *Triteleia laxa* and *uniflora* do not seem to be amenable to this treatment, although on sheltered borders in the open they hardly ever fail to produce abundance of flowers. When planted among coarse Grass they begin to dwindle the second year, and in a few seasons disappear altogether. Among Snowdrops, *G. nivalis* seems to be by far the most suitable, and even under trees it yields abundance of its single and double flowers. *G. Elwesii* can hardly be said to be suitable for naturalising, and although apparently more robust than the older sorts, it loses ground when planted in the wild garden.—K.

Eryngium Oliverianum.—In your last week's issue there seem to be some confusion about the plant so beautifully figured on p. 298. It is called *E. amethystinum* Oliverianum, and as these names represent two distinct plants, it may prove misleading to growers who possess either of them. The plant figured is no doubt *E. Oliverianum*, which may be found in nurseries under *E. amethystinum*, and this fact may account for the above. The latter, however, is a dwarf plant, rarely exceeding 18 in. in height, with deeply pinnatifid radical leaves, spiny; the stems are smooth, corymbosely branched, and the involucre leaves, never exceeding seven or eight, lance-shaped with a few teeth at their base, and much longer than the flower-heads; flower-heads, stems, and upper leaves beautiful amethyst-blue. *E. Oliverianum* is more nearly related to *E. alpinum*, and differs from *E. amethystinum* in its being 3 feet or 4 feet high; the lower leaves on long stalks, roundish, and having cordate bases; the stem-leaves are three-lobed; the involucre leaves vary from ten to twelve, lanceolate, bearing five or six teeth on each side. It is readily distinguished by its more robust habit and larger and more numerous steel-blue heads of flowers.—K.

Composition of sand.—I recently read in one of your papers an opinion that sea sand was as good as silver sand for gardening purposes. There are differences of opinion about this matter, and I should like to suggest a reason which does not appear to have gained attention. Our cliffs in this

neighbourhood are composed largely of calcareous sandstone, and if hydrochloric acid be added to a little of our sea sand, there is abundance of effervescence, as it consists largely of carbonate of lime. Now, if the same test be applied to silver sand, there is no effervescence, as it contains no lime. Will not this fact show that the composition of sand, apart from its grit, should be taken into consideration, and will give rise to different results? Having given my theory, I should like the opinion of practical men as bearing on it. — JOHN WHITEFIELD, F.C.S., Scarborough.

ORNAMENTAL GRASSES.

PROPERLY arranged and rightly treated, these Grasses are both pretty and useful. They are pretty when growing, and very useful during the winter in a dried state. The mixed flower borders are the best positions for them, and here the seed may be sown at once thinly in small patches and covered with a little fine soil. Most of the seed germinates quickly, and the seedlings also transplant readily if need be. In some instances, especially where many bulbous-rooted plants are grown, the plan of raising the Grasses in pots or boxes may be preferred. If the seed is sown in little drills, patches of plants can be more readily obtained than by sowing broadcast. On no account should any strong heat be employed in raising the plants, a cold frame being a more suitable position, and the transplanting to the borders ought not to be delayed till they have been starved into premature flowering. Rich land naturally induces the production of stronger flower stems, but ordinary garden soil is quite good enough for such accommodating weed-like subjects.

Gymnopleura latifolia and *Urtica latifolia* grow to a height of about 3 feet, and these, therefore, may go at, or near to, the back of the border. *Diplacne fascicularis*, *Eragrostis cylindrorhiza*, and *Paspalum elegans* usually attain a height of 2 feet, while *Stipa pennata*, *Hordeum jubatum*, *Pennisetum longistylum*, *Bromus macrostachya*, *Briza maxima*, *Chloris truncata*, *Coix lachrymana*, *Grangea maderaspatana*, *Panicum colomum*, *Agrostis argentea*, *Agrostis laxiflora*, and *Agrostis nebulosa* grow from 1 foot to 2 feet in height. For the second row from the front such kinds as *Agrostis dulcis*, *Briza geniculata*, *Briza gracilis*, *Bromus briziformis*, *Chloris radiata*, *Eleusine coracana*, *Eragrostis elegans*, *Eragrostis senegalensis*, *Lagurus ovatus*, *Pennisetum fimbriatum*, and *Tricholena rosea* are suitable. The dwarfest in habit, and the best therefore for the front rows, are *Brizopyrum siculum*, *Chloris elegans*, *Chrysanthus aureus*, *Festuca pectinella*, *Festuca viridis*, *Lasiagrostis argentea*, *Lasiagrostis splendens*, and *Tripsacum dactyloides*.

As a rule these Grasses, or the majority of them, are most appreciated in a dried state, and are extensively grown for house decoration during the winter months. With a very little ingenuity and the display of a moderate amount of taste, handsome bouquets suitable for large vases can be made, while for small vases a bunch of a single variety is usually preferable to mixtures. It must not be supposed that those bright mixtures sold by florists can be obtained by sowing an imported collection of varieties as retailed by all seedsmen, but people with good taste usually prefer the Grasses as grown to those unattractively stained importations. A little judgment is required in the matter of cutting and drying the Grasses. If cut before they are properly matured they keep badly, and are not sufficiently stiff after drying. On the other hand, if left till they are fully ripe much of their beauty is lost. It is when they are approaching ripeness, or when changing colour and quite dry, that they should be cut, at which time they are sufficiently matured to dry and keep well. After cutting they ought to be laid out thinly on paper or mats and in a sunny position, taking care they do not get wet in any way, and in a few days they will be ready for storing. Some of the sorts are suitable for mixing with cut flowers in vases. Many of the wild Grasses growing in the hedgerows, if collected and dried as

advised in the case of the cultivated kinds, are very pretty and serviceable. W. I. M.

CHRYSANTHEMUMS.

E. MOLYNEUX.

ABOUT this time of the year most growers commence to weed out such plants as are not suited for the growth of large blooms. By this time they will show whether or not they are likely to become suitable for the purpose named, as it is useless to grow on weak or delicate-looking plants, and generally it happens that more have been struck than can be accommodated during summer or housed in autumn. Surplus stock can be devoted to the production of cut blooms, or for conservatory decoration they are equally valuable. Those that are not required for producing large flowers will be from 4 inches to 6 inches high, and must be stopped for the production of side branches, shifting as required into larger pots before they are at all root-bound. Neglect of this often causes a loss of the lower leaves later on in the season. Plenty of space should be given to the plants in all stages of their growth; otherwise, they are likely to become weakly. Flowers can also be had later in the season by growing two batches of plants. One stopping is enough for some, while others should be again pinched when the shoots are 5 inches long, and again when the succeeding branches have attained a similar growth. From that period allow them to grow away naturally, so to speak, thinning no more shoots or flower-buds when they appear. Great care must be exercised in watering the plants in all stages of growth, never allowing them to flag. As the plants increase in size they will require supporting. The best method to adopt is to place three stakes in the pots in a triangular form, and pass around the plant a piece of bast, securing it to each stake. This keeps the shoots in position and is quickly performed. For the smallest plants 8-inch pots are large enough; while for the largest, those 10 inches in diameter are ample. Some upright-growing kinds may be potted two in an 11-inch pot, always selecting plants of the same kind, or those of about the same colour and height. For plants of the smallest size, three or four branches to each are sufficient to retain after the first stopping, but in the larger size about eight is a fair number, and sufficient to produce large bushes, this number being retained at the second stopping, selecting always the strongest, and removing any surplus ones not required. The majority of reflexed varieties have weak peduncles, causing the blooms to hang downward and consequently require support. The largest sorts of the reflexed section are more likely to come with hollow eyes. Where choice can be made, the following will be found suitable, preference being given to those naturally upright in habit:—

Mrs. G. Ruadle
Mrs. Dixon
George Glenny
Venus
Nil Desperandum
Mons. H. Jacotot
Cullingfordi
James Saltor
Flocon de Neige
Bouquet Fait
William Robinson
Simon Delaux
Triomphe du Nord
L'Africaine

Margot
La Nympho
Peter the Great
Eldine
Mlle. Lacroix
Jeanne Delaux
Dr. Macary
Dr. Sharpe
Progne
King of Crinons
Père Delaux
M. Astorg
Fair Maid of Guernsey

Some Anemone sorts bloom profusely and are very attractive, the undermentioned being the best:—

Sœur Dorothée Souillé
Fabian de Mediana
Duchess of Edinburgh
Princess Louise

Fleur de Marie
Minnie Chata
Mme. Goderaux

Where white flowers are in much demand early in October, there is no variety to excel *Lady Selborne*, as its pure white colour is most noticeable while the flowers are full, the florets falling in a weeping manner, and rendering them very suitable for cutting or for conservatory decoration. Plants of this variety grown on the pinching system do not succeed so well. The flowers produced are thin in petal, and appear much too flimsy. To develop its true character it should be grown on what is termed the "big bloom method." Another advantage in this variety is its early blooming propensity. Where space is an object, this variety is particularly valuable, as it can be had in perfection by the 1st of October, and therefore can be cut and the plants cleared away to make room for the regular November varieties. When treated as a bush plant it cannot be so used. Cuttings should be struck at the usual time, or even later, but in this instance the plants probably will not grow so strong. Do not stop the plants, but allow them to break naturally into growth, selecting five of the most promising branches, removing all others and securing those left to a centre stake. When the next break takes place, which will generally be early in August, one bloom bud upon each stem must be preserved. Each of these five stems will produce one flower, which will be in perfection by October 1. Eight-in. or 9-in. pots may be used for single plants, but two, and even three plants may be grown in 11-inch ones. When the plants break naturally the first time, allow three branches only to grow instead of five, as before advised. At the next break select three additional ones to those already formed. In this case remove all the flower-buds and retain the six growths; these will in a short time produce flower-buds, which should be retained one on each stem. Such plants do not require much space, as this sort is upright in growth and not branching in character to the extent that some kinds are. Liberal applications of manure applied in some form should be resorted to either in a liquid state or as a top-dressing.

Single varieties of *Chrysanthemums* are specially suited for conservatory decoration or for supplying cut flowers in quantity. These, to my mind, have not yet had that share of attention which their merits deserve, simply because the rage has all been for the double-flowered kinds, the idea of a single *Chrysanthemum* being quite out of the question. A more lively interest is now being taken in this class than heretofore, owing, perhaps, to the advent of more varied forms, both in colour and structure. They only require to be better known. Here we grew about fifty plants on the bush method, all of which bloomed in the greatest profusion the whole length of the stems, quite 2 feet long, and in some instances more; every little piece of side growth produced several flowers in addition to those on the main stems. These plants were arranged in the form of a sloping bank, intermixing the colours, and the effect was quite charming. Another advantage also, which should not be lost sight of, is the time they remain in flower; being light in the build of the florets, there is not the same risk of damp that there is in the incurved or reflexed sections. By the introduction of a few late-blooming kinds the show can be maintained considerably longer. The perfume, too, from some is like that of *Violets*, only in a more powerful form, and their colours are so varied. For filling centre-pieces they are especially valuable. An instance of this came under my notice during a visit to a November exhibition in the past season. Prizes were offered for the

best decorated epergne composed of *Chrysanthemums* and *Ferns*: in one instance only were the single varieties used, the other competitors depending upon the double, and consequently much heavier kinds. There was no comparison whatever in the stands for lightness of arrangement and beautiful shades, as used in conjunction with the delicate fronds of *Adiantum cuneatum* and *A. gracillimum*. These single va-

plants, covered with their snow-white flowers, in Mr. R. J. Measures' garden at Camberwell.

ORCHIDS.

W. H. GOWER.

ANGRÆCUMS.

ALTHOUGH this family contains a great number of species, the flowers of many of them are small

plant stoves, adding considerably to the attraction of our Orchid collections. The following may be taken as the best and most showy kinds: *A. eburneum*.—This is a noble growing species and appears to have been introduced some sixty years ago, as we find the Messrs. Loddiges recording it as being in their celebrated collection at Hackney in the year 1830, they having obtained it from the Mauritius. In 1854 Mr. Ellis visited Madagascar, and describes this plant as being common upon the branches and in the forks of the trees upon the outskirts of the forests, surrounded with numerous Ferns and other plants; these were flowering in the month of June. In our plant stoves under cultivation, however, the plant flowers in winter. The leaves are strap-shaped, some 18 inches long and 2 inches broad, arranged in a two-ranked fashion, and light shining green in colour. The spike is erect, as long, or longer than the leaves, bearing numerous thick, fleshy flowers, some 4 inches across, which last many weeks in full beauty. The sepals and petals are narrow, green, lip large and conspicuous, cordate in shape and ivory-white. This plant attains considerable dimensions, and is exceedingly ornamental when not in flower. Although it grows naturally upon the branches of trees, it succeeds best in a pot under cultivation. *A. eburneum virens* is similar in size and contour to the preceding, but its foliage is intense deep green; the flowers, moreover, are smaller, and instead of the lip being pure ivory-white, it is tinged with green down the centre. *A. sesquipedale* is found growing in the same districts as *eburneum*, and sometimes they are found in company. In their native habitats they appear to grow in situations tolerably exposed to the sun, and therefore should be well exposed to its influence in this country. Mr. Ellis remarked that where the plants were found growing in shady positions, the flowers lacked their pure ivory whiteness and became creamy or yellowish white, and inferior in beauty; this statement is fully borne out by the plants in our houses treated under the same conditions. Its leaves are broad, two-ranked, and of a peculiar blue-green hue; the flowers are ivory-white, with a fragrance resembling the Madonna Lily, some 8 inches or 9 inches across, flat and spreading; lip very large, cordate-ovate, and acuminate, slightly toothed on the margins, and furnished with a very long and stout greenish spur. It blooms during the winter and early spring months. *Angræcums* require a resting season, but inasmuch as they have no pseudo-bulbs to sustain them during a period of severe drought, water should be administered sparingly and the temperature reduced after growth is finished; this should take place about the time they are in flower. *A. Leonis* is a singular plant of somewhat recent introduction from the Comoro Islands. Its leaves are sword-shaped, set vertically on the stem, and the whole plant resembles a deep green fan. The flowers are borne five and seven together, pure white, and very fragrant, the long spur being tinged with green. It should be grown in shallow baskets and suspended in the strong light, although the full sun's rays should not be allowed to fall upon it through the clear glass. This plant is found at an altitude of some 5000 feet, and appears to thrive under much cooler treatment than the majority of its congeners. *A. caudatum* is still a very rare plant in gardens, although it appears to have been introduced so long ago as 1832. It is a native of the west coast of Africa, in Sierra Leone and Senegal, and consequently requires strong heat and an abundant supply of moisture. Being a compact plant, with leaves some 9 inches or 10 inches long, it can be con-



Angræcum Kotschy.

rieties can easily be grown by following carefully a few simple instructions, which I will give in a future issue.

***Cœlogyne cristata* and *Lemoniana*.**—The former, although an old inmate of our gardens, becomes more popular every year, especially as improved forms of it have recently made their appearance. The variety *Lemoniana*, which is stained in the lip with pale citron colour instead of orange-yellow, generally commences to flower about the time *cristata* is past. We recently saw some very fine masses of these

and insignificant. Of these, *A. distichum*, *teretifolium* and *subulatum* may be given as examples, whilst on the other hand *A. sesquipedale* produces enormous flowers, which rank amongst the largest of any of the Orchid family. They are with but few exceptions natives of Africa or the African islands. During the past few years many new and beautiful kinds have been introduced; these have been successfully established in our

veniently grown in a suspended basket, in which position, moreover, it succeeds the best. The spike is longer than the leaves, pendulous, bearing numerous flowers; the sepals and petals are narrow, spreading, and greenish yellow; the lip which stands uppermost is pure white, furnished with a very long, pendent spur, olive-green in colour. The flowers usually appear during the late summer and autumn months. *A. Chaillanum*, a native of West Africa, from the districts of the Gaboon and Num River, should be treated in a similar manner to *caudatum*, which it somewhat resembles in habit of growth, but from which it is totally distinct when in flower. The racemes are pendent; the flowers are pure white, except the spur, which is yellowish green; the sepals and petals are about equal in size; the flowers somewhat funnel-shaped for about half their length, the upper portion of the segments being reflexed. *A. Kotschyi*, which the accompanying cut well illustrates, is a distinct and free-flowering kind from Eastern Tropical Africa. The flowers are ivory white, with a very long spirally twisted, reddish brown spur. *A. Ellisi* is a somewhat similar plant to the preceding; the flowers are produced in a raceme nearly 2 feet long, bearing from one to two dozen pure white sweet-scented flowers, with a deep brown straight spur 6 inches long. It is a native of Madagascar. *A. bilobum*.—This is a very old, but not well-known plant from the Guinea Coast, West Africa. The leaves are very deep green, slightly netted with prominent veins, and deeply bilobed; the racemes are pendulous, many-flowered, the blooms being snow-white, flushed with pink, and sweet scented; spur slender, some 2 inches long, and slightly cleft at the extremity. This plant is very slow-growing, and requires considerable care in its management. We have tried to grow it under pot treatment, but with little success; neither did it thrive long upon a block of wood, and there is no doubt but the small shallow baskets now in use would suit it best. *A. bilobum Kirki* is a small form of the preceding from the east coast of Africa, and should be treated in a similar manner. The leaves are narrow, about 4 inches long, broadest at the points, where they are deeply and unequally bilobed. Scape drooping, bearing three or more flowers, pure white; spur nearly 3 inches long, light brown. *A. gladiifolium*, although not showy, is admirably adapted for block culture. It is an erect-growing plant with lanceolate, acute leaves; the peduncles one-flowered; the flowers are pure white, nearly 2 inches across, and furnished with a straight, slender spur 3 inches in length. It comes from Madagascar. *A. Scottianum*, from the Comoro Islands, is a terete-leaved plant somewhat resembling a small form of *Vanda teres*. The lip is large, and the most conspicuous part of the flower, which is pure white, saving the spur, which is greenish brown, tinged with yellow, and some 6 inches long. *A. pellicidum*, although not particularly showy, is an extremely handsome plant, bearing large broad leaves, from 12 inches to 18 inches long, and somewhat resembles a gigantic *Phalenopsis grandiflora*. The racemes are numerous, as long, or longer than the leaves, and thickly clothed with thin pellicid white flowers. It may be grown upon a block when small, but should be placed in a basket as it increases in size. It is a native of low districts on the west coast of Africa, and enjoys an abundance of moisture and strong heat. *A. fastuosum*, from Madagascar, is a handsome plant, with ivory-white flowers, which are very fragrant. *A. fuscatum*, also from Madagascar, produces a dense-flowered raceme of white flowers, furnished with a long, curved, slender spur. *A. citratum* somewhat resembles

in growth *Phalenopsis rosea*, and produces in mid-winter numerous long, slender, pendulous racemes, densely covered with small, flat, white flowers tinged with citron; spur longer than the lip, rather blunt, pale yellow at the extremity. It comes from Madagascar, a country which appears to abound in handsome forms of this genus. It should be grown upon a block of wood or in a shallow basket, and suspended from the roof. *A. falcatum* is a native of Japan, and thrives best on a block of wood, and should be grown in the *Odontoglossum* house. It is a small plant with very dark green leaves, producing its racemes very freely, which are densely furnished with its pure white, long-spurred, fragrant blooms. Other fine kinds are *A. elatum*, *articulatum*, *descendens*, *Eichlerianum*, *pertusum*, &c.

Angræeums require considerable care to maintain them in good condition, and are, perhaps next to *Phalenopsis*, the most difficult Orchids to cultivate. They enjoy a high temperature and an atmosphere well charged with moisture, but a free circulation of air must also be maintained. A season of rest is necessary to induce them to put forth their blooms in due season, but they cannot withstand much drought, which injures their foliage, except in the case of the large growing kinds with thick leathery leaves, which are less susceptible. In order to meet these requirements, it will therefore be found most conducive to their well-being to reduce the water supply, both to their roots and in the atmosphere, and to lower the temperature rather than to maintain strong heat and severe drought. This resting period should be about the time they are flowering, and as the majority of the kinds are winter bloomers, this course of treatment can be easily applied. For those grown upon blocks of wood, a little *Sphagnum* Moss about their roots is all they require, but for those in pots and baskets, we have found some good-sized lumps of rough peat and nodules of charcoal to suit them admirably, whilst thorough drainage is of the most vital importance.

Cymbidium eburneum.—This very fine species is now in bloom in Mr. Williams' nursery at Holway. It is a large-flowered variety, and bears two flowers on some of the scapes; the sepals and petals are pure white, as is the entire flower, except a slight stain of yellow on the lip. This species obtained the reputation of being a shy bloomer until its wants and requirements were understood. Formerly it was kept in the very hottest part of the East Indian house, but now, when grown in a cool house, it flowers freely.—G.

Lælia elegans Measuresiana.—This is a new and distinct variety, which we recently saw blooming with Mr. Sander at St. Albans. The plant is robust in growth, and has nothing, either in pseudo-bulb or leaf, to distinguish it from the type. The flowers, however, are both distinct and handsome; sepals and petals clear sulphur-yellow, the latter flashed with purple at the tips; lip broad; front lobe rich, deep velvety purple; side lobes rolled over the column, and pure white in colour. The typical *Lælia elegans* is a rare plant in its native country, and the quantities of it that are imported are not large; consequently, its varieties, especially such a beautiful one as this, are not plentiful.—G.

Cœlogyne cristata.—Mr. Page, in THE GARDEN (p. 275), March 26, says that the bulbs of this produced under cool conditions were small. I leave that for you to judge, as I have sent you a sample of bulbs so grown. I also remember that two of my largest plants in pots each 1 foot across, which were taken more than twelve months ago from the cool house some time after the bulbs were made and placed in the East Indian house to get a few early flowers, had respectively twelve and sixteen spikes of four, five, and six flowers each. Requiring more room last

spring in the *Masdevallia* house, I shifted them into warmer quarters, viz., the back stage of one of the lean-to houses. The bulbs they made were about the same, with, I am sorry to say, a tithe only of the flowers they produced in the cool house.—H. VICARY, *Sudbury House Gardens, Hammersmith*.

* * * The bulbs received were large and plump, and certainly showed that under cool treatment these plants will do well.—ED.

— In reference to Mr. Page's remarks on this beautiful Orchid in THE GARDEN (p. 275), March 26, a few years ago I saw a batch of this Orchid at Wortley Hall that had been grown under what might be termed cool treatment, as heat was only applied in cold or dull weather. The plants were flowering very freely, and many of them had two spikes from each bulb, several of the spikes having seven flowers on each. One plant growing in an 8-inch pan had fifty spikes on it.—C. R., *Seelberg*.

ORCHIDS AT WILTON HOUSE.

THE Orchid houses in these gardens are very gay just now, nearly a hundred species and varieties contributing to the display; amongst this number are some very notable plants. *Odontoglossum Edwardi*, the first plant that flowered in Europe, is bearing a spike some 4 feet in length, with a much-branched panicle carrying upwards of a hundred and fifty blooms; the individual flowers are over an inch across, and a deeper shade of violet-purple than we have hitherto seen; the peculiarity of its colour added to its fragrance renders this a great acquisition. It is a native of high mountains in Ecuador, and appears to grow robustly under the very coolest treatment. *O. roseum* is another departure from the usual colour of the genus, and its rosy crimson flowers are now conspicuous among numerous forms of *O. Alexandre*; it also requires a very cool atmosphere. Associated with these are some fine examples of *O. triumphans*, *pulehellum majus*, *Sanderianum*, *maculatum*, and others. Of *Oncidium*s, *O. Weltoni* is very conspicuous, with a spike about 3 feet long bearing upwards of fifty flowers; it is now relegated to the genus *Miltonia*, and is known as *M. Warscewiczii*. It comes from the cool regions of Peru, and thrives well with *Odontoglossum*s of the crispum section. In the same house are some of the finest forms of *O. Phalenopsis* we have yet seen, the flowers being very large and highly coloured; the markings varying in the different forms from blotches and spots of maroon-erimson to purplish violet. We also noticed that in some plants the lateral sepals were joined together (connate) for their entire length, whilst others were free, except at the base. This species, with its near relative *O. eucallatum*, cannot well be kept too cool. *O. sarcoades*, a Brazilian plant which requires more heat than the preceding, is here represented by a fine variety bearing a spike of nearly eighty flowers. The variations in *Lycaste Skinneri* are very great; indeed, these plants are quite an exhibition in themselves, several of them bearing over fifty flowers upon a plant. These have for several years been grown upon the cool plan, and have become grand specimens. In the warm house *Dendrobium*s are very gay, being represented by such kinds as *Wardianum*, *Devonianum*, *lituiflorum*, *crassinode*, *primulinum*, and others, all of which have remarkably fine growth. *Jamesianum*, in particular, has pseudo-bulbs 2 feet in length, bearing as many as twelve flowers on each stem, the ivory-white sepals and petals being beautifully set off by the stain of red at the base of the lip. *Cypripedium*s are well represented in this collection, the most noteworthy example at present in flower being *Dominianum*, with seven spikes of its long-petaled flowers. *Cymbidium Lowianum* and *eburneum* are both extremely beautiful, as also are various *Cattleya*s, but the winter-flowering section is now on the wane. *Masdevallias* are not yet at their best, but good examples of the brilliant *Vcitchiana grandiflora* are in full beauty, associated with *ignea* in various forms, *amabilis*, *Harryana*, and *Chelsoni*. Many other kinds are now flowering of less importance.

Suffice it to say, the cool treatment of all the species both from the eastern as well as the western hemisphere is carried out here, the condition of established plants and seedlings proving how congenial this is to their well being. G.

Dendrobium fimbriatum Will some one inform me how to cultivate this beautiful Dendrobe? I have three plants under my care which fail to bloom satisfactorily. They are grown in a stove with Crotons, Gardenias, and other fine-foliaged plants which do well. They are potted in peat, crocks and charcoal; one has made growth 3 feet in length, and one of the others 2 feet to 3 feet; yet I have only one spike of bloom each on two of the plants. I put one plant in a cool house in December and kept it dry for two months, so that the growths began to shrivel.—ALBERT PARRY, *Shendish, Hemel Hempstead*.

Odontoglossum triumphans—This species, which is now flowering with Mr. Jacomb, at Stamford Hill, appears to have been very much neglected by Orchid growers, the reason for which it is difficult to imagine. It is a bold-growing plant producing a many-flowered raceme of bloom, the individual flowers being upwards of 3 inches in diameter, sepals and petals broad, rich deep yellow, more or less profusely blotched with chestnut; lip large, white at base, but deep reddish brown in front, the toothed crest being also white. It is usually a late spring and early summer flowering kind, but it is now in fine condition in this collection, and affords a rich contrast to the white flowers of *O. Alexandre* and *O. Pescatorei*. Its flowers are very persistent; it may be grown successfully under the same treatment as the coolest of the *Odontoglossums*.—G.

Cypripediums at Clapton.—Amongst the thousands of Lady's Slipper Orchids which Mr. Low has in his nursery some very good examples are now flowering. Trade collections, however, can never be so effective or showy as the collections in private establishments, for whilst the latter conserve, the former are only too anxious to distribute the gems. *C. Lawrenceanum*, conspicuous and handsome by its remarkably marbled leaves, is doubly attractive when in bloom, its large and showy flowers having few equals in the section to which it belongs. *C. villosum* and *C. Boxalli* are represented by many examples. *C. Lowi*, although early in the season, is just beginning to unfold its lovely blossoms. *C. Haynaldianum*, which somewhat resembles *C. Lowi*, is also in fine form, and blooms twice in one season. *C. Swainianum*, which is a hybrid between *C. Dayanum* and *C. barbatum*, is both distinct and handsome, the beauties of both parents being happily blended; whilst *C. Sederi* and *C. Roezli* appear never to be destitute of flowers.—G.

SHORT NOTES.—ORCHIDS.

Phalenopsis Schilleriana.—This species is now to be seen in great beauty in Mr. Bonny's nursery, near Swanley. The plants are in most vigorous health, producing numerous branching spikes, each bearing from twenty to thirty of their beautiful mauve-coloured blooms.—G.

Odontoglossum cuspidatum.—This is a very distinct and handsome species; the sepals and petals are soft primrose-yellow, blotched with chocolate; the lip is white, tapering gradually to a sharp, stiff point (cuspidate), and spotted with dark brown. We recently noticed it blooming in Mr. Williams's nursery at Holloway.—G.

Ada aurantiaca.—This is a free-growing Brassia-like plant, and requires very cool treatment. It bears a nodding raceme of bright cinnabar flowers, rendering it very attractive and useful for arranging with light-coloured flowers. We recently saw it in quantity flowering in Mr. Bull's nursery at Chelsea.—G.

Dendrobium micans.—This hybrid is now flowering with Messrs. Veitch at Chelsea. The growths measured 3 feet in length, and are well furnished with 1 vely tinted flowers. The sepals and petals have a bluish tint suffused through the pale purplish colour; in the centre of the lip there is a dense purple-maroon blotch. This has been raised by crossing *D. Wardianum* with *D. lituiflorum*.—J. D.

Phalenopsis Stuartiana.—A seedling *Phalenopsis* now in flower in Messrs. Veitch's nursery at Chelsea has proved to be the same as the imported *P. Stuartiana*. It was raised by crossing *P. Schilleriana* with the pollen of *P. amabilis*. The white petals, the peculiar spotting and formation of the labellum is the same. This is one more problem solved. It will be remembered that the parentage of *P. casta* was verified by the flowering of a hybrid raised in this nursery.—J. D.

Paphinia Randi—This is a new species of this curious family which we recently saw flowering with Mr. Williams at Holloway. It is about the same size as *P. cristata* both in growth and flower; the sepals and petals are deep chocolate-brown, with a narrow marginal border of white, the lower sepals being streaked irregularly with broad lines of white; the lip is deeper coloured with a white frill, but differs in shape to any other species we have seen.—G.

CALANTHES AND THEIR CULTURE.

It would be quite impossible to name any plants or bulbs which bloom so freely in the late autumn and early winter months as the *Calanthes*. Their long arching spikes are most graceful, and the form and colour of the blooms of all the varieties are charming. In many cases, plants which are well grown and promise to bloom freely are shy in making a display. Careful spring and summer culture will always result in abundance of flowers during autumn and winter. The bulbs are perfectly at rest during the blooming season, especially towards the end of it, and the best treatment they can receive until March is to keep them quite dry. They ought to be started into growth again in March. The growths push forth from the bottom of each bulb, and we have seen them appear whether the bulb was planted or not, but one of the best ways of treating them we ever tried, and which we now follow, is to place the bulbs in a layer in a shallow box; stiff between them firmly with Moss to the depth of 2 inches, place them in a warm house, and allow the growths to break in this way. The short roots penetrate the Moss, and the growths push freely through it. When these are about 2 inches in height they are lifted carefully, without breaking root or top growth, and potted. We have potted them in all sized pots, sometimes placing four or five bulbs in an 8-inch pot, or three in a 7-inch pot; but of all ways, we have invariably found the best to be that of potting the bulbs singly in 6-inch pots. They are put into these and never shifted or repotted afterwards. Careful potting is the secret to their successful culture, and we attribute more to it than anything else. The roots are rather fleshy and produced in great abundance, consequently they require plenty of drainage and a rough mixture. Mere quantity of drainage is not the only point, as a pot containing one quarter of drainage at the bottom carefully arranged is more effectual than another half filled, but improperly arranged. We have used oyster-shells for draining *Calanthe* pots with good results, but whatever is used should be lumpy and not liable to get choked up. The potting compost should consist of little fibrous lumps of peat and loam in equal parts, charcoal and sand, and a few rough horse droppings. After the bulk of it has been mixed up, and before adding the sand, it is a good plan to give the mixture a shaking in a sieve, to remove all the small material, as small stuff is not only useless, but injurious, and hinders their progress. After draining the pots, a quantity of the potting mixture should be put over the drainage. Make it very firm, and rest the bottom of the bulb on it; filling up all round should then be done, making it firm, and finishing off with the bulb about one quarter above the soil. I approve of keeping them pretty well under, as when the pot becomes full of roots, the bulb is apt to become displaced if not given a good hold of the soil at first. There is another important point. When potting is finished, many would be inclined to finish off with a good watering at the root, but this is the worst practice that could be followed, as they are very slow in starting into growth in a wet soil, and do not root half so freely and quickly as in a rather dry soil. Some six or eight years ago I visited a first-rate *Calanthe* grower, who had shown me on previous occasions some of the best bulbs and spikes I had ever seen, and after showing me many other good things, I inquired: "Where are your noted *Calanthes*?" He informed me that the man in charge of them had watered them too early, and ruined them for the season. The atmosphere in which they are placed may be—in fact, must be—damp, and the syringe used over and under them, but keep the watering-pot away until a number of roots have

been formed and they show signs of growth. When growth is active, water without stint, give manure water frequently when the pots are full of roots, and as soon as they can bear exposure to the sun, place them in a moist atmosphere where the temperature averages 70°. CAMBRIAN.

FERNS.

W. H. GOWER.

ASPIDIUM.

This name comes from "Aspidos," in allusion to the indusium being round like a buckler or shield, and hence the vernacular name for this genus is Shield, or Buckler Ferns. These names are also frequently given to the plants belonging to the genera *Lastrea* and *Polystichum*, but are only applicable to them when they are treated as *Aspidiums*. The plants belonging to this genus are characterised by their erect habit of growth and by their fasciated fronds, which are usually twice or more or three-times divided, the segments being more or less lobed. The veins are compoundly reticulated (not free, as in *Lastrea* and *Polystichum*), and the indusium is orbicular, with the attachment in the centre. The most of the plants included in this family produce bold and massive fronds. They are very effective when grown into specimens, either as pot plants or planted in a fernery constructed on the natural system. The species appears to be somewhat widely distributed over the islands and mainland of the tropical portions of both hemispheres, but none are found in Europe. Notwithstanding their being natives of the Tropics, they are robust and vigorous in constitution, their stout and leathery fronds enabling them to stand a somewhat low temperature unharmed. The following are the most showy and distinct kinds in cultivation: *A. latifolium*, known also by the name of *nigripes*, is a native of the Fiji Islands. The fronds are from 1 foot to 2 feet in height and about 8 inches broad; the stems jet black and naked for about a third of their length, the crown of the plant and the base of the fronds being furnished with numerous black chafly scales. The fronds are membranous in texture and deep green, pinnate in the lower half, the pinnæ more or less deeply divided into broad acute segments; the upper portion only deeply lobed. It is one of the handsomest and most useful species. *A. Barteri* is a native of West Tropical Africa and requires strong heat; its fronds are from 1 foot to 2 feet in height, once-divided and bearing from two to three pairs of segments beside the terminal one, which is the largest. The segments are winged to the midrib (pinnatifid), lengthened out into tail-like points and bright green. *A. Pica*, also known as *ebenum*, in allusion to its black stems (but this designation is equally applicable to *latifolium*), is a bold growing plant, but dwarfed than the majority of *Aspidiums*, seldom exceeding 1 foot in height, and 5 inches or 6 inches in breadth. The fronds are usually more or less deeply lobed, none of the lobes being divided to the main stem (rachis); upon rare occasions, however, we have observed them pinnate in the lower part, having a single pair of lobed segments at the base, in which condition it somewhat resembles *trifoliatum*; but its ebony-black stem renders it easily distinguishable from that species. It forms a handsome specimen when grown in a pot, and is also very effective planted in a prominent position in the rock-fernery, not too far above the line of sight. It is a native of the Mauritius and grows freest in stove heat. *A. coadunatum* is a handsome Fern from Ceylon, producing fronds from 2 feet to 3 feet long, and

6 inches to 8 inches broad; the stems are brown, bare for about a third of their length. The fronds are somewhat triangular in outline, the upper portion pinnate, having the lobes divided about half-way down; the lower pair of pinnae, however, are again divided on their inferior edge, whilst the colour is bright cheerful green. In *A. repandum* the fronds are about 18 inches high, pinnate in the lower part, the basal pair of segments being one-lobed on their inferior edge, but the upper ones are winged with the stem at their base. They usually bear five or six pairs of pinnae and a terminal one, each being about 5 inches in length, with smooth edges, deep green in colour. It comes from the Philippine Islands. *A. subtriphyllum* is a handsome species, a native of Ceylon, the fertile fronds usually somewhat narrower than the sterile ones; the stems are naked for about half their length, fronds oblong in outline, the terminal pinnae forming the greater part of the whole; this is obtusely lobed, and tapers to a point; at the base are a pair of pinnae entirely separated from the terminal one, these again being lobed on their inferior edge. They are deep green in colour, and bear copious dark brown sori. *A. variolosum* is a plant which closely resembles the preceding and also comes from Ceylon. *A. decurrens*, another Ceylon plant, produces fronds of two kinds; in the very young state the sterile ones are simple, but as they increase in size they produce a single pair of obtuse lobes a little below the middle; these infertile fronds are from 6 inches to 12 inches high, and 2 inches to 3 inches broad, undulate at the edges and deep green. The fertile fronds are very distinct and about double the size of the sterile ones; they are deeply pinnatifid, bearing four or five pairs of segments and a terminal one. These segments are distant, and are connected with each other by a very narrow wing running down the stem; they are 6 inches long and upwards of an inch broad, obtusely notched, the lower pair being again once-divided on their lower edge. The sori are very copious, large and conspicuous. *A. Pteropus*.—This is said to be a variety of the preceding, but under cultivation it is very distinct; it produces fronds of two forms, the sterile ones being broad, deeply pinnatifid and lobed, whilst the fertile ones are very much narrower, the decurrent segments being less than half an inch wide. It is sufficiently different in aspect to be grown side by side with *decurrens*. It is a native of Ceylon. *A. Plumieri* is a massive, bold Fern from Jamaica, making fronds from 18 inches to 2 feet in height, and from 8 inches to 10 inches wide. It bears one pair of pinnae at the base, these being obtusely lobed on the lower edge; the terminal segment also is once pinnatifid at the base, 4 inches across, the ends being lengthened out into tail-like points, deep green on the upper side, sori copious beneath. *A. trifoliatum* in its immature form somewhat resembles *A. Pica*, and when fully developed it assumes very much the appearance of *A. latifolium*; from these, however, it may be distinguished at a glance by its brown (not black) stem; it has derived its name from usually bearing one pair of pinnae and a terminal one, all of which are deeply lobed and undulated on both edges; it, however, not infrequently bears a middle pair of pinnae in addition. It is of a rich, deep green on the upper side, profusely ornamented beneath with large conspicuous sori. It also bears the name of *heracleifolium*. It is a native of Jamaica and various other West Indian Islands, and is a very hardy plant. *A. cicutarium* is an elegant species, more finely divided than any of the

preceding. The fronds are from 18 inches to 3 feet high, somewhat triangular in outline, bipinnatifid, and pale green with obtuse segments. It comes from the West Indian Islands and Tropical America. The above-named Ferns are by no means fastidious in their requirements, most of them being easily grown into good specimens in the temperature of an intermediate house, although it cannot be denied but that they become larger and more fully developed in stronger heat; their fronds, however, are sufficiently thick and leathery to enable them to stand for a very long time in the dwelling-house without any heat, and thus the majority of them are available for the embellishment of any place where broad, massive fronds are required. If these plants have not yet been repotted this season, no time should be lost in doing it, as the young fronds are now pushing up; more care is necessary perhaps in repotting broad-fronded Ferns than any others, because any deformation which comes about through injury to the roots is more plainly discernible. They should be potted in peat and loam in about equal parts, adding some sharp river or silver sand. Being strong-growing plants they require ample pot room. They enjoy a copious supply of water, and a little application of soot greatly assists the colour of the fronds.

Stenosemia aurita.—This is the name of a very handsome, but by no means common, plant belonging to the reticulated-veined section of the *Aerostichoid* Ferns, and is nearly allied to the genus *Polybotrya*. The fronds are of two distinct forms, although sometimes we have seen them intermediate in character. The sterile one is a foot or more high, triangular in outline, and somewhat resembles *Aspidium trifoliatum* in general appearance. It bears a little bulbil on the stem at the base of the lower pair of pinnae, which eventually forms a young plant; it is leathery in texture and deep green. The fertile frond is about the same height as the sterile one, and the divisions are similar, but instead of being broad and leafy, they are all reduced to narrow, linear segments, which are completely covered with brown sori. This makes a neat and compact specimen in the stove, and is by no means a delicate plant; it usually produces its fertile fronds annually, and when thus furnished it becomes a most attractive object. Pot in peat and sand, using small pots. It is the only species in cultivation, and is found in various islands in the Eastern Archipelago.—G.

Trichocarpa Moorei.—This is a remarkable and handsome Fern from New Caledonia. It is named in honour of Mr. Charles Moore, director of the Public Gardens in Sydney, and is the only species yet discovered. Hooker places it in the genus *Deparia*; from this genus it is, however, very distinct, and easily distinguished by its reticulated veins, those of *Deparia* being forked and free. The fronds rise from a short decumbent root-stock, and seldom exceed a foot in height. They are triangular in outline, twice or thrice-divided (bi-tripinnatifid), membranous in texture, and bright green in colour. A characteristic feature of this plant is the peculiar hair-like veins, which extend beyond the edge of the fronds and form footstalks, which support little cup-shaped receptacles, in which the sori are situated. This forms a neat and handsome specimen in a stove temperature. Care must be taken in watering it, however, as if wetted overhead its fronds lose their brilliant green colour. It should be potted in peat and sand in small pots with plenty of drainage.—G.

SHORT NOTES.—FERNS.

Juan Fernandez Fern (*J. C. Bristol*).—Your Fern is *Thyrsopteris elegans*, a species peculiar to the island of Juan Fernandez, but we believe it is by no means plentiful there. It is the only species known, although it would appear to have some affinity with *Balanium culcita*, a native of the Azores and Madeira. It is a plant very seldom met with, although it has been in cultivation for some years. In its native country it is said to rise upon a slender stem, and is

found in mountainous districts growing in moist shady woods. The sterile fronds somewhat resemble a gigantic form of *Davallia canariensis*, but when fertile the lower pinnae of the fronds are reduced to rachiform segments, bearing the large cup-shaped involucre. It would certainly be worth importing.

Llavea cordifolia.—This is a singular and handsome Mexican Fern, which appears to be nearly allied to *Allosorus* and *Gymnogramma*, although totally distinct from either. It grows some 18 inches or 2 feet in height, and is three-times divided, the sterile segments being stalked, oblong, or ovate-cordate in shape, finely toothed on the edges, and from 1 inch to 2 inches long. In this state the fronds much resemble small specimens of *Osmunda palustris*. When fertile the whole upper portion of the frond becomes altered in appearance; the segments are narrow, linear, and pendulous, from 2 inches to 3 inches in length and pinnulate, with the margins rolled inwards, forming a universal indusium, which nearly encloses the sori. The whole plant is of a pale green hue, and the stems (especially towards the base) are profusely clothed with large white chaffy scales. It should be grown in small well-drained pots in peat, loam, and sand, and placed in a somewhat cool, but not cold house. This plant is also known by the name of *Ceratodaetyle osmundoides*. We recently noted fine examples of this Fern in Mr. Laing's nursery at Forest Hill.—G.

GARDEN FLORA.

PLATE 591.

THE PURPLE GUM CISTUS.

(*CISTUS PURPUREUS*,*)

THIS is one of those delightful shrubs that are classed among what are called old-fashioned flowers, and very old it is, seeing that it was cultivated in England as far back as 1550, and was cherished and loved by Gerard, Parkinson, and other fathers of English gardening. It therefore possesses much interest as well as exquisite beauty, but for all this it is not in common cultivation, being found only in gardens where old-fashioned plants abound and in botanical collections. There is, however, some allowance to be made for these, because this and most all other species of *Cistus* are unquestionably tender, only thriving to perfection in the warmest gardens in this country and on the lightest of soils. But there are numberless gardens along the coast and in other warm localities where all the Gum *Cistus*es and Sun *Roses* (*Helianthemum*) would thrive and create an effect totally different from all other shrubs, and even where they cannot be grown in the open they would flourish against a sunny wall, and how could a wall be more beautifully clothed than with these sun-loving shrubs. The best of all spots for them is a sunny knoll, open to the south and well sheltered to the north and east. The place must be well drained and the best soil is a deep sandy loam. In such a spot one could plant the best of the tall *Cistus*es, and fringe the group with the dwarfier species and the finest kinds of *Helianthemum*.

The finest of the *Cistus*es include, besides *C. purpureus* (a good coloured plate of which is here given), the following species: *C. ladani-ferus*, which grows about 4 feet high and has large white flowers; *C. crispus*, flowers purple; *C. hirsutus*, white flowers, golden centres; *C. salviifolius*, large white flowers; *C. monspeliensis*, white; and *C. laurifolius*, a very hardy species, with Laurel-like leaves and white flowers. These are all natives of the south of Europe and all evergreen bushes, producing an abundance of flowers generally in the height of summer. Though the blossoms are very short-

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lived, they are produced in such profusion and in such quick succession, that their short duration is not noticeable. Some of the species named are deliciously fragrant, particularly *C. laurifolius* and *ladaniferus*. In every good garden where the climate is favourable there should be a spot set apart for a group of Rock and Sun Roses; and where space cannot be afforded for a distinct group, they should be planted here and there about bold rockeries.

W. G.

STOVE AND GREENHOUSE.

THE HYACINTH.

WE are now in the height of the Hyacinth season, and the gorgeous displays to be found in most gardens are proofs of the great popularity of these beautiful spring flowers. They have become during the last decade almost as important adjuncts to the numerous spring exhibitions as the *Chrysanthemums* are to those of autumn or winter. As a rule the trade exhibitors display their plants to the best advantage, but the opposite of this holds good as regards amateur collections. In many instances the plants are not well grown, and where placed for exhibition the arrangement of the plants leaves much to be desired. An instance of this might be found in the exhibits at the Crystal Palace, where the trade exhibitors made an excellent display, but the whole of the amateur growers failed to satisfy the judges that their exhibits were of sufficient merit to obtain the highest awards offered. As a successful exhibitor of the Hyacinth, I will offer a few remarks on its culture that might be of service to those intending to exhibit in the future. In the first place, it is necessary to obtain the best bulbs, which may cost a little more money, as they should be four years old. They must have careful cultivation, for everyone knows that the grower in this country cannot produce large spikes unless the rudimentary part is formed in Holland the previous year. Our object is to get the largest amount of beauty from them by developing the spikes and flowers perfectly. The Hyacinth requires good open soil to grow in, and in order that the compost may be well incorporated, we mix it up about three months before it is required—loam two parts, decayed cow manure one part, one part leaf-mould, and one part coarse sand. The bulbs are potted about the third week in October, one in the centre of a 6-inch pot. They are potted so that the crowns are left above the surface, the bulbs being pressed in moderately firm. When they are all potted arrange them close together out of doors on a hard bottom of ashes, and cover them well over with some Cocoa-nut fibre refuse. There let them remain to allow them to form roots until the middle of January, when they may be taken out and placed, in the first instance, in a cool house and removed to a warmer temperature if necessary to hasten their flowering. The spikes develop very rapidly after this, and require manure water frequently to bring them to perfection.

As the spikes develop they must be supported in some way. The best support is a stout iron wire bent at the base, to avoid injuring the bulb; the upright wire is worked in amongst the bells, so that it is not seen at all when the plants are arranged in the exhibition, the greenhouse, or conservatory. The best spikes for exhibition are those on which the bells are closely arranged, so that they form a very compact, symmetrical head of bloom. As a rule, the bells do not take this form naturally, but require some little arranging with an ordinary pencil. It can scarcely be called dressing, though some critics say it is, but whether the plants are required for exhibition or merely to be arranged in the greenhouse, this is a necessary part of their culture, and those who object to assist the natural habit of the plant in this way must be content to take a lower place. A spike with the bells drooping is not nearly so effective as one with the bells arranged in a horizontal position. A very important matter is the

selection of varieties. The catalogues enumerate a much larger number than is really required, and as many new varieties gradually find their way into cultivation, the difficulty of selection every season becomes greater instead of less. I have before me a catalogue of an extensive Dutch grower, in which are enumerated 120 double varieties, most of them having very fascinating descriptive remarks attached. At one time double Hyacinths were the most popular. Now they are not much esteemed. For exhibition purposes they are, with one or two exceptions, worthless. The only double varieties we care to grow are the following: *Laurens Koster*, indigo-blue; *Louis Philippe* and *Van Spayk*, pale blue; *Koh i-noor*, salmon-rose; *Princess Louise*, red; *Lord Wellington*, pale rose; and *Miss Nightingale*, white. The same catalogue enumerates 236 single varieties. It is far too many, and those wishing to select their own bulbs must have great difficulty in doing so unless they have some personal knowledge of the varieties. Amongst newer varieties to be obtained at a higher price than the older well-known sorts, *King of the Blacks* has been very fine this year, and is certainly the best blue-black variety, and produces a more handsome spike than the old variety *General Havelock*. It is superior to *Masterpiece*, which does not produce a long spike. The best of the older dark blue varieties are *King of the Blues*, *Marie*, *Souvenir de J. H. Veen*, and *Mimosa*. There are now some very handsome light blue varieties; *Electra* and *Princess Mary* of Cambridge are amongst the best of the newer ones obtainable at a reasonable price. *Lord Derby* took the lead this season as the best light blue. These, with *Biondia*, *Czar Peter*, *Grand Maitre*, and *Lothair*, are the best. The good old variety *Grand Lilas* must not be omitted. Amongst the darker red varieties, *Vurbaack*, rather expensive, is still the best. *Linnaeus* is very distinct and beautiful; *Etna* is a handsome new variety, forming a massive spike; *Lina*, *Von Schiller*, and *Prince Albert Victor* are very fine. Amongst pale red or rose the best are *Cavaignac*, *Fabiola*, *gigantea*, *Princess Amelia*, and *Grandeur à Merveille*. In the single white class, by far the best is *La Grandesso*; next to it is *Mont Blanc*. *Alba maxima* and *alba superbissima* may also be grown, but I do not care for any others. *Sir Henry Havelock*, *Haydn*, and *Jeschko* are mauve tinted, and may be grown for variety.

The best yellow as yet is *Ida*, but *King of the Yellows*, *Bird of Paradise*, and *Obelisque* may also be grown. Those who would like to grow a larger selection may find no difficulty in obtaining them; but intending exhibitors would do well to select a larger number of bulbs of the above rather than grow a greater variety, which may fail them on the day the plants are wanted.

J. D.

How plants fared in a cold house during the winter.—I have no doubt that there are others who, like myself, have had to experience great losses of plants from frost in a cold house during the past winter. The slaughter has been unprecedented. My house is about 24 feet by 10 feet, a lean-to on the south side of the dwelling, having a flooring of thick slabs of slate, which are about 5 feet from the garden level and fully open underneath. Thus the frost attacked the house not only on three sides and the roof, but through the flooring also. I gave up *petroleum* stoves two or three years ago on the ground that they were dirty and disagreeable, on account of their fumes, expensive and useless. All that I could do in the way of precautionary measures was to allow the plants to become fairly dry at the roots, keeping the interior of the house, and especially the shelves, quite dry, and covering up with newspapers as securely as possible. Alas! all was in vain. Not a *Fuchsia*, large or small, remains alive, and not a zonal *Pelargonium* either. The plants were of various sizes, but all came to grief. Large well-established specimens of *Agapanthus umbellatus* are very much shaken; good plants of *umbellatus albus* and *variegatus* are all dead, and not a *Richardia aethiopica* saved. *Primula obconica* and *floribunda* soon went; a *Beaucarnea* that I had kept through three winters

succumbed; and in its wake went *Eupatoriums*, *Scilla longibracteata*, *Cannas*, &c. Some large plants of *Eucalyptus globulus* are well-nigh destroyed. Of those saved there is a pretty Indian *Azalea* that looks as fresh and full of buds as if it had been kept in a warm greenhouse all the winter. A good piece of *Phormium tenax variegatum* is damaged certainly, but not much disfigured; *Begonia metallica*, *Plumbago capensis*, some fine plants of *Pachyphytum bracteosum*, *Agave americana*, and *A. picta* are saved. There appears to be something peculiarly destructive about the wintry weather in January and February. For some ten years past, and even through the bitter time of January, 1881, I had managed to save soft-wooded things, such as zonal *Pelargoniums* and *Fuchsias*. I shall make no further attempt; when autumn leads the way for winter they will be thrown away to the rubbish heap, as unworthy the care required to bring them safely through the winter in an unheated structure.—R. D.

THE FAMILY LABISIA.

THE genus *Labisia*, which belongs to the Natural Order *Myrsinaceae*, is very little known at present in cultivation, owing, no doubt, to the fact that its representatives are few, consisting of only three or four species, which are all natives of the Malay Archipelago, singling out Borneo as their chief habitat. The plants of this genus are known under the not very popular name of "Spoon-flowers," on account of the lobes of the corolla, which resemble the bowl of a spoon. As regards systematic arrangement, it is a near ally of the well-known genus *Ardisia*, which has contributed so many beautiful plants to our collections.

The genus is represented in gardens now by three species, viz., *L. Pothoina*, *L. alata*, and *L. Malouana*. The first and earliest known, *L. Pothoina*, has been in cultivation more than forty years. It is a stove plant, having the habit of a *Pothos*, as its specific name implies, and thrives in a humid atmosphere. It has sessile leaves swollen at the base and small white flowers. *Ardisia pumila* is a synonym of this plant.

L. ALATA is a pretty soft-wooded stove plant, which may be readily distinguished from the preceding species by not having the leaves sessile, but clasping the stem by means of a very short dilated petiole. The graceful habit of the plant is due to the pretty spreading leaves, which are contracted at the base. The colour of their upper surface is glaucous green, while the under surface is of a dull green. The flowers are small, white inside, red on the outside, and arranged in small clusters on the flower-spike.

L. MALOUANA is quite a recent introduction, and is named in compliment to M. Jules Malou, a French botanist. It is a pretty ornamental stove plant with woody copper-coloured stems, profusely covered with small white warts, which give them a variegated appearance. The leaves are entire, ovate, and, like *L. alata*, clasp the base with a short dilated petiole. The upper surface is dark green and velvety, with a light green mid-rib, gracefully ornamented on each side with a broad band of a leaden-white colour. This band is composed of numerous minute spots lying very close together, and give the central portion of the leaves an appearance as if flour had been sprinkled over them. The under surface is reddish purple on each side of a brownish red mid-rib, but assumes a green colour adjoining the margins. When the leaves are young they are smooth and shining and of a reddish purple hue. The chief attraction of this species lies in its compact habit and ornamental foliage, characters which cannot fail to recommend it. A plant may now be seen in flower in the stove at Kew. A. Z.

Anopteris glandulosa.—This is a greenhouse shrub belonging to the once popular, but now neglected class known as New Holland plants. It is rather a sturdy growing bush, of erect habit, with very dark green leaves of a stout, leathery texture some 6 inches or 8 inches long, while the flowers, which are borne in terminal racemes, are bell-shaped, and of a white, wax-like character, reminding one to a great extent

of some of the Andromedas. Though it attains a good size in its native country, this *Acropteris* will flower freely enough in a small state if struck from cuttings.—T.

CAMELLIAS.

THAT fine new bright scarlet American variety *C. M. Hovey*, with its large and handsomely formed imbricated flowers, is one of the best for pot culture. It is handsome in growth, and also free-flowering. Those who saw the fine specimens in pots shown by Messrs. W. Paul and Son on the 5th of March will have realised its value.

The most striking of the red and crimson Camellias will be found in *C. M. Hovey*, *Madame Lebois*, *Beali*, *corallina*, *Andrea Doria*, and *Mathottiana*. Of pink and rose shades there are *Countess of Derby*; *L'Avenir*, a charming and very free variety; *Bella d'Ardiglione*, a finely formed flower with the inner petals a little paler than the outer ones; *Beauty of Hornsey*, a charming variety which sometimes comes with white lines on the petals; and *Marchioness of Exeter*. Those of a blush or delicate pink hue are *Comte de Hainault*, *Madame Ambrose Verschaffelt*, sometimes pink and sometimes white, with flakes or bands of pink, very fine; and *Eugène Massena*. Of pure white flowers there are *Montironi*, very fine, the petals remarkably stout and solid; *Princess Charlotte*, closely resembling the foregoing. *Cup of Beauty* is a variable variety that is sometimes pure white, sometimes tinted with flesh, and sometimes white streaked with rose, which is its true form, and then the white should preponderate; occasionally the rose is the principal colour, having on its stripes of white; *Countess of Orkney*, sometimes pure white, but should have stripes of carmine; *alba plena*, *imbricata alba*, *candidissima*, and *Mons. d'Offey*. The leading striped and flaked flowers are *Storeyi*, *l'Insubria*, *Bonomiana*, extra fine; *Archiduc Carle*, *Adelina Benvenuti*, and the fine old *Donckelaari* with its pleasing semi-double flowers.

The cause of dropping the buds in Camellias is no doubt mainly attributable to injudicious watering. I have known plants to fail where they had a little water given frequently which had only moistened the surface soil, while the main part of the ball remained quite dry. The simple rule to be observed with Camellias is not to water till a plant really requires it, and then thoroughly soak it. These plants are well grown in the Royal Nursery, Slough.

R. D.

Azalea mollis under glass.—Great numbers of this beautiful flowering shrub are now every year imported from the Continent, and find a ready sale in this country, which cannot be wondered at, as they lift with such close compact balls of soil that they do not at all suffer from the journey, and may then be potted up for flowering under glass, after which they can be hardened off, and are then available for planting out with other hardy shrubs. Besides the imported plants, great numbers are grown in this country for the same purpose, and many instead of being planted out are kept over year after year in pots, and flower well treated in this way, provided they are assisted with some stimulant during the growing season. When the blooms expand under glass they are thus rendered safe from late frosts, and also from the effects of very heavy rains, which often injure the expanded blossoms a good deal. This *Azalea* varies considerably in the colour of its blooms, but the range is not quite so great as in the other hardy *Azaleas*; the flowers, however, are more massive than in any of those kinds.—T.

Rubus rosæfolius coronarius.—Some four or five years ago this little double-flowered *Rubus* appeared likely to become very popular as a pot plant for winter blooming, but since then it has made little if any headway though its pretty white blossoms are by no means to be despised during the dull months of the year. It reaches a height of 1 foot or 2 feet, and when growing freely forms a rather dense specimen by reason of the numerous erect shoots that are pushed up from the base of the plant. If cuttings are struck now and grown on during the summer they form pretty little flowering plants by autumn,

when their blooms will be much appreciated. In the earlier part of the summer the plants must be encouraged to grow as freely as possible, by keeping them in an atmosphere favourable to quick growth, but by the end of July they may be hardened off and placed out of doors for a time. So treated, they will later on, when removed into a warmer structure, flower freely, and maintain a succession of flowers for a long time. Cuttings should be formed of the young shoots, which strike readily. This *Bramble* can also be increased by pieces of the roots. Red spider will need constant watching throughout the different stages of growth, as they increase very rapidly on this plant, and soon cause the leaves to turn yellow and drop.—H. P.

The Snowball tree (*Viburnum Opulus*).—Nearly everyone is familiar with this plant, which is largely planted in shrubbery borders, for the globular heads of snow-white flowers render it very conspicuous and attractive. It may not, however, be so well known that this is one of the very best plants for early forcing either in a small or large state, and is specially valuable from Christmas until February, either for the embellishment of the conservatory or dwelling-house, or for the production of cut bloom. This shrub is largely grown in this manner at Beddington House, Surrey, by Mr. Penfold, who describes it as one of the very easiest of subjects to manage.—G.

Azalea rosæflora.—This beautiful Japanese *Azalea* is now flowering profusely in Mr. Bull's nursery at Chelsea. The flowers are very double, made up hose-in-hose fashion; the petals are close, and form a beautifully imbricated double bloom, that when young resembles in shape the bud of a Tea Rose. The colour is a delicate salmon-pink, and so persistent are the blooms that they usually die upon the plant, unless picked off by hand. It would be interesting to learn the parentage of this plant, for although it was introduced from Japan by Messrs. Rollisson and Sons, of Tooting, it is not reasonable to suppose that it was found in a wild state; it probably having been brought about by cultivation in some of the Japanese nurseries. It is somewhat slow in growth, but is a most profuse bloomer, and is extremely useful for producing button-hole flowers, especially in the bud state. A coloured plate of it appeared in *THE GARDEN*, Vol. XVIII., p. 254.—G.

Monstera deliciosa.—This Aroid, which is a native of Mexico, and known also by the name of *Tornelia fragrans*, is tolerably well known as an ornamental-leaved stove plant, and is sometimes used with considerable effect in sheltered nooks in the open air during the summer months. It is remarkable for its large, leathery, deep green leaves, perforated with holes, and also for its long snake-like roots. It produces fruits about the length and shape of the Pine-apple. These when ripe are pinkish in colour and have a delicious flavour, quite distinct from any other fruit we know. In the gardens of Wimbledon House, the residence of Sir H. Peek, it grows vigorously upon a wall in the stove, and is at the present time bearing six large fruits.—G.

Bananas.—The fruits known by this name are mostly the produce of *Musa sapientum* and its varieties, which are very numerous. It is a tall-growing species, with stems that rise some 10 feet or 15 feet in height. These bear enormous bunches of fruits, which weigh from 40 lbs. to 60 lbs. or more. *M. chinensis*, however, which is perhaps better known by its garden name of *M. Cavendishi*, is a dwarfer plant, its stout stems seldom exceeding 5 feet or 6 feet in height, and produces large bunches of fruits in abundance. It is a plant that was more often seen in gardens some years back than it is at the present time, but it still receives considerable attention in Sir Henry Peek's garden at Wimbledon House, where several fine examples are at the present time ripening enormous bunches of fruits.—G.

Lachenalias at Beddington.—These old-fashioned Cape bulbous plants are far too seldom seen in our gardens, their spotted leaves and brilliantly coloured tubular flowers being extremely handsome. *L. pendula* and *L. tricolor* are two kinds which have for years been largely grown by Mr. Penfold at Beddington House, where he treats them as basket plants, and where they usually begin to dis-

play their beauty about Christmas. We observed on a recent visit that *L. pendula*, which is the largest-flowered and the showiest of the two, was just passing over, and that *L. tricolor* was ready to take its place. Treated in this manner, and by the use of open baskets, fine masses are obtained, as the shoots push out through the sides in all directions, while the spikes laden with tubular flowers stand at all sorts of angles, and have a very pleasing effect.

AMARYLLISES AT MESSRS. VEITCH'S.

THE display of these gorgeous spring flowers for the present season has, during the past month, been much better than usual. Owing to the late season it will be continued during the present month. To those who have closely watched the raising of these plants from seeds during the past ten years it is most interesting to note the progress towards perfect development of leaf and flower. A raiser of seedlings soon learns something of the initial difficulty in obtaining seeds from the best formed flowers, but it is only from such that real progress can be expected. The Messrs. Veitch have spared no expense in obtaining the best seedlings of other growers when it was thought the infusion of fresh pollen would be beneficial, or when a vigorous constitution could be infused into their own seedlings with well-formed flowers. The result has justified the means, and now there are to be found new colours such as have not hitherto been seen in the *Amaryllis* family, and with the new colours the flowers are also perfect in form, and as many as six of them on one scape. Form and size were obtained five or six years ago, and during the last two or three years the new colours have been developed. The greatest progress has been made in the light ground varieties, white or cream, flaked and marked with rose, red, or crimson lines. The parent of these fine light varieties was one of their own seedlings named *Lady of the Lake*. The most recent seedling from this is a variety named *Her Majesty*. The flowers of this measured 22 inches round the broadly opened corolla, the petals creamy white, slightly flaked with red. Hon. and Rev. J. T. Boscawen is also very fine, the flowers a mottled salmon, with a white band in the centre of each petal; *Marian*, white with scarlet feather; *Empress* has well-formed recurved petals, white ground, very pure light scarlet feathers; *Flowerdale*, creamy white, pale rosy red netting; *Atlantes*, white, neatly recurved petals lightly shaded with rose; *Norma*, white ground, feathered bright scarlet-crimson, creamy band.

To the above light-ground varieties must be added *Giantess*, a seedling from *The Giant*. It is quite distinct, has large and well-formed creamy white flowers, with greenish star and deep rosy red lines.

Great advance has also been made in the dark-coloured varieties, even the celebrated *Empress of India* having been left far behind. *Giganteum* is a remarkable variety, a seedling from *Tennyson*, but an improvement on that variety in form, size, and colour; the flowers measure 8 inches across, reddish scarlet. *Ensign*, scarlet, with a shade or suffusion of lake, fine form; *Lord of the Isles* is a distinct variety, rich in colour and of dwarf habit; *Amazon*, deep scarlet, pale green centre; *Rupert*, rich crimson with maroon tint, whitish star; *Hortense*, pale red, very handsome, broad white band in centre of each petal; *Eurasian*, dark crimson; *Endymion*, crimson, with cream coloured margin on each petal; *Antilles*, rose-tinted lake, conspicuous greenish star. *Purpurea* is quite a distinct type. The flowers resemble *Solandraflora*, and are of a distinct reddish purple on a whitish ground.

There are quite a thousand seedlings in flower, and the above are a selection of the very best; at the same time it is but fair to say that there are many more superior to the best-named older varieties now in cultivation. J. D.

Achimenes as basket plants.—Hanging baskets of mixed plants, flowering and foliage, are often a failure, through, as is too often the case, being inconveniently crowded or by blending to-

gether what may be termed incongruous subjects. Hanging baskets at flower shows are very frequently an unsatisfactory feature; they are planted for the occasion and then slung up in a hot tent without ventilation, with the result that in an hour or two they are not fit to be seen. I have a very lively recollection of the huge baskets of Achimenes I saw at Chatsworth a few years ago in the lifetime of the late Mr. Thomas Speed. They were very large, but with the branches hanging over and about in all directions, perfect masses of bloom. Moss, or some such material, lined the inside of the huge wire baskets, and then sufficient plants of one variety were put in to fill them. They soon established themselves, and when well in flower were objects of great beauty in the Victoria Regia house. The best varieties for the purpose are Ambrose Verschaffel, Baumanni hirsuta, Dazzle, Carl Wolfarth, Henry Williams, longiflora, longiflora major, Margaretta, Mauve Queen, and Mauve Perfection. R. D.

The Lace-leaf plant (*Ouvirandra fœnestralis*).—This vegetable wonder is peculiar to the island of Madagascar, from whence it was brought to this country by the late Mr. Ellis. Upon its first introduction it caused great excitement in the horticultural world, and realised high prices. Now, however, the novelty of its structure has passed away, and it has become comparatively rare, although by no means a difficult plant to manage. We were, therefore, recently agreeably surprised to find a fine specimen of this plant growing in an ordinary tank in one of the houses in Sir Trevor Lawrence garden.—G.

Lilium Harrisii. Whether this Lily differs from some of the varieties of *L. longiflorum* already in cultivation is a very open question, but at all events as seen in flower now it is very beautiful, and a useful subject at this season when white flowers are so much in demand. Great numbers of this Lily are imported every year from America, and also from the island of Bermuda, and though English-grown bulbs are to all appearances equal to imported ones, these latter can be induced to bloom earlier in the season, no doubt owing to the fact that they are ripened off sooner than they would be in this country. To have them in bloom now they should be obtained by September at the latest and at once potted in good open loam, enriched with well-decayed manure. Sand should be liberally used, especially around the bulbs. After potting they must be placed in a greenhouse temperature and kept slightly moist till the roots become active, when more water can be given, and directly the shoots appear the plants should be kept in as light a position as possible. So treated, the foliage will quickly become developed, and by the new year the plants may be placed in a structure maintained at about 55° by night, with a corresponding increase by day. In this way they will come on rapidly, and by about the middle of March the first flowers will expand, and at this season they remain in beauty a considerable time. One caution to be observed in the case of these Lilies when growing is to see that aphides do not effect a lodgment upon them, as in a few days they will injure the blooms to such an extent that they never open in a satisfactory manner. As they take shelter in the cluster of young succulent leaves at the top of the plant, they are not easily dislodged therefrom, except by fumigation.—H. P.

SHORT NOTES.—STOVE AND GREENHOUSE.

The Rose-flowered Butterwort (*F. inguicula rosea*).—This is a large-growing species forming quite a dense crown of its soft, bright green leaves. The flowers are borne upon long foot-stalks, and are large and flat, of a beautiful soft rosy purple colour. It is now flowering in Mr. Bull's nursery at Chelsea.—G.

Day Lilies in pots.—I have seen the beautiful yellow-flowered Day Lily (*L. flava*) grown in pots, and brought on in a gentle heat, so that by this time of the year it was in full flower. The blooms were remarkably attractive, for they were not only beautiful in themselves, but differed so widely from the majority of plants in flower at this season, and when grown in this way the perfume was most agreeable.—T.

Gas injuring plants.—Our plants get spoiled at intervals and do not flower. We can smell gas—which must be escaping from the main which is laid along outside the

walls—rising through the soil in the greenhouse. I would be obliged if any reader could inform me if this would injure the plants, or would the gas require to be burned before any injury would follow.—H. H. LANDMAN.

Begonias at Beddington House.—In the warm conservatory here numerous kinds of Begonias are planted out, and just now their spikes of bloom are both numerous and effective. The most noticeable are *B. Carrieri* with pink and white flowers; *B. insignis* (which is a large form of fuchsiodoid), vermilion-coloured trusses; and the old *B. manicata*, which has its leaf stalks curiously frilled with bright red. This produces large branching cymes laden with numerous delicate pink blooms.—G.

SEASONABLE WORK IN PLANT HOUSES.

STOVE TABERNÆMONTANA. The double-flowered variety of *Tabernæmontana* is amongst the most useful as well as beautiful stove plants in cultivation. The dense bushy form of a well-grown specimen, clothed with its glossy green foliage and thickly studded with pure white flowers, presents a very fine appearance. The twisted petals give a pleasing irregularity to the character of the flowers, that relieves them from the over-formality existent in many double flowers. The blossoms are deliciously fragrant, and are preferred by many to the favourite *Gardenia*, as the perfume is more delicate, and never elays in the way the flowers of *Gardenias* often do. For small arrangements of cut flowers, such as button-holes, sprays, bouquets, or wreaths, where white is required, the double *Tabernæmontana* is unsurpassed. Not the least of the merits attached to the plant is that it is easily grown, and gives a long succession of flowers. Like most other inhabitants of the stove, its time of blooming depends upon the amount of heat it receives. Plants that flowered last autumn and were cut back during the winter will now have made some progress, and if not already re-potted they should be shifted at once. It is not well to attempt to remove much of the old soil, except in the case of old specimens that have been partially headed down, as the disturbance of the roots would delay the time of flowering. Give pots a size larger, bearing in mind that this *Tabernæmontana* does not require so much root-room as some plants. In the case of specimens that are large enough they may be kept in the requisite condition by the help of manure water given frequently, with an occasional application of some concentrated manure. Plants in good condition will bloom two or three times before autumn. This *Tabernæmontana* strikes freely from cuttings made of the young shoots, which should be taken off when the wood is comparatively soft. Examples that were cut back about the beginning of the year, and have been kept in a genial growing temperature will now afford suitable cuttings, and where young stock is required no time should be lost in getting them struck, as the plants will then have time to attain strength before autumn. If the cuttings can be secured with a heel they will root quicker and with more certainty. They may be put, several together, in small pots filled with sand, and placed in a close atmosphere, with a brisk heat, and shaded, they will strike in a few weeks. When sufficiently rooted move them singly into 3-inch pots. The plant will grow in either loam or peat, but it succeeds best in peat, which should contain plenty of fibrous matter and have a moderate amount of sand added. During the growing season it enjoys a brisk heat. Keep the little plants well up to the light, giving a little shade in sunny weather. Stop the points as soon as top-growth is fairly in motion; this may require repeating a second time in the course of the summer, during which the plants will want pots 2 inches or 3 inches larger. Syringe freely in the afternoon at the time of shutting up the house. So treated nice thriving examples will be secured by autumn.

BORONIAS. The different species of *Boronia*, of which there is now a number of desirable kinds, including *B. pinnata*, still one of the best if not the very best—*B. elatior*, *B. Drummondii*, *B. megastigma*, and the new and beautiful species, *B. heterophylla*, are all deserving of especial notice by those who have a conservatory or greenhouse to keep gay with flowers through the late winter and spring months. Their natural disposition to bloom pro-

fusely, even whilst the plants are young, is such that small examples in 5-inch or 6-inch pots flower with the greatest freedom; their endurance is such, that in several of the kinds named they will last for six or eight weeks. In the case of *B. pinnata*, they keep on opening in succession, which, combined with the length of time they last, enables the plant to maintain a gay appearance for three or four months. Young plants should, after flowering, have their last summer's shoots shortened back to about one-third of their length, after which they must be potted. *Boronias* are freer rooters than most hard-wooded subjects, consequently, to do justice to them, they should not be stinted for pot room during the early stages of their existence. Plants that are now in 5-inch pots may be moved into others two sizes larger; the best fibrous peat should be given them, to which add a liberal amount of sand. It is important that the peat should be of a nature that will admit of its keeping in a suitable state for the roots to grow in it for a lengthened period, as the plants, with fair treatment, will live and maintain a healthy flowering condition for many years, and there must be no attempt at shaking the old material away. After potting, treat in the ordinary way that answers for hard-wooded greenhouse stock.

DAPHNE INDICA. The time of flowering these plants varies according to the treatment they receive in respect to warmth. Where wintered in an intermediate temperature they bloom so much earlier than if located in a cool greenhouse. Although, strictly speaking, these *Daphnes* do not require more heat than a cool-house affords, they still succeed better when kept in intermediate warmth, particularly whilst the plants are young, and after this during the time their annual growth is being made. Where the blooming is over the plants should at once be moved to where they will have the requisite warmth with a moist atmosphere. Where more root room is needed larger pots should be given, but those who have not had much to do with these plants will do well to be careful not to over-pot, as unless the plants are exceptionally strong and are kept warmer all the year round this is usually looked upon as necessary, large pots frequently cause their loss. Good fibrous peat answers best with some rotten manure and sand added. In this the roots make headway better than where loam is used.

DAPHNES PLANTED OUT.—I am no advocate for planting bushy-habited stove or greenhouse plants out in beds and borders to the extent that some now advise, on the score that they require less attention in watering and grow faster. Free-growing things, when turned out with their roots unrestricted, push ahead at a rate that often leads to the supposition that it is the right method, but after a time the plants get too large, and have either to be headed back or removed altogether to make room for young stock, either of which courses generally ends in a gap in the supply. To speak of turning *Daphnes* out in a border after giving a word of caution about their dislike to large pots looks like a contradiction; but there are some things that cannot bear much root-room when grown in pots that thrive freely if planted out, and the plants under notice are amongst the number. Where a place can be found for them on the wall of a low house or pit facing southwards, and where they will not be too far from the glass, they will grow at a rate that no amount of attention and skill can bring about under pot culture. Needless to say the bed must be well drained and made of good lasting material. The plants before being turned out should be in strong vigorous health, and have attained some size; small examples when planted out rarely do well. Care must also be taken to see that the soil is not over-watered, especially during winter when no growth is going on, and immediately after flowering when the energies of the plants are weak, and somewhat sluggish through the effects of blooming. The white variety *D. indica alba* requires similar treatment to the ruby tinted sort; its flowers are less showy, but the scent is more powerful, and on that account it is preferred by some.

CROWEAS.—Of the few hard-wooded greenhouse plants that bloom in autumn, these, when well managed, are amongst the most useful. Their flowers individually are less conspicuous than those of some plants, but what they lack in this respect is made up for the quantity produced and the unusual length of time the plants keep on blooming. These Croweas are very useful for standing about the side stages in conservatories and greenhouses, as being comparatively small growers they are suitable for a front position. To have them in flower early in autumn the plants should, if possible, be kept after blooming and during the spring in an intermediate temperature. Where they can be thus accommodated, and have manure water occasionally, the crop of flowers will be much more plentiful than when the growth is made in cool quarters.

ROCHEA FALCATA.—There are few things that have a brighter appearance in the conservatory or greenhouse in autumn than this pretty little succulent. A dozen plants interspersed amongst other things with their dense glowing scarlet heads of bloom studded with yellow anthers do much to enliven the whole at a time when flowers are not over-plentiful. The plant is easily increased from leaf cuttings; these will strike if put in at any time when the leaves are matured, but if the propagation is carried out early in spring, time will be saved, and the young stock will attain more strength. The leaves should be put in whole, inserting them about an inch deep and 2 inches apart round the sides of 6-inch pots filled with sand. Stand them in an intermediate temperature and give no water for several days, otherwise the leaves, from their soft, fleshy nature, will be likely to rot; for the same reason they must not be confined in a striking frame or under propagating glasses. A shelf where they will be close to the glass is the best place to put them. Give water in moderate quantity before the sand gets so dry as to cause the leaves to shrivel, but it is well to err on the right side by not applying too much or too soon until the roots are present, after which top growth will soon appear and then they may be watered more liberally. When an inch or two of growth has been made, put them singly with the old leaves attached into small pots well drained and filled with a mixture of loam and sand, or peat and sand. Keep them near the glass in a growing temperature during the summer. The plant is a native of the Cape, but is a little more impatient of cold than many that come from the same country; consequently, it is better kept during winter in a temperature of from 45° to 50°.

T. B.

BOOKS.

RECENT WORKS ON THE LARGER FUNGI.*

Now that the warm and showery weather of spring is swiftly approaching, many of the larger vernal fungi will appear in our pastures and



Agaricus (Amanita) vaginatus (quarter natural size).

hedge-sides and on our downs. The Morels are peculiar to the spring months, so is the delicious

* "British Fungi—Hymenomyces." By Rev. John Stevenson. Wm. Blackwell and Sons.
 "Text-Book of British Fungi." By W. Delisle Hay. Sonnenschein.

St. George's Agaric and many other fungi, both valuable and worthless.

Mr. Stevenson's two volumes treat of the Hymenomyces only, but this immense family



Agaricus (Leptota) procerus.

includes all the Mushroom-like fungi and all the Boleti, as well as many of the minor genera, which contain esculent species. In general terms Mr. Stevenson's volumes may be said to contain descriptions of all the larger British fungi, exclusive of the microscopic species; this, however, would not be strictly correct, as there is a considerable number of large species to be found amongst the Ascomycetes, a family not included in Mr. Stevenson's work.

We may say at once that Mr. Stevenson's two volumes are simply invaluable; the fulness and general accuracy of the descriptions, which are all brought up to date, are admirable. An enormous number of British species are here described for the first time in hand-book form; indeed, very few species indeed have ever been so fully described before in any work published in this country. Mr. Stevenson has founded



Agaricus (Volvaria) volvaceus (one-fifth natural size).

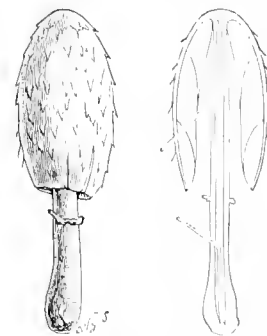
his work on the great masterpieces of the illustrious Swedish botanist, Elias Fries. There is a glossary of terms and a good index, with derivations of all the generic and specific names.

No student who works at the higher fungi can afford to be without these excellent and cheap volumes; with a moderate amount of care even the beginner should be able to correctly name the larger fungi from living examples. The labour in preparing the MS. and checking the numerous references must have been enormous, and all mycologists must feel under a debt of gratitude to the author. The work must have been entered upon as a pure labour of love, regardless of time or money recompense. The publishers have done their part as admirably as the author, for the volumes are first-rate examples of good paper and typography.

We have noticed a few slips and omissions amongst the derivations and the specific descriptions, but, taking the two volumes "all in all," we are not likely to see an improvement upon them for many years to come. Every genus and

sub-genus, 103 in number, is illustrated by a small wood engraving, by Mr. Worthington G. Smith, made either direct from Nature, or from that gentleman's water-colour drawings from Nature, now in the British Museum, South Kensington. Each illustration is drawn to scale, and shows a section, as well as the mere external appearance of the fungus. By the courtesy of the publishers we are enabled to reproduce six of the wood-engravings.

Mr. Delisle Hay's work belongs to a very different class from the above; why the book should be termed a "Text-Book of British Fungi" we cannot imagine, for the work only



Coprinus cornutus (quarter natural size).

discusses the so-called edible and poisonous species of the larger fungi. All the hundreds of botanical species of unknown quality are entirely omitted, and not a word is said about the enormous number of smaller species. The work contains a considerable amount of descriptive matter in reference to fungi in general, but we have observed so many errors in different parts of the work, that we have but little faith in any part. Even amongst the edible and poisonous species the slips are serious, although it must be acknowledged that the author appears to be familiar with the objects he describes. The work is published at such a low price that no doubt it will find purchasers, and these will find a good deal in the volume worth referring to—i.e., if the book be used with discretion and some previously acquired sound knowledge. It may then not be without its use.

The author has supplied "popular" names for all the fungi described. These names are



Nyctalis parasitica (half natural size).

atrociously ill-chosen and absurd, and ought to be mercilessly expunged in any future edition. If a few names are quoted our readers will appreciate their absurdity. We have, then, "Beelzebub's Cushion," "Bladder Elfcup," "Dark Jelly-sprout," "Guilty-sprout," "Infamous (Litocyebe)," "Sickener's Sister," "Pill-sprout," "Stinker," "Wrinkle-twig," &c. To make the case worse, the species are all *indeed* under these idiotic names. The result, of course, is that the index is perfectly useless, for no one

at present knows, or is ever likely to know or accept, this ridiculous and extensive series of so called "popular" names.

The book is advertised by the publishers as containing about a hundred plates and figures. Now, plates and figures are often the best part of fungus books, for whilst few persons can understand, or will care to attempt to understand the superfine jargon in vogue with some professional mycologists, yet everyone can understand a "plate and figure." Many persons buy books (especially foreign ones) for the plates alone, and no doubt many persons may be tempted to buy the work before us solely on account of the "100 plates and figures." Such persons will be bitterly disappointed to find that these plates are a mere hash-up of the little illustrations used sixteen years ago in Cooke's "Handbook." Most of the figures are illustrative of microscopic species, and not a word of description is given of such species in the book. Besides this, some are upside down, others only show a single spore, and one is a leaf-hair, and not a fungus at all. The "100 plates and figures" are perfectly valueless, for even if they had been described they would have



Lentinus cochleatus (quarter natural size).

been very little good, owing to the advances that have been made during the last sixteen years. Without description they are worse than nothing, for they spoil good paper and occupy space. We cannot understand this wholesale and unacknowledged use of the entire series of illustrations belonging to another author's book.

W. G. S.

ROSE GARDEN.

T. W. GIRDLESTONE.

GROUPING THE SPECIES OF ROSE.*

IN his most recent contribution to the literature of the Rose, M. Crépin, of the Botanic Garden at Brussels, has devoted himself to a minute analysis of the Systyle. The species which M. Crépin refers to this group are described in detail, particular attention being directed to various characteristics which, it is suggested, have been unduly neglected by botanists; such as, for instance, the form of the inflorescence which is made to constitute a basis for the division of the Systyle into two sections—those having an umbelliform and those having a pyramidal inflorescence; and a critical examination is made of the recent Japanese and Chinese forms out of which three new species are created. By the addition of these and the re-arrangement of others, the group is made so different from that of Mr. Baker, of Kew (as published not long since in the horticultural press), that it is worth while to compare the two side by side:—

GROUP I. (CRÉPIN) SYSTYLE.	GROUP II. (BAKER) SYSTYLE.
1. <i>R. microcarpa</i> (= <i>amyensis</i>)	
2. <i>R. multiflora</i> (= <i>polyantha</i>) (Sieb. and Zucc.), <i>intermedia</i> (Cart.), <i>thyrsoidea</i> (Leroy), <i>Wichurae</i> (Koch), <i>Calva</i> , <i>microphylla</i> , <i>trichogyne</i>	2. <i>R. repens</i> (= <i>arvensis</i>) <i>capitata</i>
3. <i>R. Luciae</i> , <i>Savaterii</i> , <i>firma</i> , <i>Luciae</i> , <i>adenophora</i> (?), <i>cratægina</i> , <i>yokosensis</i> (?), <i>genouina</i> , <i>hakonensis</i> , <i>platyphylla</i> (Hort. var. <i>Jap.</i>)	3. <i>R. sempervirens</i> <i>prostrata</i> , <i>scandens</i> , <i>Leschenaultiana</i> , <i>longicuspis</i>
4. <i>R. Wichuriana</i> , <i>fimbriata</i> , <i>poterifolia</i> , <i>adenophora</i> (?), <i>cratægocarpa</i> , <i>yokosensis</i> (?), <i>Maximowicziana</i>	4. <i>R. meschata</i> , <i>Dupontii</i> (= <i>nivea</i>), <i>Brunonis</i>
5. <i>R. tunquinensis</i>	5. <i>R. multiflora</i>
6. <i>R. anemone-flora</i>	6. <i>R. abyssinica</i> (= <i>Schimperiana</i>)
7. <i>R. setigera</i> (= <i>rubifolia</i>) <i>fenestrata</i>	7. <i>R. polyantha</i> (= <i>Luciae</i>)
8. <i>R. phœnicia</i> (= <i>chlorocarpa</i>)	8. <i>R. phœnicia</i>
9. <i>R. moschata</i> (= <i>Brunonis</i>), <i>abyssinica</i> , <i>Leschenaultiana</i> , <i>longicuspis</i> , <i>ruscinonensis</i> , <i>Pissarti</i> , <i>Godefroya</i>	9. <i>R. setigera</i> (= <i>rubifolia</i>)
10. <i>R. sempervirens</i> <i>prostrata</i>	10. <i>R. stylosa</i> (= <i>collina</i>) <i>leuco-livida</i> , <i>stylis</i>
11. <i>R. arvensis</i> (= <i>repens</i>)	

It will be seen that M. Crépin brings *R. microcarpa*, placed by Lindley under *Banksiana* and allowed to remain there by Mr. Baker, among Systyle, apparently on the ground of the extrusion of the styles beyond the disc in spite of their not being united, those of *Banksiana* being completely included, for although M. Crépin dwells on the fact that *R. microcarpa* has free stipules like *R. Banksia* (the stipules of all other Systyle being adnate), he expresses a very strong opinion that it cannot be classified elsewhere than among Systyle. It really seems as if it were the connecting link between the two groups, combining in itself some of the characteristics of both.

Second in the arrangement under notice comes the important species *R. multiflora*, near to which evidently are the various forms recently sent to Europe by Messrs Franchet, Takasima and others, and from which M. Crépin selects three as sufficiently distinct to be considered as separate species. A source of difficulty is probably present in dealing with these imported specimens of Roses, as of other plants from China and Japan, in the fact that so many forms have been from time immemorial in cultivation in those countries, that it is not by any means a simple matter in many instances to get at the true wild species, and some botanists would in all probability be inclined to class M. Crépin's three species *R. Luciae*, *R. Wichuriana*, and *R. tunquinensis* as sub-species or varieties of *R. multiflora*. But until more numerous examples and growing plants are compared, M. Crépin's opinion is entitled to especial consideration in view of the fact that he is by no means one of those botanists who are disposed to raise every slightly varying individual to the rank of species. Indeed, his remarks on botanists of this tendency, "who belong to the school of specific sub-divisions," and whose "hair-splittings (which, of course, may be repeated for every individual plant, and be made to furnish quasi-species into infinity) have yielded us hundreds, if not thousands, of species of *Rosa*," are much to the point, and contrast well with the sound rules laid down for obtaining evidence for the definition of true species, for which "it is necessary to take into account circumstances which may have an influence upon the form, the proportions, and the number of organs, to avoid losing sight of the action of dwarfing and its converse in growth, to bear in mind the inter dependence of various characteristics, not to forget the highly important fact of parallel variations, and lastly, to work upon sufficiently abundant materials collected as far as possible from all points of the area of distribution of the species." A botanist, therefore, working on such broad lines as are implied in the last para-

graph is not likely to constitute new species without good reason, and that M. Crépin is one of those who essay classification broadly under well marked types is further evidenced by the fact that he places *R. abyssinica*, which Mr. Baker allows to remain as a good species, as a variation of *R. moschata* in company with *Leschenaultiana* and *longicuspis* (sub-*sempervirens*, Baker) and *Brunonis*. On the other hand, *R. anemone-flora* (sub-*indica*, Baker) is elevated to the rank of species.

M. Crépin appears quite convinced that the original and true type of *R. multiflora* is the now well-known *R. polyantha*, often called in this country the Bramble Rose, from a certain resemblance of its flowers to those of the common Bramble. The arrangement of the prickles in pairs at the base of the leaves pointed out by Lindley as characteristic of *R. multiflora* is especially distinctive of *R. polyantha*; the fringed stipules also are very noticeable, and in other points, such as the pyramidal form of the very many-flowered inflorescence, the short round buds, the small corolla, and the leaves with nine leaflets, *R. polyantha* (Zucc. and Sieb.) agrees exactly with the description of *R. multiflora* (Thunb.).

Now that *R. polyantha* is so generally cultivated in Europe, it will be no easy matter to obtain general acceptance for the name *multiflora*, and in all probability the two names *polyantha* and *multiflora*, oddly enough identical in meaning, will have to continue side by side.

The point chiefly relied on for the differentiation of *R. Wichuriana* is the habit of growth of its shoots, which are procumbent, as with *R. arvensis*, but beyond this, *R. Wichuriana*, *R. Luciae*, and *R. tunquinensis*, all seem to have many characteristics in common with *R. multiflora*, the points of approach and divergence being easily comparable by means of the three very careful analytical tables which have been drawn up.

Some interesting remarks are made under the head of considerations of the relative value of species referred to the group Systyle, in which M. Crépin shows his consciousness (which, indeed, he makes no attempt anywhere to disguise) of the proximity of *R. Wichuriana*, *R. Luciae*, and *R. tunquinensis* to *R. multiflora*, by grouping, for the purposes of his discussion, the four together. He then goes on to point out that the more isolated types have a greater distinctive value than those that have several characteristics in common, the former representing the actual branches of the genealogical tree of the genus *Rosa*, the latter a secondary branching, probably due to evolution. But if this be so, the right of *R. Wichuriana*, *R. Luciae*, and *R. tunquinensis* to be considered good species will assuredly be questioned, for modern botanists are very loth to admit as species any form which can be directly traced to an earlier type. The suggestion that in the future fresh subdivisions may arise and be ultimately admitted as species, only renders it all the more imperative upon botanists now to avoid unnecessarily complicating the task of subsequent workers in the same field, and for this end to make it as clear as possible to what types already existing forms may be referred, or wherefrom they have originated.

Sweet Brier.—This can hardly be regarded as an attractive plant. It does not become conspicuous in size and its blossoms are very small compared with a good Rose, but for all that it is a sweet and pleasing old-fashioned subject that might be much more used in all gardens than it is. Plants of it in odd corners are sure to be found out by those who tire of the glare of Geraniums, and a hedge of it in the kitchen garden or pleasure grounds is far more charming than Privet or Laurel, the delicate fragrance of the Sweet Brier giving it a peculiar and uncommon charm. (CAMBRIAN.)

Rose Her Majesty.—The character which comes from America, that this Rose is much liable to be affected with mildew, is, I fear, but too well deserved. I had two plants of it as soon as they could be procured, and although they were grown for some time in a light, airy house, both plants

* "Rose Systyle." Par François Crépin. C. Annot-Bracekman, Ghent. 1887.

were severely attacked with mildew and no remedies that we applied had any effect. I then turned them out of doors and plunged the pots to their rims in a warm border. Still the disease spread on every newly made leaf. In the autumn I noticed that the disease had spread over the bark in large brown patches, as if it had eaten its way through to the woody stem. I fear this Rose is likely to be subject to this serious enemy of the Rose grower.—J. C. C.

TEA ROSES FOR FORCING.

THESE are the most valued flowers in our gardens during the early spring months, especially when in good health and free from greenfly, mildew, and other parasites. The buds and partly opened flowers are most beautiful cut with their foliage and placed in clear glass vases of small size. In gardens where no regular forcing-houses are available, or even ordinary greenhouses in which to grow the plants, it is not easy to make sure of a plentiful supply of blossoms, but the difficulties are not insurmountable. Pits or frame lights may be used to keep the plants in a growing condition. As the plants go out of bloom there is a tendency to neglect them, as they are often pushed into corners of vineries or other houses at a considerable distance from the glass, and where they scarcely receive any circulation of air. Instead of this, they should be placed in an airy place quite near the glass, and if they are stood in pits or frames, the lights might be removed altogether in fine weather. This is conducive to stout, healthy growth and leathery leaves of good substance. While being forced into growth in the spring, the flowers will not be first-rate unless the plants are placed near the roof-glass, where any air that it is necessary to admit can circulate amongst the leaves. Another error in culture is that of potting in a compost that is too heavy, and into which the roots do not enter freely. The turfy loam used in potting seems open enough at the time it is used, but after twelve months' watering it gets very close in texture, and many of the small rootlets die when they may inadvertently receive an over-supply of water. If a third part of good fibrous peat is used this may be avoided, and the plants are not so likely to suffer should it be necessary to place them outside where they may be exposed to drenching rains. Tea Roses ought not to be exposed in this way; it is much better to protect them with glass even during the summer and autumn months, abundant ventilation being provided. Many varieties of Tea Roses are furnished with flower-stems that are too weak to support the flowers in an upright position. A notable exception to this is furnished in a beautiful variety named Princess Beatrice, raised by Mr. Bennett, of Shepperton. It is a true Tea variety, raised by cross-breeding, and the stems bear the flowers erect, like a Hybrid Perpetual. A tray of blooms was exhibited at the spring exhibition of the Crystal Palace on March 26, and was much admired. The flowers are paler in colour, but more full than Madame Falcot, and are exquisitely perfumed. Madame Falcot is a free-growing, very useful old sort for cutting in the bud state; so also is the white variety Niphotos. Safrano is well known and greatly valued. A few other desirable varieties which have been well tried are Belle Lyonnaise, Madame Berard, Madame Eugène Verdier, Anna Ollivier (fine in the bud state), Catherine Mermet, Comtesse de Nadaillac, Hon. Edith Gifford, Madame Jules Margottin, Marie Van Hontte, Perle des Jardins, President, Souvenir d'un Ami, Sunset, and The Bride.

J. DOUGLAS.

Hybrid Teas.—The fulfilment of the hopes expressed by "J. C. C." on p. 275 was intended to have been effected in the notes on these Roses on p. 225, where a list being given of all the varieties of proved merit, it was left to be inferred that those not mentioned were of little value or attraction. There is little doubt that the less the names of worthless plants appear in print the better; many people will remember the name of a plant when they have forgotten any remarks that may have been

made about it, and though a flower may have been mentioned only to be condemned, it may yet under such circumstances be selected for planting because its name "has been seen somewhere." If, however, only varieties of merit are ever enumerated, the chance of their names becoming generally familiar is not then reduced by the frequent mention of worthless sorts which in turn are liable sooner to attain deserved oblivion. The varieties mentioned by "J. C. C." as well as many other hybrids of the same date have been carefully grown in considerable numbers since 1880, and all those not included in the list on page 225 have this year been finally discarded on account of some essential objection, such as lack of colour, constitution or attractiveness. Those discarded number nearly two dozen varieties, for which it has been found impossible to discover a use, either for exhibition, for supplying cut flowers, or as ornamental plants out of doors, and which consequently it is not worth anybody's while to grow. From Beauty of Stapleford it has not infrequently been found possible to obtain finely formed flowers for exhibition, but their production is not in any way worth the pains involved, as their dull colour always mars the brilliancy of a collection of cut blooms. Under these circumstances it is not obvious that any useful purpose would be served by the enumeration of these discarded Roses, especially as those growers that possess them can judge whether or not they are valuable to them, while those who have not got them will be less likely to obtain them if they are not reminded of so much as their names. The raiser of many of these discarded Roses has since given us such far finer and more beautiful sorts, that it is also hardly worth while to associate his name with varieties which, however useful they may have been as indications of the probable outcome of a definite experimental procedure, have not proved themselves of value to Rose growers in general.

KITCHEN GARDEN.

W. WILDSMITH.

MANURES FOR KITCHEN GARDEN.

AS regards the above, I have never had the good fortune to be in the enviable position of always having at hand abundant supplies of stable manure. I am satisfied that for every description of vegetable crop, stable manure stands unequalled; other descriptions of manures may, in some instances, prove equal to this for certain crops, but this suits all crops and soils alike. Then, in respect of its application, that the most nourishment may be extracted from it, there can be no doubt that the most certain mode of procedure is to bury it in a fresh state, a plan that we always adhere to when ground is being trenched, the decomposed supplies being reserved for ground that there may not be time to trench, but only to dig; so that long, strawy manure would not admit of cropping, drill drawing, &c., without some disturbance of the litter. Another way of applying the manure in this long state is as a mulching to such vegetable and fruit crops that in our judgment would be likely to benefit by the application. Peas, French Beans, and Scarlet Runners in the summer season are all thus treated, and that the crops may gain immediate benefit from it, a good watering is given as soon as it has been spread. All our wall fruit trees are thus treated, from 4 feet to 5 feet of border, next the wall, being at all times covered. In a decayed state this manure suits all vegetable crops, and for Lettuce, Radish, Coleworts, Cauliflowers, Turnips—in fact, any description of vegetable that readily absorbs whatever is put into the ground—it is specially well suited, as being mild in its action no taint is imparted to the produce, which taint is always present when sewage or other putrid manures are used. My indiscretion once led me to use in quantity on an Asparagus plot undiluted sewage from a cesspool that was

made to receive the refuse from kitchen, scullery, and stables. It was put on just as the Asparagus was breaking through the soil, and from the first few cuttings no complaint was made, but as the season advanced questions were asked as to what was the matter with the Asparagus, the taste was so bad. This was quite true. Since that occurrence we have been most careful in the use of any kind of manure, either liquid or solid, that owing to its strength would be likely to make the produce unpalatable. The sewage we still use, but in a greatly diluted state, and judging by its effects on both fruit and vegetables, the weaker form has the same stimulating effect on all crops as had the stronger dose, and there is none of the unpleasant astringency of taste in the vegetables. Another kind of manure that for lack of better we have to use is composed of garden refuse of every description—weeds, decayed vegetable matter, sweepings-up of walks, refuse soil, &c. This we collect in a heap, and once or twice during the winter it is turned over, soot and quicklime being intermixed with it as the turning over is being performed; these ingredients destroy all insects, and the lime neutralises any ill effects that, but from its presence, might arise from putridity. This we have tested as an excellent fertiliser for Potatoes planted on light soil. Wood and peat ashes, mixed with decayed leaf-soil, make an invaluable manure for short-lived crops, such as Lettuce, Turnips, Radish, and summer Spinach, and ensure a quick, succulent growth, and therefore mild-flavoured produce. As a manure for flower-beds, I question whether any other can touch it. For many years we used guano, but the quality at last so deteriorated, that crops that had no manure of any kind were just as good as those that had a dressing with guano. Bone-dust is too dear for kitchen gardening, although we use a limited quantity for fruit-growing with the best results.

LETTER FROM BURGHEY.

TO THE EDITOR OF THE GARDEN.

SIR,—We have just passed through a very cold month—14° to 17° of frost, with 6 inches of snow, and it has left its mark in my vegetable quarters. Lettuces, which I grow in quantity, are simply dead; Spinach, which I have never known to fail before, is killed. The borders are all dug and Ashtop Potatoes planted. Cabbage has stood better, and what a fine early Cabbage is that which is being sent out by Stuart & Mein, Kelso, N.B.; they are absolutely hearting. Nevertheless, after all these mishaps, I venture to predict March will be found to have been our very best friend. It has kept the fruit blossoms in their right places, with the exception of a few trees of very early Peaches, such as Amsden, Hale's Early, and Waterloo. The principal varieties are just bursting. Pears, Apples, Plums both on standards and dwarfs are studded with blossom buds. It will be perfectly well known that clear frosty nights are generally followed by fine sunny days. This has been the case all through March, and never have I seen a greater promise—Brussels Sprouts just making their appearance under glass, and fine La Grosse Sucrée Strawberries now ripe. All are satisfactory, so that should my prediction be right respecting a cold March, we shall all have much to be thankful for. My November-sown Peas are still looking fine. I am told that I do not preach what I practise; therefore I will try to do so, taking my text from the words "A cold March." My opinion is that a cold March is the best friend a gardener can have. I feel sure all your readers will agree with me when I say cold, frosty nights generally mean fine sunshiny days, and of all the helpmates we possess, the glorious sun stands a long way the first in all matters relative to forcing. I am indeed pleased to report that all my forcing houses give great promise; the same

may be said of flowers, vegetables, &c. It is said to be dangerous to prophesy "unless we know;" still I fully believe we shall reap a rich harvest of all kinds of outdoor fruit, which in a great measure we owe to a cold March. A noble lord and fruit land proprietor tells me that he always gets his rents better when we have a cold March. We also owe to the works of my text not only all these good things, but we have great opportunities of noting the hardiness of numbers of subjects under our charge; among them Strawberries may be noted. The great majority of our outside Strawberries are killed down to the ground line, but we see indications of growth in the hearts of the plants, though they look poor and puny. These varieties include President, Vicomtesse Héricart de Thury, La Grosse Sucrée, and Oxonian; but what a different look there is in those quarters planted with Pauline and Laxton's Earliest of All! The old leaves are fresh, green, and beautiful, thus showing they are not only improvements on existing varieties so far as the fruit goes, but are very much hardier. There is a great difference between these and the others mentioned, the former showing strong crowns and look vigorous, while the others, as I have said, are puny indeed. R. GILBERT.

Hardy Broccoli—Opinions differ greatly as to the hardiness of Broccoli and the ways of obtaining it. Mr. Gilbert's system of planting with the crowbar might do well enough in free, open soil, but on heavy, wet land I cannot see how it would succeed. It has been tried here, but with no success. We can grow good Broccoli on trenched ground. Out of a batch of 8000 plants I have only counted twenty vacancies; all the rest are looking well and not in the least damaged by the recent severe weather. The seed was sown the second week in April, and planted out the second week in June with the dibber on well-manured land. The varieties grown are Backhouse's Winter White, Veitch's Model, Knight's Protecting, Sander's Goschen, and Gordon's Niddrie. We are now using Backhouse's Winter White; the plants are not even laid in with the heads facing north.—OLIVOR.

The small-pot fallacy.—I am surprised to see Mr. Gilbert believing in small pots and mentioning Tomato plants nearly seven months old from cuttings just coming into bloom in support of it. I have seedlings sown in January as far advanced as his in 6-inch pots, and at least showing flower freely, and another 75 feet row of cutting plants struck later than his in big pots all about 3 feet high, with their first set well swelled and some nearly colouring. Yet I fancy I am behind. I do not believe in small pots in the sense advocated by some gardeners, nor does it appear to answer in Mr. Gilbert's case when he has to resort to stimulants; this would not be needed if his plants were not already starved. It will not do, this small-pot theory. Every plant needs a pot of a certain capacity to yield a maximum result in a given time. You may call the pot big or little, but that is the gist of it. There is such a thing as over-potting, but that is not what the small-pot advocates mean. The best crop of Tomatoes I ever had was from plants put out in a vinery border on the back wall, when the Vines were young in front and did not obstruct the light. These Tomatoes had abundance of root-room, were 12 feet high, and bore long and enormously such as I never saw before nor since. I am greatly surprised at Mr. Gilbert's winter Spinach being killed by frost; never knew such a thing in England or Scotland in the hardest winter. We have suffered bad enough from frost here this winter, and March has been the severest on record, but the Spinach is most luxuriant and abundant considering how little growth there has been.—J. S. W.

SHORT NOTES.—KITCHEN.

Dwarf French Bean Ne Plus Ultra—We are now gathering large quantities of this Bean; and after trying every sort that ever possessed the recommendation of being early, I have arrived at the conclusion that Ne Plus Ultra is the earliest and most prolific. It is very dwarf in growth, bearing heavily, and the pods are long, slender, and excellent in quality.—J. CURR, *Maryona*.

Early dwarf Peas for small gardens.—Tall-growing Peas should not find a place in small gardens. Probably the very best and earliest dwarf Pea in cultivation is William Hurst, a wrinkled variety with finer pods than those of American Wonder or Little Gem, and also more productive; while it rarely exceeds 1 foot in height. Then there is a great favourite of mine, Omega, a dwarf late Ne Plus Ultra, excellent alike in cropping and table quality, and not more than 2½ feet in height. A gentleman writing to me a few days ago speaks of these two as the Alpha and Omega of Peas. Here, then, is an early and a late variety that can be highly recommended. Sturdy can be grown for an intermediate crop; it is the same height as Omega, but perhaps scarcely so good, though that may be a matter of taste. But they are as useful in large gardens as in small ones, and by those requiring early Peas the variety William Hurst may be profitably grown. R. D.

KITCHEN GARDEN NOTES.

POTATO PLANTING. The fine weather has this week made us so busy in other departments of the garden, that this has been somewhat neglected; still, we have been able to plant a good breadth of the following varieties of Potatoes: Reading Hero, Abundance, Lapstone, and Schoolmaster. All the American varieties we long since discarded, as being much inferior in quality and very little more prolific, if any, to our best English-raised sorts. We give space, less or more, according to the height and spread of haulm of each sort. For strong growers we allow a yard between the rows, and the short-topped kinds from 2 feet to 2½ feet, and the same in respect of distance of sets in the rows, the dwarfed growers from 14 to 18 inches, and the stronger 2 feet. All are planted in drills and covered to a depth of from 4 inches to 5 inches.

PEAS.—Another good breadth of these has been sown on our very best land in shallow trenches to prevent the necessity of earthing up higher than the ordinary ground line. This sowing will be in a full bearing state in the height of summer; consequently any little item of culture that may conduce to the prolongation of the bearing state is worthy of consideration, hence the non-earthing up, that rain or artificial watering may have the fullest effect, which can hardly be the case if ridged up. The varieties now sown are several seedlings of the wrinkled marrow section, Ne Plus Ultra, Royal Jubilee, Telephone, and Satisfaction. By sowing several kinds at the same time there is greater reason to expect a longer succession, as no two varieties are ready for use at exactly the same date. It is not always practicable, but whenever we can arrange the cropping, so as to have the rows of Peas a long distance apart, we do it, and crop the immediate space with any quickly maturing crop, such as early Cauliflower, Lettuce, Spinach, and even early Potatoes. But whether such cropping be done or not, the rows should not be nearer together than 6 feet, as if crowded the pods seldom fill out, and there is great waste from the breaking down of the haulm when gathering the Peas. The earliest sown lot, if not already done, ought to be staked. We never defer this work, for if not done at time of sowing—which sometimes we do—the work is done the moment the Peas break through the soil, and thus they are protected from cold winds and destructive birds.

BROAD BEANS.—These we have thinned out to about 8 inches apart, and the ground being rather loose at their base from the action of frost, they have had a slight earthing up. The Spinach sown between the rows we found it necessary to dress with soot as an antidote against the attack of snails and grubs. Broad Beans are not valued very highly, so that they are only grown in limited quantity, and our last sowing has already been made, Broad Windsor being the variety. The cottagers in this district dibble in here and there a seed in their Potato quarters, so that their Bean crop takes up no ground, and being planted so thin, from 8 feet to 10 feet apart over the whole plot, it has no injurious effect on the Potatoes.

HOEING. After such a recent and lengthened season of snow-storms, it seems strange to be already at this kind of work, but it is a fact, nevertheless, and the soil works well. Purple-sprouting Broccoli, Curled Kale, and that hardiest of winter greens, Cottagers' Kale, are all having the ground stirred deeply between them to get as much and as quick a growth as possible, for the bulk of the Broccoli crops being a failure makes the demand on other green crops the greater. The ground occupied with autumn-sown Cabbage, which was previously cropped with Onions, not having been dug at time of planting, had got so hard that instead of hoes we thought it advisable to use forks to stir the soil to a depth of about 1 inches. We grow only the dwarfest varieties, and soiling up is, therefore, never required, as they are planted but a foot apart in the rows, so that weeds have but a poor chance.

VEGETABLES AND RIDGE CUCUMBERS.—It is time that these were sown. We raise both in heat and grow them on in pots, and if handlights or frames can be spared to place over the beds when the plants are first turned out, we press them into service till danger from frost is past, and the plants have started well into growth. Bottom-heat is not essential for either, but as regards Cucumbers, they start much more kindly if a little can be given. Marrows are more hardy and do not need it, nor are they fastidious in regard to soil. The beds that have been cleared of early Potatoes are first-rate positions for them, and as they are usually cleared of their crop by the middle of May, they come in just right for them, for without protection it is not wise to plant out earlier than that.

WORK IN PROSPECT.—Planting out remainder of Cauliflower plants that have wintered in frames; also Lettuce and Coleworts that have been raised in heat; pricking out Celery and a later sowing of Cauliflower; potting off seedling Globe Artichokes; planting Sea-kale; also preparing to sow both this and Asparagus, have engaged our attention. If showery we will give another slight dressing of salt or soot, or both, to Asparagus plots. None of our crops are so persistently attacked with slugs as these, and two or three such applications we are, therefore, obliged to give. W. W.

TREES AND SHRUBS.

W. GOLDRING.

THE FUCHSIA-FLOWERED CURRANT.

(RIBES SPECIOSUM.)

AMONG the earliest spring flowering shrubs this Californian Currant is one of the most beautiful and interesting, as it is so different from any other. It is aptly named the Fuchsia-flowered Currant, as its glittering red blossoms are more like those of a Fuchsia than those of any other Ribes. They are of similar shape, with long, protruding



The Fuchsia-flowered Currant (*Ribes speciosum*).

stamens, and hang on the branches in the same gracefully drooping way as a Fuchsia. It is altogether an elegant growing shrub, as its long shoots hang gracefully on all sides. Although

it is perfectly hardy in the southern parts of these islands, it is so beautiful that it is worthy of wall culture, and if the place is warm and the aspect of the wall is south or west the flowers appear as early as April, long before the open bushes flower. It, moreover, quite preserves its evergreen nature when against a wall, an advantage not to be overlooked. It likes a light, loamy soil, and no attention is required beyond that of encouraging new shoots by cutting away the old at pruning time. It thrives well along our south coast, and the finest plant of it I ever saw was growing in the Victoria Park, Bath. It was an isolated specimen on the lawn, and was 6 feet high and as much across, and covered with bloom.

HEDGES V. WALLS.

No one, I should imagine, would advocate the use of hedges in preference to walls for enclosing a garden. At the same time hedges are, in my opinion, of more value than some people suppose. They are not only useful for forming dividing lines, but they afford a great deal of shelter, and in many cases would have a more natural appearance. Those who have had much experience in growing kitchen garden crops on borders with a good aspect near to a well-furnished evergreen hedge must be aware of its capacity to afford shelter. The difference in the amount of shelter furnished by a wall is not much greater. However, that is my experience. There certainly is not the same power in the wind sweeping along a border next to a hedge as there is by the side of a wall. Perhaps someone will say a border next to a hedge cannot be so warm as one against a wall, but in practice there is not so much difference in the relative earliness of crops as might be supposed. It is proved in many cottage gardens all over the country. The vegetables are often as early as in those sheltered by high walls. At the same time I must not be understood as advocating hedges in preference to walls, and I acknowledge the fact that hedges harbour vermin, which is a serious drawback to their extended adoption.

There are several Evergreens suitable, but no doubt green Box makes the most compact and closest hedge. The large-leaved form of the common Box will form a hedge in much less time than is generally supposed if the leading shoots are not stopped until they get the desired height. There is no danger of the bottom getting thin if the sides are clipped once a year. If the plants are small when planted, it is best to put in a double line, allowing a distance of 1 foot between the lines and the same from plant to plant. The greatest objection to Box is its making so many roots; nothing will grow near it. This applies to all evergreen hedges, but with greater force to the Box. The only satisfactory way of getting over this objection is to make it a rule not to plant nearer to the hedge than 2 feet or 3 feet. Next to Box, the green-leaved Holly is undoubtedly the best to form hedges from 6 feet to 8 feet high. The common green form is the one generally used, but for the sake of variety and for securing a quicker growth I prefer the Minorea Holly, better known, perhaps, as balearica. This is a very distinct variety. For forming hedges or lines in any part of the dressed grounds, I think the variegated sorts are the most ornamental. If shelter only is the object which it is desirable to obtain with as little delay as possible, Lawson's Cypress (*Cupressus Lawsoniana*) is the plant to select; but, in my opinion, when this plant is clipped in the form of a hedge it is too stiff and formal to be pleasing.

Where there is sufficient space to allow the side growth to extend a little every year the Yew makes an imposing hedge, but it is hardly suitable in any position, except as a dividing line between the pleasure ground and the kitchen garden, because it impoverishes the ground so much for several feet on each side that nothing will grow near it. Hedges for boundary lines where cattle can reach them are best formed of White Thorn or Holly. The former is the most suitable, and where the land is fairly good and a double line of plants put in, a thoroughly impenetrable hedge may be formed in a few years

Not unfrequently Thorn hedges do not make the progress they would do owing to the indifferent preparation of the soil. In every case the ground should be dug up 18 inches deep over a space 3 feet wide, and then there will be no fear of the result. Unless the land is suitable for the growth of Holly I do not advise its use. J. C. C.

THE EUROPEAN BOX THORN.

(*LYCIUM EUROPEUM*.)

ALTHOUGH this thorny, rambling shrub is so commonly seen in cottage gardens, generally climbing over a porch or out-house roof, its



The European Box Thorn (*Lycium europæum*); branch with flowers and berries.

value in large gardens is not recognised. One often meets with steep, and exposed, and dry banks where ordinary plants or shrubs refuse to thrive, and if I am asked to name a few plants that will grow upon them I invariably include the Box Thorn, or Tea Plant, as it is more commonly called. For such a spot it is invaluable, as it is so indifferent as to soil, and

is no further trouble when once well planted, and, moreover, is an extremely rapid grower, for when established in good soil it makes annual shoots from 10 feet to 20 feet long, and if against a wall the shoots are even longer. It is highly ornamental from early summer, when it blooms, till autumn when it carries a profusion of small scarlet berries. Indeed, it is in flower and fruit at the same time, and the purple unripe berries, the purple and white blossoms, and the scarlet ripe berries on the same shoots have an extremely pretty appearance. On a bank the shoots spread out in all directions, and become in a short time so dense that the plant monopolises the space for several feet around it. It is a capital plant, too, for arbours and porches, as the shoots can be tied to pillars, and then allowed to spread in a canopy, dense enough to form a screen from the sun, and the flower and berry-laden shoots droop in a graceful way from the top. It is a cheap plant in nurseries, and the variety with yellow instead of scarlet berries may also be obtained. There are a few other so-called varieties of *Lycium*, but they do not differ much from the common European species; indeed, they are considered only varieties of a very widely distributed species. The names of these species are *L. barbarum*, *chinense ruthenicum*, and *ruthenicum*, but only the first-named is common in nurseries.

***Euonymus japonicus variegatus*.**—This *Euonymus* is a capital plant for covering walls, as when growing luxuriantly—as it does when planted in good soil and watered freely during hot, dry weather—its effect is charming. The variegation is more clearly defined, the foliage being larger, while the colour of the stems is bright golden. The leading branches should be laid carefully in close to the wall, while those shoots springing from the breast of the plant may be clipped in closely.—E. M.

***Araucaria imbricata*.**—This tree certainly forms a distinctive feature in the nursery of Mr. G. W. Piper, at Pittdown, Sussex. Some years ago two irregular lines of it were planted along the side of the nursery, running parallel with the main road; these have now developed into large trees, forming a beautiful avenue. The largest specimen is nearly 70 feet high, with a stem girthing 9½ feet, while its branches sweep the ground. We are told that the male and female catkins are produced on separate trees, but this fact is set at variance by what I saw here, both being produced on one tree, this circumstance, I was informed, being of annual occurrence. Moreover, Mr. Piper has raised a great quantity of seedlings from seed obtained from the trees in question.—A. HERRINGTON.

***Eucalypti in East Norfolk*.**—In July, 1883, I planted some trees of the Blue Gum (*Eucalyptus globulus*), the Mountain White or Cider Gum (*E. Gunnii*), the Spotted Gum (*E. gonicalyx*), in a corner that is sheltered from the north, and north-east, and north-west, and partially from the south-west (it had been an old sand pit), but exposed to the full force of the south and south-easterly winds; they have grown well and are fine trees; the *E. globulus* are 35 feet high, measuring round bole of trees 15½ inches 1 foot from the ground; *E. Gunnii*, 25 feet high, round bole 12½ inches; *E. gonicalyx*, 16½ feet high, round bole 9 inches. In the winter of 1883 I put some mulching of long manure from the stables about 1 foot up the boles, and they did not show any signs of being hurt by the frosts and winds until the following spring, when they looked a little browned for a short time. In 1884 I put a much heavier mulching on all, but more especially on the tallest of the *E. globulus*, which was then 22 feet high, to which I packed the mulching 2½ feet up the bole with the result that it died—I have no doubt from the dampness, being constantly close to the bark, so that it excluded all air. Since then I have only put a very light covering over the roots, which, so far, has been satisfactory. Just now they all (except one of the *E. globulus*)

look very much withered, but I hope they will start again after being cut back in May. E. Gunni has flowered here, but the flowers are insignificant. E. globulus has shown plenty of blossom-buds the last two seasons, but never has been able to open them. My object in writing this is to learn from other readers of THE GARDEN how their Gum trees have withstood the effects of the past three or four winters, and whether they have had any protection or not. South-east and south-west winds are very prevalent here in early spring and autumn, which is a great disadvantage to them, for their foliage is so heavy that now and again a branch will twist off.—J. E. SENDALL, *Brundall, Norwich.*

Acer Schwedleeri.—This hardy, free-growing, purple-leaved Maple should not be lost sight of by planters. It is a real acquisition, as far as effective contrast is concerned, amongst trees of light green foliage. Its leaves are of a bright reddish purple when newly unfolded, very brilliant and glossy, and as large as those of the common *A. platanoides*, or Norway Maple, of which it is a variety. W. G.

Privet hedges.—I am not in favour of introducing tender or very valuable plants as hedges in places where the main object is to secure shelter or shut out objectionable views, and, considered from all points, I know of no more satisfactory plants for hedges generally than Privet. The plants are very cheap, and if the evergreen and oval-leaved varieties are planted in mixed fashion they will form a fine hedge. They grow freely in every situation, and form a dense mass sufficient to obstruct cattle or break the current of wind; they bear cutting or clipping into any form, and when well trained are very ornamental.—J. MUIR.

Ampelopsis Veitchi This is a climbing plant that never requires the least attention bestowed upon it, as it will clothe even the smoothest wall with a dense covering of its beautiful foliage. It is, however, deciduous, thus losing its effectiveness during winter, though the gorgeous colouring of the decaying leaves in the autumn is some compensation for the bareness later on. The young growth attaches itself so firmly to the wall by means of the sucker-like points of the tendrils, that even if a large plant be removed, all that is necessary is to secure the principal branches in position, and as soon as growth recommences the young shoots attach themselves to the wall. I have moved several with great success, but find that the roots form very few fibres, so that in shifting them every root should be carefully preserved, and the plant attended to in the way of watering until established. H. P.

Undergrowth in pleasure grounds.—Those about to plant evergreen undergrowth under large trees in pleasure grounds should intermix, especially with Rhododendrons, the yellow Ghent Azalea. There are many colours of this fine, hardy, flowering shrub, but the yellow is the most robust, and makes the best rabbit-proof covert next to the Rhododendron. Being sweet-scented, moreover, gives it an advantage, and for coverts, in connection with dressed grounds, it is a decided gain. The yellow-flowered, black-berried *Berberis Aquifolium*, too, is a better rabbit-proof covert than the Laurel, which with us is more eaten by rabbits than any other Evergreen. Evergreens should never be planted in great sweeping masses, but should be divided and sub-divided by deciduous plants, and for this purpose the Ghent Azalea is well adapted.—W. G.

Zenobia speciosa.—This deciduous shrub grows about 3 feet or 4 feet in height, and bears pure white bell-shaped Lily of the Valley-like flowers in great profusion during the summer months. As often seen, however, it has a stunted and unhappy appearance, owing to being planted in too dry a situation. It is a native of swampy districts in North America; therefore it does best with us in damp, shaded parts of the American garden, conditions under which the *Clethras* and others of its more immediate allies succeed. A very distinct variety of this *Zenobia* is that called *Z. pulverulenta*, a plant covered all over with a white meal, and its flowers are larger and opener than those of the typical form. The *Zenobias* form pretty

objects for conservatory decoration when forced into flower in the spring; the pure white blossoms have a very chaste appearance, and the distinct hue of the variety *pulverulenta* shows up conspicuously amongst its green-leaved associates.—W. G.

The Red Maple (*Acer rubrum*) is a beautiful object in the landscape when it is unfolding its leaves in early spring. Its vermilion-red hue is sufficiently distinct to make it conspicuous. It has two distinct seasons when it assumes this striking colour—spring and autumn, but I think the tone of red is brighter in the autumn than early in the year. It is to be regretted that the Red Maple—for it is only in very old gardens that fine trees of it can be seen—is so scarce in the form of large trees.—W. G.

Rhodotypos kerrioides.—There is such a striking resemblance between this and the old Japanese *Kerria* (*K. japonica*), that it is difficult at first sight to distinguish the one from the other when not in flower. The *Rhodotypos* is a handsome shrub of slender growth, having opposite leaves with much wrinkled surfaces and large pure white flowers. It appears as yet to be very little known in cultivation, but it is a shrub that certainly deserves attention, as it is a beautiful object when in flower in summer. In a light warm soil in the neighbourhood of London it grows about 4 feet or 5 feet high and is perfectly hardy. It is a common garden shrub in Japan, but it does not appear to have been found in a wild state. Siebold, who first brought it into notice, believes it to be a native of the island of Kiusiu. W. G.

Varieties of Cupressus Lawsoniana.—Probably one reason that the variety of Lawson's Cypress known as *intertexta* is not so often met with as some of the others is the fact that it does not root from cuttings so easily as most of them; indeed, among the varieties of *Cupressus Lawsoniana* a very great difference exists in the readiness with which they can be struck. Generally speaking, the open, loose-growing varieties do not strike so readily as the more compact forms, and of these latter the easiest to root is the upright-growing *erecta viridis*, while *intertexta*, which is the most widely removed from it in habit, differs to the same extent in its rooting qualities. A good deal of the success or otherwise in striking cuttings will depend to a great extent on the conditions under which they have been grown, but where all are situated alike the peculiarities of each are rendered still the more manifest. The great difference between the varieties of one species in the matter of propagation is by no means limited to Lawson's Cypress, for many other examples could be quoted, though none perhaps to such an extent as in those mentioned above.—T.

PROPAGATING.

FOLIAGE BEGONIAS.—A stock of this class of Begonias can be easily obtained, as they grow readily from leaf cuttings, and quickly form effective little plants when increased in this way. Of course, division can be resorted to where large plants are at hand, and ordinary cuttings readily strike whenever obtainable, but the usual method, and the only one available for rapid increase, is to put in cuttings of the leaves. For this purpose, the leaves selected should be well matured, and at least 2 inches or 3 inches of the stalk must be allowed to remain on. This stalk is then inserted in the soil, leaving the leaf flat on the surface, when a few incisions made through the principal ribs will form a seat from whence the young plants are likely to spring. Pans or pots of soil may be used for laying the leaves on, or a little soil may be placed in the bottom of a propagating case, and the leaves dibbled therein without employing pots. This last method possesses the great advantage of economising space. Besides the stalk which is inserted in the soil, a few small pegs should be employed to hold each leaf in position, and to ensure its being in immediate contact with the soil. After a time young plants will make their appearance, generally at the base of the leaf, and where

the various incisions have been made. They may then soon be removed, and quickly make sturdy little plants. Where the loss of a plant or two is not so important a matter, a space that is often wasted may be utilised for the increase of these Begonias, but the same measure of success cannot be hoped for as when carefully attended to in a propagating house. I allude to a bed of Cocoa-nut refuse, or other plunging material in the stove, in which good-sized subjects are grown. A considerable amount of bare fibre is often seen, and on this the leaves may be placed in the manner recommended above. The overhanging plants will serve to keep the leaves shaded, and prevent them becoming shrivelled.

Another way of treating these Begonias is to cut the leaves up into strips and then dibble them in perpendicularly as cuttings, but this cannot be depended upon to the same extent as the other method. Save for the increase of any particular variety, Begonias of this section can be raised from seeds almost as readily as the tuberous-rooted kinds. By intercrossing about half a dozen distinct plants I obtained a large and varied assortment, most of which were equal to the named varieties. From the minute character of the seed it should be sown on the surface of the soil, and simply covered with a pane of glass till germination takes place. Then if pricked off carefully, the young plants grow away rapidly, but will need some time to fully develop their markings. From the appearance of my plants in their earlier stages, I fully expected to have a few distinct varieties amongst them, but as they increased in size these prominent markings disappeared and no new varieties resulted from this batch of seedlings. Other classes of Begonias are by no means difficult of increase, for those of the shrubby section can all be readily propagated by cuttings of the young shoots, which should be taken now, for especially in the case of the winter-blooming varieties this is the best time, as cuttings struck now and grown on throughout the summer will make good plants for flowering in the winter. The pretty and distinct *B. socotrana* admits of increase in rather a peculiar manner, for when in full growth small bulbils are formed at the base of the stem, which, when separated and placed under conditions favourable to growth, quickly root and form young plants. Those of the tuberous section that are now growing will yield cuttings if desired, the principal thing to guard against being to see that they are not kept too close and moist, otherwise from their succulent nature they are liable to damp off.

PINGUICULA CAUDATA.—Another instance of successful leaf-propagation is to be found in the case of this pretty Mexican Butterwort, which can be readily increased in this way, though on its first appearance in this country it by no means seemed like a plant that would be amenable to such treatment. To propagate this, the large leaves should be taken during the summer and stuck into pans filled with Sphagnum Moss, and a little sand sprinkled over. If the Moss be moist, the leaves will not require to be watered for some little time, and from their succulent nature they must not be put into close or moist quarters. A shelf in not too hot and dry a position suits them well, all that is necessary being to keep the Moss merely damp. In this way the old leaf will root, and push up a young growth from its base, and when large enough to handle they can be potted off, using for the purpose a compost largely composed of peat and Sphagnum Moss.

CROTONS, IXORAS, BOUGAINVILLEAS, FRANCISCEAS, and many other stove plants may now be readily increased from cuttings. As it is by no means difficult to strike the majority of the plants above mentioned, care should be exercised in the selection of the cuttings, which should be clean and well grown, as upon this the future of the plants will to a great extent depend. The cuttings should consist of good sturdy shoots of the current season which have become slightly woody in texture. Those with large leaves are best put singly in small pots, and secured to a stick to keep them steady. The soil for most things may consist of peat, loam, and sand, in equal parts, but for *Ixoras* the peat

and sand may with advantage predominate over the loam. If the cuttings of these different stove plants are plunged in a gentle heat, in a close propagating case, they quickly root, after which they should be hardened off, and without delay shifted into larger pots, as if checked in their earlier stages they will suffer later on.

LILACS.—Where these are forced into bloom they will be by now in full growth, and should it be desired to increase any, these young shoots may be taken off and struck in the same way as Fuchsias and similar subjects. Though such a method is scarcely likely to commend itself for the increase of the common Lilac, it may with advantage be employed for the propagation of the newer kinds, a great many of which have been put into commerce from the Continent within the last few years. In consequence of these new kinds being generally budded or grafted on the common Lilac, the suckers from the stock require constant attention. This is avoided by striking the cuttings, and where dwarf bushes are needed, this last is a very suitable means of increase.

EPIPHYLLUMS may now be readily grafted, and can safely be trusted in the hands of a beginner, for they are about the easiest of all plants to unite in this way. The stock mostly employed is the Pereskia, and all that is necessary is to cut the stock down to the required height, and having cleft it, insert therein the scion of Epiphyllum, which must have had its base fashioned wedge shape, in order to join well together. To keep all secure some cultivators pass a thorn or two of the Pereskia through both stock and scion, which is sufficient; the union, however, is not so neat as when they are tied with matting, which may be done without injury, for even should it cut through the wing-like part of the scion, no harm will result. After grafting, the plants should be kept close for a fortnight or so, but the case must not be too moist, neither should they be plunged in bottom heat.

GRAFTING is by no means absolutely necessary for the propagation of Epiphyllums, though from their drooping character of growth they are seen to the greatest advantage when elevated, and for this reason they are generally grafted. When grown in hanging baskets no grafting is needed, all that is necessary being to stick pieces of the Epiphyllum into the baskets wherever required, and when placed under favourable conditions they quickly strike root and establish themselves.

GARDENING BY THE SEA.

OUR climate along the southern coast of England is of such a favourable character that it offers a wide range for the cultivation of plants suitable for the open-air garden and as climbers against walls. There is a greater choice amongst climbers suitable for walls than any other, and to these I will first direct attention.

TECOMA JASMINOIDES. This plant is well known as a greenhouse climber, but it is not generally known that it thrives in a warm aspect on walls in the open air on the South Devon coast. At Dawlish, a mile inland, it thrives and flowers in the most satisfactory manner much better, in fact, than ever I saw it doing under glass, as the flowers are larger and produced in greater numbers, and the foliage is larger and of a darker shade.

BIGNONIA RADICANS. Although this creeper grows luxuriantly enough in many inland counties, one requires to see it in some of the gardens on our south-western coast to understand its capacity to produce a brilliant effect during the autumn months. No creeper with which I am acquainted is capable of covering so large a space in so short a time, or has such a singular and distinct character. It requires a rather rich and deep border for the roots to develop its qualities.

LIANTHUS PUNICEUS. In a suitable climate this is unquestionably the most brilliant creeper grown, as it will clothe a wall from 20 feet to 30 feet high with large bunches of its bright crimson flowers almost from top to bottom, and being an Evergreen further enhances its value. I am only surprised that it is not more grown

in the south and west than it is, for in a good soil after the first year of planting it will increase in height at the rate of 5 feet each year, and being naturally of a branching habit it fills up the wall without any pruning. Unless anyone has seen this plant draping the walls at Dunster Castle, with its gorgeous masses of brilliant flowers, it is hardly possible to conceive the striking effect it has, as it continues flowering for some time, the youngest wood being the last to flower. This Lianthus is not very particular about soil, for I have seen it thriving in a bed of lime rubble, and also in a loamy mixture. Cuttings of the half-ripe wood strike as freely as Pelargoniums in the early autumn, but they should not be planted out until the following spring.

STAUNTONIA LATIFOLIA.—This is another evergreen climber that is much harder than is commonly supposed; the growth and foliage render it a suitable subject as a climber; the flowers are of a dull brown colour, which make them somewhat unattractive. Its greatest merit is, I think, that the blossoms are highly fragrant.

PITTIOSPORUM TOBIRA.—This is another sweet-smelling Evergreen, suitable either for a wall of moderate height, or for growing in the form of a bush. The flowers are creamy white and are produced at the points of the shoots. It has rather a neat and stiff habit, and well furnished with growth down to the ground when the plant is not crowded by other subjects. There is also a variegated form, which is a counterpart of the other, except in the colour of the leaves, which have a creamy variegation. It will be found to make the best growth when a little peat is mixed with the soil.

BERBERIDOPSIS CORALLINA.—This plant also makes much more growth on open warm walls than it does under glass. It is not a striking plant even when in flower; the flowers are more remarkable perhaps for their singular form and colour than for their capacity to make an effective display.

FUCHSIAS.—As flowering plants for covering walls, or for growing into the form of huge bushes, there is nothing amongst what may be called half-hardy plants to equal them. Only in a few instances have their merits been recognised as suitable for the shrubbery border in a form large enough to render them conspicuous objects. I have seen a lower formed of hardy Fuchsias in a Devonshire garden, and in several instances they have reached to the tops of walls 10 feet and 12 feet high. Riccarton is, no doubt, the hardest of all Fuchsias for planting to form bushes, and the old corallina is the best for covering walls. For warm and sheltered corners, many of the better forms do exceedingly well even close down to the sea. I have seen the double-flowering varieties as well as the single flowered very beautiful in cottage gardens where only a low wall separated the garden from the sea.

BENTHAMIA FRAGIFERA.—This evergreen plant would certainly do well on warm walls all along the south coast, and it is quite hardy in sheltered shrubberies in some of the gardens in South Devon; as a wall plant its growth is of easy management. We have it growing on an east wall where it occasionally bears fruit, which are coral-red.

ROSE CLIMBING DEVONIENSIS.—Although this Rose may do fairly well in some inland gardens, I have never seen it doing half so well anywhere as on the sea-coast, where its growth is very remarkable, and the number of flowers far exceeding those produced on plants grown under glass. I can recommend this Rose for sea-side planting; of course it requires a good soil and plenty of room for its branches to extend, and only moderate pruning until it has filled up the space allotted to it.

MAGNOLIA GRANDIFLORA.—This is well grown in the form of standards at Sea View House, Dawlish. In this instance the plants were in the most satisfactory condition, many of the trees being nearly 40 feet in height with an ample spread of branches, which, when I saw them, were carrying many large flowers. The condition of these trees made it evident that they had not suffered in any way since they were planted; as a matter of course, they

were not fully exposed to the sea-storms of wind and rain, but were well sheltered by surrounding trees. I believe there are many sheltered gardens by the sea in which this Magnolia would do equally well as standards or bushes. Amongst other subjects which are suitable for the lawn or the shrubbery border I may mention *Choisya ternata*, which grows in the form of a low shrub with leathery shining foliage and sweet-smelling cream-coloured flowers.

OLEARIA HAASTI is of similar habit of growth, and suitable for planting either on the lawn or the shrubbery. It bears large heads of small white flowers. *Desfontainia spinosa*, sometimes called the flowering Holly, is also a useful Evergreen, suitable either for planting against a low wall or in a sheltered position in the shrubbery.

TEA-SCENTED ROSES. I am surprised that this very beautiful class of Roses has not been more grown round the coast. There are many gardens that can afford the requisite degree of shelter, and in these they may be grown with a degree of safety that is unknown to Rose growers in less favoured places. If the zonal Pelargonium will live for several years in open borders without injury, it is certain that Tea-scented Roses, being much more hardy, may be planted with safety. J. C. C.

Double Primroses. I see several correspondents in THE GARDEN have an idea that the double Primroses are descendants of *Primula vulgaris*. With one exception (called New Giant Yellow), I believe they sprang from *P. altaica*, a species flowering a month earlier than the typical forms of *P. vulgaris*, and certainly the parent of the best of our coloured Primroses. Pompadour is one of these, so I think is Double Sulphur, Ruby, &c. In Mr. Frettingham's nursery is a large collection, mostly *altaica* hybrids, and they come into flower any time in the winter during spells of mild weather, and in the spring they are masses of flower, more so than any selections I have seen of *P. vulgaris*.—WM. ELLIOTT.

We have received from Messrs. James Carter and Co., High Holborn, a pamphlet dealing very fully with the making and after-management of lawns, lawn tennis and cricket grounds, their formation and after-management.

From the director of the Royal Botanic Gardens, Kew, the April number of "Bulletin of Miscellaneous Information," containing notes on *Manilla Hemp*, which is obtained from the fibres of *Musa textilis*, the fruit of which is green and hard, and useless as food. Notes are also given on the fibre obtained from *Musa sapientum* and the Pine-apple.

BOOKS RECEIVED.

"Smithsonian Report." 1884. Vol. 2.
"Reports on the Colonial Sections of the Exhibition." 1886.

Names of plants.—*U.S.*—*Dendrobium nobile* Wallichianum.—*Kent.*—1, *Epidendrum Stamfordianum*; 2, *Odontoglossum Uro-Skieneri*; 3, *Dendrobium chrysoetoxum*; 4, *Cypripedium venustum*, good coloured var.—*J. W. L.*—*Dendrobium speciosum*.—*Lancaster.*—1, *Bodia lanulata*; 2, *Drosera capensis*; 3, *Erica Banksii*; 4, *Beronia elatior*.—*Jury.*—The Fern sold in Covent Garden Market by the name of French Fern is the Black Spleenwort, *Asplenium Adiantum-nigrum*.—*J. C. County Down.*—The three Ferns which you send, and which you say clothe the stone walls in Ireland so beautifully, are *Asplenium Trichomanes*, *A. Ruturaria*, and *Ceterach officinarum*.—*R. A.*, *West Derby.*—*Dendrobium anosum*.—*J. T.*—*Oncidium sphaacelatum*.—*J. M.*, *Stoke la Trent.*—1, a very handsome form of the rose-coloured *Odontoglossum Alexandrie* (crispum); 2 and 3, *Odontoglossum luteo-purpureum*; 4, a form of *Odontoglossum Andersonianum*; 5, *Ceologyne baecida*.—*A. Constant Reader.*—1, *Cornus mascula*; 2, a species of *Salix*.—*P. C.*, *Leeds*—A very fine and highly coloured form of *Odontoglossum Rossi*.—*L. H. L.*, *Torquay*.—*Pulmonaria officinalis*.—*H. R.*, *East Faversham*.—*Catascium thomus*, *Ceologyne baecida*.—*W. F.*, *Faversham*.—1, *Dendrobium luteolum*; 2, *D. crassinode*; 3, *Angreum citratum*; 4, *Cypripedium concolor*.—*D. McP.*—1, *Adiantum sulphureum*; 2, *Humata heterophylla*; 3, *Fadyenia prolifera*; 4, *Antrophyum lanceolatum*.—*K. D.*—Double form of *Sparmannia africana*.—*J. D.*, *Bovey*.—1, *Odontoglossum triumphans*, poor form; 2, *O. Cervantesi-decorum*; 3, *Dendrobium Ainsworthii*; 4, *Cymbidium sinense*.—*G. H.*, *Bristol*.—1, *Adiantum fulvum*; 2, *A. hispidulum*; 3, *A. formosum*; 4, *A. affine*.—*J. C.*, *Douglas*.—1, magnificent form of *Dendrobium nobile*; 2, ordinary form.—*E. B.*, *Rocheester*.—1, *Leucopogon lanceolatus*; 2, *Eriostemon anemum*; 3, *Polygal. Pulmaria*; 4, *Boronia tetrandra*.—*Fra Laver*.—1, *Scelaginella atroviridis*; 2, *Hymenophyllum asplenoides*; 3, *Sitobolium davallioides*; 4, *Microlipia platyphylla*.—*R. B.*—1, *Odontoglossum nevadense*; 2, *Vanda tricolor insignis*; 3, 4, 5, poor varieties of *Odontoglossum gloriosum*.—*Morp.*—1, *Melaleuca Wilsoni*.

WOODS & FORESTS.

"YORKSHIREMAN."

PINUS PATULA.

WE have little hesitation in saying, and most tree-lovers will agree with us, that as an ornamental Pine the above species is second to no other, and is well worthy of a far greater amount of attention than it has hitherto received. Once a tree or shrub, in fact any plant, is branded with the too-oft-bestowed title "half hardy," erroneous though it may be, it is hard to lift the veil and disabuse the public mind of the fallacy; and so to a great extent with the present tree—yes, and a dozen others that I could name. It is usually classed as a tender subject, only fitted for the mild climate of Southern England and the Channel Islands, and to be coddled in a shady nook and exposed to full sunshine.

This pretty Mexican Pine may not be so hardy as our Austrian and Corsican, but that it is by no means a tender subject may be inferred from the fact that from Edinburgh southward, throughout Ireland, and on the Isle of Man it does fairly well; indeed, in the latter place, wind-swept and cold though it be, it is, according to my friend, Mr. Farrant, healthy and well, and a much-cherished occupant of his well-arranged pinetum of choice subjects.

Pinus patula is, in truth, a lovely tree, and one that is quite wanting in the stiffness and formality that characterise the majority of its brethren, the long, lithe, and gracefully-irregular branches, draped with the finest and softest of foliage, being totally different to those of any other species that I can think of, and rendering the tree distinct and beautiful in the extreme. Usually the branches ramify to a great extent, in most British specimens the spread of these exceeding the tree's height; but, for all this, the stem never looks naked and bare, the long, soft, delicately green leaves hanging and swaying about with the least breath of wind, imparting to the tree, when viewed from a short distance, more the appearance of a mass of green velvet than anything else that I can recall to mind.

In most Pines the leaves are arranged in a certain order, but not so in the one in question, for although it is classed in most books and catalogues as ternate, or with three leaves in a sheath, yet I have nearly as often counted four as three; indeed, so as to arrive at some definite conclusion, I counted the number of each on a branch, and found that there were nearly as many threes as fours, but this I likewise noticed that invariably the four-leaved sheaths were arranged on the inner side of the branches, and those containing three on the outer. They are, in the specimen now before me, $7\frac{1}{2}$ inches long, remarkably fine and soft, and much recurved. The cones are arranged in whorls of about four, are fully 2 inches long by $1\frac{1}{4}$ inches in diameter, and either stand out at right angles to the stem, or are pointing downwards—usually the latter. As differing from most other members of the Pine family, the cones of this tree are produced on the stem at a distance of 2 inches or more from the previous shoot, and on stout, short footstalks. Before expanding, the buds are apt to attract attention owing to their long, narrow, sharp-pointed shape and fluffy appearance. Although *Pinus patula* cannot be ranked with the giants of its race, for it rarely, we are told, exceeds 60 feet or 70 feet in height, still it has proved itself to be a fairly rapid grower in this country, and soon forms a bole of 6 feet or 7 feet girth, and, in some instances, fully 40 feet in length, and well clothed from the ground upwards with plenty of branches and foliage. It is a tree above all others of its kind that wants plenty of room, and where this is allowed it, and a kindly soil provided with shelter from our worst winds, it grows rapidly after the first five years or so, or when it becomes quite established. Coddling it cannot abide, and even were it in its nature to do so, the loss sustained by the non-development of its long lower branches would be great indeed, for these are so cosy in appearance, and so well clothed with leaves, that half the charm of the tree would be wanting in their absence.

For planting in an open space and contiguous to

some of the more strict-growing members of its tribe this Pine is particularly well adapted, and in such a place—if on the greensward so much the better—its peculiarities are most readily recognised, and its fine, easy, sweeping character most appreciated. There are plenty of suitable positions for it in every park, but it is well before planting to study the tree's nature and under what conditions it has done best in England, for to unsuitable positions and soils may the death of several fine young trees be wholly attributed. Several of the southern counties of England can boast of possessing some of the largest and oldest trees of *Pinus patula*, but in other places as well and where climate cannot compare with these favoured spots it likewise feels quite at home, and puts on its best and most enticing garb. We are frequently told that it is difficult to procure, either "for love or money," young plants of this Pine, and this is perfectly true, for a perusal of a dozen of the catalogues of our biggest nurserymen reveals the fact that in not two of these does the name *Pinus patula* occur.

Home-grown seeds are scarce, if not, indeed, wanting entirely, for we have not yet seen male catkins on any specimens of this Pine, even on trees that have borne abundant crops of cones for many years. Now, however, that the tree has been found to be tolerably hardy in this country and of so ornamental an aspect, some plant dealer more enterprising than his neighbours will, no doubt, import seeds, and in a short time offer plants at a fairly moderate cost. It would be interesting to know how far north this Pine has been cultivated successfully, for I do not remember, save in Midlothian, of having seen any specimens or even young trees. Perhaps some reader will kindly let us know.

One of the finest and largest specimens we know of is growing at Pencarrow. It is upwards of 35 feet in height, with a girth at a yard up of $7\frac{1}{2}$ feet. Another, at Bieton, is of almost similar dimensions to the latter; while at Carelew, in Cornwall, there are several large and healthy specimens of 30 feet and upwards. The largest tree of this Pine at Balamoor, in the Isle of Man, is in good health and growing rapidly, its present height being fully 20 feet. In various other English counties it is likewise doing well, several specimens we know of being well-furnished, healthy-looking trees of from 15 feet to upwards of 35 feet in height, and with a spread of branches equalling, if not surpassing, in diameter the total height. On the Mexican hills at elevations of nearly 10,000 feet it occurs in considerable quantity, and was introduced to us by Lambert about half a century ago. A. D. WEBSTER.

Tree planting in Ireland.—It is admitted that fully one-half of the 4,000,000 acres of the waste land in Ireland is profitably reclaimable in the sense of [the capitalist or the speculator, but every acre of it is profitably reclaimable in the sense of the enduring prosperity of the country. The bleakest mountain-side, the worn-out bog, will produce timber, and an abundance of timber in Ireland would give it a new climate, new industries, and a higher civilisation.

Estate management. Will "Agent" kindly say what periodicals or books are best suited for study by one who is just about to undertake the management of a large estate?—J. W. L.

* * * "The Book of the Landed Estate," by Brown; Johnstone's "Agricultural Chemistry"; "Book of The Farm," by Stephens; "Book of Farm Implements and Machines," and "Book of Farm Buildings," by Stephens; Lindley's "Descriptive Botany and Vegetable Physiology," and Brown's "Forester," are all books every land agent should be possessed of and be familiar with. He should also see two or three of the best agricultural, horticultural, and other papers devoted to rural pursuits, such as *The Field*, *THE GARDEN*, *Farm and Home*, a good Scotch agricultural paper, and any others of the same class he can procure that are likely to meet his special wants. Books alone, however, will never fit a man for any post without practical application and keen observation at the same time, and in a land agent, practical knowledge on a great

variety of subjects is simply indispensable, otherwise he is almost certain to be frequently imposed upon by subordinates, dealers, contractors and others. Capable and trustworthy foremen in the different departments are a great help to an agent, but unless he has some experience himself he is no judge of such men, and it is not good for him to be dependent on their assistance. AGENT.

BARK AND BARK STRIPPING.

THE period of bark stripping and harvesting is one of the most anxious seasons of the year with the forester, as the quality of the bark is so largely dependent upon the weather during the time which intervenes between the stripping and the delivery, as well as upon the carrying out of the work at the proper time, to secure easy and expeditious peeling. In most cases, the time when the bud is just expanding into the leaf is that which gives the greatest weight of bark of the best quality, and with the smallest amount of labour. By deferring the work even for a few days there is often a loss in weight amounting to as much as 10 per cent., and a great deterioration in quality.

Even in the most favoured situations it is but seldom that the season for stripping extends beyond from twenty-five to twenty-eight days. In this district (Kent) it often reaches from about the 20th of April to the 20th of May in an early spring, and from about the first day of May to the end of the month in a late one. Much depends upon latitude and the exposure of the situation, and further north it is often from about the middle of May to the middle of June. The healthiest trees in the most sheltered situations break out earliest, and generally strip easily and yield good bark, while those of unkindly growth or in exposed situations linger in the bud, strip with difficulty, and yield bark deficient in tannin. Whenever hammering has to be resorted to, the cured bark is generally deficient in that bright inside creamy colour which denotes abundance of tannin matter. Such bark is also more liable to deteriorate upon the drying stage during the wet season.

Trees growing in sheltered hollows having a southern aspect yield the best bark. Under twenty years old the trees have not arrived at perfection for stripping, and after thirty years the yield both of tannin and other extractive matter diminishes. The astringent property upon which the value of the bark so much depends is most abundant in trees of middle age.

A calculation of the quantity of bark to be stripped may be made from the following data: A flourishing, well-proportioned, and full-grown tree will produce from 5 cwt. to 6 cwt. of bark for every ton of measurable timber it contains. Trees of medium age, averaging 10 feet each, will produce a ton of well-cured bark for every 150 feet of timber; hedgerow trees in favourable situations about a ton of bark to 3 tons of timber. The yield from plantations or coppice Oak will be proportionate to the space afforded to the growing timber. Where this is ample we may estimate a ton of bark for every 4 tons or $1\frac{1}{2}$ tons of timber. Small Oak poles will not average more than 1 ton of bark from 5 tons. All branches of 1 inch in diameter should be peeled, as these contain in proportion more tannin matter than the trunk bark.

The number of hands required to strip and stack a given quantity of bark in a stated time will depend upon the size of the timber as well as other circumstances. As a general rule, the larger the trees the fewer the hands. Taking the average of several years, I have found that about six or seven men, with two strong boys, will fell the trees and strip and stack 1 ton of bark in the day. The price paid per ton has for some years been £1 12s.

Before felling a tree, care should be taken to ascertain if both the body bark and that of the branches will run easily. An experienced eye will generally tell this at a glance. The necessary tools for felling and cutting up are the heavy and light axes and the handbill. For peeling the peeling-iron and the wooden mallet, made of Ash, about 4 inches square at the head and 7 inches long, with

a wooden handle. This will sometimes be found necessary for loosening refractory bark, but the less it is used the better the quality of the bark.

Various methods of stacking bark are adopted in different places. One of the most common consists in placing it upon a raised stage formed of strong forked sticks driven firmly into the ground, and upon which are placed longitudinally other peeled rods, so as to form a secure platform; upon this is placed the smaller shreds of bark, the whole being securely thatched or covered in with lengths of the body bark, averaging from 3 feet to 3 feet 6 inches. If the bark be well stacked, no turning will be necessary in an average season, when it is fit for delivery in about a fortnight; but should a long spell of wet weather follow, choose a fine day and open and re-arrange the stack. When the bark will snap between the fingers or under pressure and not bend, it may be considered fit for delivery.

During the process of curing, the inner side of the bark should never be exposed to the sun or rain. The stage should be raised sufficiently high to admit a free current of air under the bark; about 2 feet will be sufficient for this purpose. Bark generally loses about one-third of its weight in drying if properly harvested. A dull inside colour indicates bad curing or the presence of but little tannin. This matter, which gives the chief value to bark, is found mainly in the white cortical layers, which are situated next the albumen or sawwood of a tree.

In felling trees of an age to leave reproductive stools, great care should be taken not to strip off the bark down to the roots, as is often carelessly done, as this destroys the continuity of the dormant buds. While smaller poles may be advantageously cut down with the axe, all trees having a diameter above 6 inches to 8 inches are felled by the aid of the cross-cut saw; this will be found to be economy both of time and timber.

In delivering bark, it is customary to tie it up in bundles with withies for the convenience of loading. Formerly it was chopped in small pieces and afterwards delivered in bags. The cost of tying up is about 1s. 6d. per ton. Chopping costs 6s. or 7s. per ton.

As soon as the stripping and stacking are finished, no time should be lost in cutting up the cord-wood and fagots, and getting the whole of the produce removed from the fall. As the speedy curing of the bark depends so much upon the airiness of the situation in which it is staged, an open sunny and airy spot should be chosen, well removed from the shade and drip of trees. A. J. B.

Park and other roads.—After reading the very excellent remarks by "J. S." and A. F. Paterson on the above in THE GARDEN, pp. 292, 314, I think next to the importance of a good road is that of having it free from Moss and weeds, which I find is no easy matter, especially where the paths or roads are near to Grass which is allowed to seed. Last year I was induced to try Smith's weed-killer on the park roads here, as well as in the pleasure grounds and stable yard, and the result was that not a weed was to be seen all the summer, and even now, April 5, there is scarcely one visible. It not only destroys all vegetation, but gives a bright appearance to the roads, and I can with confidence recommend it. Care, of course, must be taken not to touch the Grass edges or the clothes of the user with the liquid. I have discarded salt in favour of the above, as I consider that after the strength is gone salt acts as a stimulant to the weeds. Another consideration is that it costs considerably less than salt.—ARTHUR LEE.

Spiders and trees.—Dr. C. Keller, of Zurich, claims that spiders perform an important part in the preservation of forests by defending the trees against the depredation of aphides and insects. He has examined a great many spiders, both in their viscera and by feeding them in captivity, and has found them to be voracious destroyers of these pests; and he believes that the spiders in a particular forest do more effective work of this kind than all the insect-eating birds that inhabit it. He has

verified his views by observations on coniferous trees, few broad-leaved trees, and Apple trees.

CARRIAGE DRIVES.

In the formation of carriage drives there are several points of importance that should be considered before the work is begun. In the first place, a graceful and easy line should be chosen, so as to bring into view as many features as possible. A circuitous route may in some cases be necessary on account of the undulation of the ground, but the case is altogether different when an indirect line is taken for the purpose of bringing into view some particular feature of the place. It is not advisable to convert a pleasing curve into a straight line for the sake of bringing any particular feature into view. The next point of importance is the width, and the consideration of this opens up others. These are the cost of the first formation and the after maintenance. I hold that to form a drive that will be pleasing from all points, the width must be in proportion to the extent of the surroundings. A narrow drive through wide stretches of open country has, to say the least, a poor appearance. A width of 16 feet is the least that should be allowed, and in many cases 18 feet or 20 feet would not be too much; whilst where space is limited less width may be given.

As regards the cost of construction, that will vary considerably according to locality and the kind of materials available. It is a general rule to use that which can be found in the district. This is right enough in its way, but may not be the most satisfactory in the end. As an instance, much of the red sandstone in some parts of the country is so soft, that it quickly grinds into mud in wet weather, and many of the flints obtained from pits are not much better. The cost of blue lias stone is prohibitive in many cases, but it is so superior to all others, that it proves quite as cheap in the end. If I had my choice of materials, I should prefer, for the foundation, a depth of about 5 inches of chalk and the same quantity of blue lias stone, broken into two sizes, the first layer being larger than the other, the top layer being about the size of a hen's egg, with just a sprinkling of fine gravel spread on the surface. This sort of stone has such an irregular surface when broken rather small, that it requires something to bind it into a firm bed, which when done no ordinary wear will disturb.

Drainage for the surface-water is a subject that will also have to be dealt with in a thorough manner, or the result will be subsequent vexation and trouble. Unless they are absolutely necessary, I have a great objection to underground drains, for if they are not regularly cleaned out they soon become useless. But if they must be used (and I am aware they are sometimes necessary) they should be large enough to take the maximum quantity of water. When it is possible, the surface-water should be led away by channels, and in the case of steep inclines there should be a space on each side about 18 inches wide, paved either with houlders or thiu, flat stones placed on edge. This space should be 3 inches lower in the middle than the outsides. To lead the water from these channels there should be outlets formed either with the same materials or wide, half-round pipes, which will prevent the washing away of the sides in cases of heavy rains. This brings us to the subject of the formation of the road. My conviction is that the form of the bottom when it is ready to receive the materials should be convex, and not concave, as some advocate. I am in favour of the convex form, not only because it is a saving of materials, but because it secures an equal distribution of the material; and whereas in the case of the concave form the bulk of the materials is in the middle, in the other there is the same depth where it is most wanted, *i.e.*, in the wheel-tracks. Solidity is a matter of the greatest consequence in the foundation of a road. It is, therefore, necessary to see that the form is correct, and that it is also made sufficiently firm, so that there will be no unequal depressions when the materials are all in their place. When the drive is made over unequal ground, it is a good plan to first get a rough level by filling up all depressions and levelling down any rising points, so that when laying the stones an equal quantity will be required over all the surface.

As to the depth of the materials, it should be in proportion to the amount of traffic likely to be upon it and the character of the ground. In a general way the depth should vary from 6 inches to 9 inches. If the road has to pass through damp and swampy places, the centre should be raised considerably, so as to admit of the surface-water running quickly away. The depth of the material should decide the size of the first layer. I believe there is nothing gained by using the material too large either at the top or bottom. There is more resistance and quite as much wear in a depth of 6 inches of stones put together in a compact mass as there is in a greater depth, where, owing to the large size of the stones, there are unoccupied spaces between them. With a thin layer of fine gravel scattered over the surface and a heavy roller to follow, a new road may be made both agreeable in appearance as well as easy to ride over. Repairing the road comes within the province of this article. I refer to it principally with the object of raising an objection against the common practice of doing the repairing in patches. I am aware that it is sometimes the case that roads and drives wear more in one place than another, and that judicious repairing is both useful and economical. I object to the practice of laying down narrow strips of fresh stones, which, in the majority of cases, are avoided by the drivers of vehicles, and roll about, to the manifest discomfort of both pedestrians and horses. The proper way to repair a drive is to break up the whole width of the road where faulty places exist, and after the surface is levelled to put on fresh material where it is wanted. When this is done the whole width will work down again to its original level, and as regards appearance and wear will be equal to a new-made road. J. C. C.

Tree roots choking drains.—A cure for this evil is coal tar. In using it, mix it with sawdust to the consistency of ordinary building mortar. A layer of this should be spread on the bottom of the drain; on this set the drain pipes, and then cover all over with the tar mortar. If the work be carefully performed, and the mortar applied in sufficient quantity—say 1½ inches thick all round—success may be guaranteed.

A curious geological phenomenon exists in the vicinity of Bebring's Strait. At Elephant Point, Kotzebue Sound, a ridge 2 miles wide and 250 feet high, seems to be a vast mass of ice, thinly covered with clay and vegetable mould. In this soil Birches, Alder, and berry-bearing plants grow luxuriantly, with the stratum of perpetual ice as the underlying rock within less than a foot from their roots.

Rabbits and trees.—During the late severe weather much damage has been done here by rabbits barking nearly everything before them. Many readers are misled by lists of trees and shrubs which, it is said, rabbits will not touch, but on this estate, I observe, nothing is safe from them, unless protected, except Rhododendrons. Sad havoc has been made amongst the common Laurel, with which many of the woods here were quite thickly planted some time ago; they are now in a pitiable condition and gradually getting thinner. The Portugal Laurel has also suffered, but not to such an extent as the common one. I also observe loppings of trees in the coverts entirely cleared of bark. Larch, which they even bark in summer, rabbits appear to have a great liking for. All kinds of forest trees are liable to be attacked when first planted; therefore it is better to plant one hundred trees and carefully protect them, than plant five hundred to be mutilated, and take their chance of surviving in a deformed and stunted condition. Newly formed plantations should be protected by placing wire-netting not less than 3 feet high around them. It should be fixed to upright posts, and in pegging down, 3 inches at the bottom should be turned out and laid flat on the ground, taking care to have it well fastened down. Where we cannot use wire-netting we place pieces of stick, dipped in tar, against the trees, which practice serves to protect them a little.—OLITOR.

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"This is an Art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—Shakespeare.

STOVE AND GREENHOUSE.

T. BAINES,

EPACRISES.

EPACRISES when well grown flower almost from end to end of the preceding season's shoots, forming densely clothed sprays of elegant blossoms, that not only last long when allowed to remain on the plants, but also stand well when cut. When the plants are in rude health their long, profusely flowered shoots have an elegant appearance associated with other flowers of more formal character. To those who have to provide a continuous supply of cut bloom there are few things so reliable, as when properly treated they never fail to flower. The extent to which the flowers of most plants may be cut is limited, as in some cases, if too much of the growth is cut away in gathering them, the plants suffer in future. Not so with Epacris. To keep them in shape, it is necessary each spring, before growth commences, to shorten all the preceding summer's shoots by removing two-thirds of their entire length.

Epacris are more easily grown than most hard-wooded plants, proof of which is seen in the large healthy old examples that are met with in the hands of cultivators who attend fairly to the wants and particular requirements of the plants they grow. They are moderately free rooters, but do not like too much pot-room. A careful and judicious use of the water-pot is one of the essentials to success in their cultivation. In common with most plants indigenous to the same countries—New South Wales and New Holland—they require the amount of moisture to be regulated by the more or less active condition of both root and top growth. When in gathering the flowers the plants have been to a great extent denuded of the preceding season's shoots, or after the blooming they have been shortened back previous to growth commencing in spring, the soil should be kept much drier than in the summer, when the tops and also the roots are in an active state.

Though Epacris do not require more warmth than an ordinary greenhouse affords, still, if the plants after being cut in can be kept slightly warmer, it will accelerate growth, and assist them in getting over the weakening effects of flowering and of cutting in. Plants that began to bloom in autumn, and that after flowering had their shoots shortened back in the way described, will, if they require more root-room, now be in right condition for potting, having had sufficient time to enable them to break freely. Good fibrous peat, neither too light nor too heavy in texture, with a liberal addition of sand, is the best material in which to grow them. In potting use the lath freely, so as to make the soil quite solid. Where light potting is adopted the soil holds water like a sponge, a condition that will not answer for any plant that does not like its roots being in contact with saturated material. After potting keep the atmosphere a little closer than ordinary by giving less air. Shade when the weather is bright; the material used must be thin, such as will break the sun's rays without darkening the plants. After the roots have begun to move in

the new soil no shade will be required, except in the case of small plants that necessarily are in little pots.

Epacris are such free flowerers, that they will bloom whilst quite small; when they are large enough to occupy 6-inch pots and have made a season's growth in these they will yield an acceptable amount of flowers for cutting, or where required the plants will be equally useful for the greenhouse. To admit of their producing the full quantity of bloom they are able to, it is necessary that they should have their shoots thoroughly ripened. This is best effected by standing them out of doors where they will be fully exposed to the sun, allowing them to remain out until there is danger from frosty nights or drenching autumn rains. There is a considerable difference in the time that some varieties flower as compared with others. The autumn and early winter bloomers are mostly erect in their habit of growth; in these the plants do not attain so large a size as the late-flowering, more robust, drooping growers, which are represented by such kinds as *E. grandiflora rubra*, *E. miniata splendens*, *E. Eclipse*, and others of like character. These last are best for blooming in spring, from April to the end of May or later, but if required late the blooming must be retarded by keeping the plants through the spring in a north house where little sun can reach them. The time of flowering in Epacris can be regulated by the time the plants are turned out of doors in summer, as immediately they are exposed the flower-buds begin to form; this occurs whether shoot extension is completed or not. Consequently where a long succession of flowers is required, all that is necessary is to have a sufficient number of plants, and to turn them out in batches at different times. Plants that are forward enough in their growth may be stood out about the middle of July. This refers to the earlier blooming section already described; the strong growers flowering in the spring must be put out at the same time as the second set of early bloomers, about three weeks later. During the first few days of exposure it is well to place the plants where they will not be under the full influence of the sun in the middle of the day, as it sometimes browns the leaves. In the case of small examples they should be stood as near together when out of doors as they will bear without overcrowding; by these means the sun's rays will be prevented from reaching the sides of the pots. It is necessary to guard against this with all hard-wooded plants when in the open air in summer. With both large and small examples means must be taken to prevent worms getting into the pots. A bed of fine coal ashes 5 inches or 6 inches thick on which to stand the plants is the best preventive.

Each season the plants should have their shoots shortened back in the manner already spoken of; this ought to be done immediately the blooming is over, as then they begin to make growth more or less according to the time of the year, and when this is allowed to go on and the cutting back is effected afterwards it is so much of the energies of the plants wasted. Treated as advised, Epacris will keep in a healthy flowering condition for a very long time. I have had plants as strong and full of vigour when a dozen or fifteen years old as they ever were.

One of the advantages connected with the cultivation of these plants is that they are rarely attacked by insects, unless they are stood so that their shoots are in contact with some other plant on which scale exists. If affected with

the brown species it can be easily killed by washing and dipping in insecticide; this should be done when the plants are cut back after flowering. White scale is more difficult to deal with, yet can be destroyed by repeated applications of insecticide.

MIGNONETTE CULTURE IN POTS.

By growing in pots this may be had in flower from the beginning of December until the end of April, and the wonder is that it is not more cultivated in this way. To have it in perfection during the period named two sets of plants are required, one set to be grown on what I will term the bush method, and the other set as standards. These latter plants are most useful for the decoration of the conservatory during February, March, and April. By this method the best spikes of bloom are produced; we have had several measuring from 12 inches to 15 inches in length, the variety being Miles' Spiral. Its habit of growth is robust, while the flower-spikes are strong, erect, and the flowers very sweet, while the individual blossoms are large. Another good variety is Golden Queen, which has a somewhat yellow appearance; it is very sweet and of good habit of growth. To have the plants in perfection at the time stated, the seed should be sown about the middle of May, as if later, the plants do not get sufficiently strong to ensure the best results. Some growers affirm that Mignonette does not transplant successfully from the seed-pot, but this is a mistake, as no harm need be apprehended if ordinary care is taken with the seedlings. The best way to ensure good results is to sow the seed in small pots, three or four seeds in each, using half loam and leaf-soil, with a liberal sprinkling of coarse silver sand. The best position at this time is a cold frame placed under a north wall, where the seeds quickly germinate; when the plants are well through the soil give air freely, to induce a stocky habit, which is essential to their future success. As soon as the plants can be handled, remove all but one from each pot. If a sufficient number of pots was not previously prepared, the seedlings taken from the others may be potted into small pots and kept close for a few days. When the pots are nicely filled with roots and before the plants become pot-bound, they should be transferred into 3½-inch pots, using the same sort of soil in which the seed was sown. When the plants are 3 inches high it must be determined for what purpose they are intended—bush-plants or standards. Twelve to twenty plants of the latter are usually sufficient for most large places. For standards select the strongest-looking plants; to these place a thin stake, securing the plant before it becomes bent, remove all side branches as fast as they appear until the desired height is obtained, which should not be less than 2 feet; pot into larger pots as required; the final one may be 9 inches in diameter. The soil at the last potting should be composed of two parts fibry loam, one part horse manure, half-part of leaf-soil, with a good sprinkling of finely-ground bones; add some charcoal, which serves to keep the whole porous and sweet.

The final shift will not be required until the plants are housed the first week in October. After the plants are well established in the first pots from the seedling, the position should be changed from behind the north wall to one where more light can be had, shading the plants in the middle of the day. The plants should be well syringed every evening in warm weather; air also should be given during the night. Those plants intended for "bush" growth should have their points taken out when 3 inches high, to induce the formation of side shoots; these in turn should be pinched when 3 inches long. At this stage stakes will be required to support the branches. Some of the plants may be stopped until the end of September; whilst, to prolong the supply of bloom, the stopping may be continued with the remainder for a month later. Pot as required into various sized pots; for the largest plants 10-inch ones should be used, using the same kind of soil as for the standards. Great care should be exercised in supplying the roots well

with water, as neglect of this soon causes the leaves to turn yellow. Red spider quickly infests them. Inattention to these two matters soon renders the plants unsightly. Syringe the plants freely every evening during hot weather. During the first week in October the plants should be housed in a light, airy greenhouse or other structure where they will receive plenty of air. They must be placed near to the glass to prevent the shoots becoming drawn up weakly. If at this period a night temperature of not less than 45°, with a rise of 10° by day, can be given, they will receive much benefit. Some of the plants should be once more stopped, and these will continue the supply of flowers until the beginning of March, or even later, when the standards will come into bloom. The bush plants will have abundance of roots at the time they are showing their blooms, and will require to be freely watered, using weak liquid manure at each alternate application. At the same time the branches must be tied out to prevent crowding. Trellises, of about 2 feet diameter and 1 foot high, upon which to train the shoots of the standards are often used; these should be made of galvanised wire, and supported by a stout stake placed in the centre of the pot, the trellis being securely fixed to the top of the stake to keep it in position. This should be done as soon as the final potting has been accomplished. It is very difficult to fix the trellis after many branches are formed without causing damage to many of the shoots. After the main branches have been tied to the trellis, the points of succeeding shoots must be pinched out as fast as an inch or two of new growth is made, otherwise bloom-shoots will take the lead before the trellis is nearly covered with branches. The growths should be tied down to the trellis even after the flower-spikes are visible. If tied down too soon, the spikes by their weight bend the slender stems. When the flower-spikes are 6 inches long, and sooner in some cases, the seed-pods will form at the base of the stem. If these are removed, the flowering period is much lengthened. E. M.

Tropical Sundews (*Droseras*).—Although these plants cannot be esteemed showy, they are nevertheless very curious. The common British species (*D. rotundifolia*) is a delightful and familiar plant, but its beauties are far surpassed by its tropical allies. We recently observed strong masses of the fine *D. capensis* in Sir Trevor Lawrence's garden. It has stalked oblong-obovate leaves, the whole surface densely covered with red viscid leaves. It rises with age upon a somewhat stout red stem, and sends up a scape bearing medium-sized red flowers. It comes from South Africa. Two species, viz., *D. capensis* and *D. binata*, are also just now in fine condition in Mr. James's nursery at Norwood, growing in company with the cool Orchids. In the latter plant the leaves are borne upon long, erect footstalks, the leaves several times dichotomously divided, the divisions being long and narrow, profusely clothed with red viscid hairs, the scape bearing white flowers. It is a native of Australia. Upon a recent visit to Kew Gardens we observed good examples of the kinds previously named, and in addition *D. spatulata* and *D. auriculata*; the former may be described as a smaller and more caespitose form of *D. capensis*, and is indeed considered as identical by some authors. It is a native of Australia. *D. auriculata* is a distinct and elegant species, and one which we have not observed in any other collection. It rises upon a slender, erect stem, some 6 inches or 9 inches high, bearing alternate ear-shaped or lance leaves on its entire length, these being clothed with delicate pinkish red viscid hairs, and the terminal scape bears rosy pink flowers. It is probably from India. —G.

Clianthus puniceus.—As a greenhouse climber, or rather as a suitable subject for covering a portion of roof or the end of a glass structure, this *Clianthus* is one of the finest plants we possess, yet it is by no means common, and that not from any difficulty in its culture, as it will, if attended to in one or two particulars, grow very freely and soon cover a considerable space. Plants raised from cuttings are the best, for not only do they flower more freely, but the cuttings can be taken from a specimen with the finest flowers whereas

there is a certain amount of variation in the colour of seedlings. The cuttings should be taken at this season, or a little later, according to the position of the parent plant. The young growing shoots must be selected for the purpose, and the weak or medium ones are much preferable to those that are stronger. Each cutting should be about 4 in. or 5 in. long, only the bottom leaves being removed for the purpose of insertion. Pots 4 inches in diameter, well drained and filled with light sandy soil, are suitable for the insertion of the cuttings. From four to six cuttings may be put around the edge of each pot, and they must then be kept in a close case and shaded from the sun till rooted. In about six weeks they will have formed roots, when air must be given, and as soon as sufficiently established the young plants should be potted. An open turfy loam with a fair admixture of peat and silver sand suits this *Clianthus*, and as the plants get larger less of these two last materials will be needed. Where intended for covering a considerable space, this *Clianthus* should be planted out, but it will be necessary to thoroughly drain the bed before planting, as though a liberal supply of water is beneficial when in full growth, yet stagnant moisture is very injurious at all times. Should the atmosphere of the house be dry, the *Clianthus* is very liable to the attacks of red spider, which must be guarded against by a liberal use of the syringe. For this reason the cuttings should be closely examined before insertion, as a few insects will in a close case rapidly spread, and greatly disfigure the foliage. Though a dry atmosphere is favourable to insect pests, too much moisture during winter will tend to encourage mildew on the foliage.—H. P.

CALADIUMS.

WHEREVER there is a warm pit, intermediate house or stove, *Caladiums* should be grown in quantity, as they are amongst the most ornamental of all foliage plants from May until November. The markings of the leaves are very striking, and the general effect of the plants when well developed is exceedingly pleasing. Many choice stove plants could be named that are difficult to keep in good health in ordinary stoves during the winter. *Caladiums*, however, are quite different, as their bulbous roots can be stored away in a room during the winter, and they need not be started until the season is far enough advanced to assist their growth. Unless forcing appliances are very good no attempt need be made to begin their culture until early in April, as their growth in February and March is never satisfactory, and bulbs placed in a moderate heat now will be in full leaf by June. The best way to treat *Caladium* bulbs in winter is to keep them absolutely dry, and in a temperature of 60° or 65°. We always turn ours out of the pots when they die down in autumn, and store them in a box in dry sand, and from November until March they occupy very little space. In starting them we take them from their winter quarters and pot them into a mixture of loam, leaf soil, and sand. Large bulbs are placed singly in 5-inch or 6-inch pots, and smaller ones are grouped in threes, fours, or fives in the same sized pots. The pots are carefully drained, and the bulbs covered with the soil. They are then placed in a temperature of 65° or 70° where the atmosphere is moist, but they are not plunged or watered much until the young growths are observed pushing through the soil. If they can then be placed in a bottom heat of 80° and watered freely the foliage will develop rapidly. The object of placing the bulbs in small pots at first is that they may be more easily repotted into larger ones without disturbing the roots when they require more root room, and when the foliage has gained a good size and the pots are full of roots they may be potted on into larger pots without receiving a check, which could not be done if they were potted in large pots at first and sub-divided before re-potting again.

Last year we had a number of small bulbs which we placed in a cutting-box, started them into growth afterwards, and subsequently lifted and potted them in 3-inch pots. They were handsome little specimens by the month of July. Although it

may be well to pot a quantity to see which of them will grow best, yet I would not advise more being potted into larger pots at the second shift than can actually be grown well, as in the case of *Caladiums*, like many other plants, it is better to have a few well-grown plants than a number of bad ones. In repotting the second time those which have been started in 6-inch pots may be transferred to 8-inch ones. Careful draining of the pots must be observed, and the potting mixture at this time should consist of fibrous loam, with a liberal addition of horse droppings and silver or coarse river sand. The mixture must not be too fine, and it may be rammed very firmly into the pots. Plunging in bottom-heat is an advantage in starting the bulbs, but I do not approve of it afterwards, as, although it pushes the plants rapidly into a large size, they are not robust, which is the stamp most suitable for amateurs and small growers whose *Caladiums* cannot always occupy a warm stove. The largest *Caladium* plants I ever saw were some specimens which had always been grown in a strong bottom-heat, but one day they were taken out to compete at a show, and before the judges reached them the large flabby leaves were hanging over the pots and resting on the stage, and thus the largest plants in the show were consequently left prizeless, as the awards went to sturdy specimens which were admirably adapted for conservatory decoration. It is these which all should grow, and after the second potting, do not replunge, but merely put them in a warm place, syringing freely until they begin to root anew and then administer water liberally. Retain them in a temperature of 65° or 70° until the foliage is well developed, and then they will bear being placed in the warmest end of the greenhouse or conservatory; in fact, from July until the end of September they may be used in these structures, and if placed in more heat in autumn it will prolong the display of leaves. Very handsome little specimens may be grown in 8-inch and 9-inch pots, and we rarely pot them in 10-inch or 12-inch pots, unless very large plants are desired. When the pots are full of roots it is almost impossible to overfeed them with manure water, and the highly beneficial effects of this render the use of large pots almost unnecessary. I never knew *Caladiums* to be infested with any kind of insect, and the trouble of keeping them free from pests of this kind cannot be included amongst their cultural necessities.

CAMBRIAN.

Grevilleas as flowering plants.—Some of the *Grevilleas* are the most persistent flowering of hard-wooded greenhouse shrubs, and among those that bloom nearly all through the year, one kind—*G. Preissi* is at its best during the autumn and winter months. The flowers of all of them are peculiarly curved and borne freely, except those of *G. robusta*, which in most gardens is the only representative of the genus to be met with. This is cultivated for the sake of its foliage, which renders it available for sub-tropical work in summer and for many other purposes, as the quantities brought into Covent Garden Market will testify. *G. rosmarinifolia* is a dense-growing shrub with closely packed clusters of flowers at the end of every shoot. The flowers are of a reddish purple colour, and last a long time in perfection, besides which a succession is kept up for months. In a warm greenhouse this is now in bloom, but under less favourable conditions it is not so far advanced. This *Grevillea* is one of the hardiest among Australian shrubs, for in the south and west of England it will survive the winter out of doors; indeed, the finest specimen I have ever seen was an open-air shrub on the south coast of Devon. Another species of equal hardiness, and flowering at the same season, is *G. sulphurea*, a dense-growing bush with pale yellow-coloured blossoms. A specimen of this against one of the walls at Coombe Wood survived many winters, and flowered profusely every year. Like *G. rosmarinifolia*, it will flower at this time under glass. *G. crifolia* is a dwarf, dense-growing kind with needle-like leaves. The flowers are borne very freely, and are of a bright red colour. As a pot plant it is very suitable, as under favourable conditions it blooms profusely,

and that, too, during the early months of the year. *G. punicea*, a bright red-flowered species, is very showy, but it appears to be a scarce kind. *G. Preissi* is, from a foliage point of view, quite different from any of the others, the leaves being very finely divided, while the growth of the plant is free and open in character. The flowers are borne in dense terminal clusters, of a bright pink colour, with a very prominent curved style of a much deeper hue. This *Grevillea* is also known under the name of *G. Thelemoniana*.—T.

Asparagus plumosus. This elegant climber, although generally treated as a stove plant, will succeed well in an ordinary greenhouse, and seems to do best trained loosely on a flat surface. We have a large plant here which covers nearly 100 square feet of the back wall of a greenhouse. The main shoots only are tied in; the others are allowed to grow at will. It is most useful for mixing with cut flowers, as it lasts a long time when cut, even when the stalks are not in water. It will also stand a few degrees of frost without injury, provided there are no young growths on the plant. We had some very severe frosts in December last, and our heating apparatus having got out of order, on several occasions we had 3° of frost in the house where this *Asparagus* was growing. *Chrysanthemums*, *Heliotropes*, and other plants were cut down while it remained uninjured, and it is now growing as freely as ever I have seen it in a stove. Another advantage in the greenhouse treatment is, that it is not so liable to be attacked by the mealy bug, which generally infests it so much when grown in a warm house. It grows well in a compost consisting of rough fibrous loam, leaf-mould, or rotten manure and coarse sand. As it is a gross-feeder, liberal supplies of manure water will greatly benefit it.—C. RUSSELL, *Inquire Hall, Sedbergh*.

Culture of perpetual Carnations.—When the cuttings, rooted in a hot house during winter, have been hardened in a pit or a greenhouse, they can in April or May stand a long journey without earth at the roots and packed in damp Moss. On arrival the roots must be dipped in water, and immediately planted in a very airy situation, and shaded for five or six days if the sun is hot. They must be kept moist, and when they are in a growing state watered from time to time with liquid manure. When they are about 3 inches or 4 inches high they must be pruned to at least half their size to obtain side shoots and flower-buds. To get plants to bloom in winter and up till April and May, they must in autumn, about the middle of September, be taken up and potted in 6-inch pots, and put on bottom heat in a pit or stove, kept close for about a week, and then aired gradually, when the weather permits, for another week; afterwards as much air as possible must be given, provided there is a temperature of 5° or 6° centigrade (about 40° Fahr.). Of course, the plants destined for this purpose must have a good quantity of flower-buds when taken up from the open ground, and some will have, if properly treated, as many as sixty to eighty. When the buds begin to expand the plants can be used for indoor decoration. Of course, the plants which the first year do not bear a sufficient number of flower-buds must not be potted, and if the winter appears to be severe they must be lifted from the open ground with a ball of earth adhering to the roots, and put close to one another in a pit, uncovered as long as possible, and when frost sets in, covered only to be protected against it, and aired as much as possible. These plants will thus produce flower-buds, and may be potted in March or April and become fit for indoor decoration. If the plants are potted and put in a stove or on bottom heat before they have a sufficient number of flower-buds they grow straggling, lose their leaves, and will bloom badly.—JEAN SISLEY, *Monplaisir, Lyons*.

SHORT NOTES.—STOVE AND GREENHOUSE.

Best manure for pot plants.—Will you have the kindness to inform me in THE GARDEN which of the following manures, viz., guano, nitrate of soda, and sulphate of ammonia, is the best for pot plants, naming them according to their respective merits?—W. M.

Pretty Polly Pelargonium.—Forty years ago, ere zonal and large-flowered Pelargoniums had become so common, the old Pretty Polly, in conjunction with Uniques, Diadematus, &c., were ranked amongst our best greenhouse flowering plants. In those days also a collection of the various cut-leaved and specially sweet-scented Pelargoniums was found in many gardens. We cannot find fault with the changes in taste which the introduction of new things and the whirligig of time brings about; but if those who want specially pleasing objects would take to the Pretty Polly and its old flowering congeners, and grow them as pyramids for lawn and terrace decoration, they would be charmed with the effect produced. Very fine examples of this form of culture of these old favourites may still be seen at Glen Eyre, Southampton.—A. D.

SEASONABLE WORK IN PLANT HOUSES.

SEEDLING FERNS.—Several of the best decorative Ferns are most useful when not too large, and of these stock should be raised from time to time. Amongst these may be named *Lomaria gibba*, *Pteris cretica*, and its variegated form, *P. serrulata*, *Adiantum cuneatum*, and the gold and silver *Gymnogrammas*. Where spores of these and other kinds of Ferns were sown last summer, the little plants will now require pricking off, as, if allowed to remain too long in the seed-pan, they get crowded together and much weakened, in addition to which their roots become entangled to such an extent that in separating them their roots are very much injured. Seedling Ferns may be treated in two ways: either prick them off in pans, or boxes, a short distance apart, and after they have made some growth, pot them. When the seedlings are small it is best to adopt this course, but where large enough, so that their roots will be able to occupy the soil within a reasonable time, it is better to put them in small pots at once. Ferns are not particular what material is used to keep the soil open. I find that coal cinders, broken to about the size of horse-beans, are as good as anything. Where the plants are required to attain size in little time, they must be pushed on in a growing temperature; keep them where they will get plenty of light, and do not shade more than is necessary to prevent the fronds getting injured by the sun. In the cultivation of Ferns that are ultimately to be used in cold houses, living rooms, or for cutting, there is no greater mistake than growing them with insufficient light and air, as, under such conditions, they are much less enduring.

CYANOPHYLLUM MAGNIFICUM AND SPILE-ROGYNE LATIFOLIA. When these two fine-leaved subjects were first introduced, most cultivators of stove plants were anxious to possess them. Now they are seldom met with, as when well grown their noble foliage never fails to be attractive in addition to the contrast they present to everything else. It is only whilst the plants retain their leaves down to the base that they are seen to the best advantage; consequently, it is advisable to propagate them annually, so as to always have young stock coming on to take the place of the old plants, and which, except where very large examples are required, may be discarded. Cuttings, which a healthy plant will produce freely from the lower joints after the top has been removed, should be taken off when they have made a pair of leaves each; they are best put singly into 3-inch pots filled with a mixture of peat and sand. These two plants require the same treatment; viz., plenty of heat, rich soil, a moderately moist atmosphere, shade in bright weather, and, if large specimens are wanted, they must not be stinted for pot room. Plants that have been headed down to within a few inches of the bottom, and after they have broken are partially shaken out and placed in new soil, make the handsomest examples, as in their case the lower leaves are larger than it is possible to get young stock to produce. Where small, or medium-sized plants are wanted, all that is necessary is to restrict the roots by giving smaller pots.

POTTING OFF CUTTINGS OF STOVE PLANTS.—Where an extensive collection of these is grown

this work requires frequent attention during this and the ensuing month, for as soon as cuttings are well rooted, especially when a number have been struck together in one pot, they need separating, as, if allowed to remain, the roots get entangled, so that they cannot be got apart without injury, and in addition, time is lost in getting the young plants established.

CORDYLINA INDIVISA. Although this *Cordylina* is one of the handsomest of all the fine-leaved plants that will thrive in a greenhouse temperature, it has still always been comparatively scarce, owing to the fact that it is not so easily kept in good condition as many things. It likes to be kept a few degrees warmer in the winter—say, about 15° in the night than most greenhouse plants require, as when cooler than this its roots, which are always impatient of moisture, are more likely to suffer. Young plants that have come safely through the winter and that need more root-room should now be potted. Good rich loam with a little sand is the best material for it. Its fleshy roots are more susceptible of injury, if much disturbed, than most things; consequently, when re-potting, it is better to remove one of the old crocks from the bottom of the ball. The soil must be rammed well into the pots, otherwise it will hold water to an extent that endangers the health of the roots. It is better to keep on the safe side by under rather than over-watering. Plenty of drainage must be used, so as to admit of the water passing freely off. As the season advances and growth is more active, more water may be given, but at all times it must be applied cautiously; in this respect this *Cordylina* requires treating much in the way that *Ficus* do. Manure water greatly assists the plant, causing the leaves to come much larger.

CASSIA CORYMBOSA.—Independent of the usefulness of this plant for covering back walls in conservatories and greenhouses, it is one of the best late summer-bloomers we have for flowering in pots, coming in as it does when the bulk of the earlier things are over. Cuttings put in now and grown on with a little warmth during summer will make nice flowering examples next year. Old specimens that are turned out in borders and used as coverings for walls in the way already mentioned produce an amount of bloom that would scarcely be credited by those whose experience of this plant has been confined to pot-grown examples. But to keep large plants that cover much space in sufficient vigour to bloom as they should, they must be well supplied with manure water from this time onwards until they come into flower. The wall on which this *Cassia* is grown should not be too much darkened by other things grown in the body of the house. The present is a good time for turning it out; it does not require so much root room as some things, but the border must be well drained; without this the roots languish, though the plant may not die outright.

CYCLAMENS.—To have these plants in anything like the condition that the market-growers who make a speciality of them produce them in, it is necessary to treat them wholly different from the way that used to be considered right. Under the old course of management, where no more warmth was used than a cool greenhouse affords, double the time was occupied in reaching a flowering stage than is taken under the treatment now practised. From the time the seed is sown in summer, all on through the autumn and winter, alike during the ensuing spring until there is enough sun, fire-heat must be used to keep the house or pit in which they are located in an intermediate temperature; and again when autumn comes round a like amount of fire-heat must be employed, as by the end of the year, or in about eighteen months from the time the seed was sown, they will be commencing to flower. The secret of success is in keeping them going all the time, winter as well as summer. To do justice to them a small pit should be set apart for them, or whatever other plants are located with them must conform to the treatment they require. Young stock that as soon as large enough to handle was put in small pots should now be moved into others 3 inches in diameter. Good turfy loam, with

some leaf-mould, old decomposed cow manure, and sand, form a compost that answers for them. Keep them well up to the glass, now giving them a temperature of 55° in the night, with proportionately more in the day-time. A thin shade must be used when the sun is on the glass, giving air in accordance with the state of the weather. Keep the material on which the pots are stood moist, and syringe overhead in the afternoons. So treated, the plants will grow apace and be in a condition for moving to the pots they are meant to bloom in in summer. Plants that are now flowering must be regularly attended to with water, examining them frequently to see that they are free from aphides, which if allowed to remain undisturbed do much injury in little time.

FRANCOA RAMOSA.—The value of this nearly hardy herbaceous perennial can scarcely be over-estimated where flowers for cutting are much in demand. The long feathery sprays of white bloom which the plant, when strong, produces freely, are an acceptable addition to any arrangement of the choicest flowers. Where a stock is required, if there are no old plants to propagate from, seeds should at once be sown in a good-sized pan filled with sifted peat and a little sand, covering the seed thinly. Stand in an intermediate temperature, covering the pan with a sheet of glass until the plants are up. After this they should be kept close to the glass, giving enough water to keep the soil fairly moist. As soon as the little plants are large enough to handle, prick them off in pans or shallow boxes, now using either peat or good loam—this *Francoa* will grow in either—adding some leaf-mould and sand. Keep in a growing temperature until the weather gets warm, when a greenhouse or cold pit or frame will suit them, giving as much air as will suffice for ordinary greenhouse plants. When they are big enough, move them singly into 4-inch or 5-inch pots, using the soil in a little more lumpy condition. Where there are large, old specimens and more stock is required, they may be divided, securing to each of the pieces as many roots as possible; put them singly into 4-inch or 5-inch pots, or two or more pieces may be put together in larger ones. Keep in a little warmth until they have made some progress, after which a cold pit or frame will be the best place for them during the summer. Where the plants are wanted for conservatory or greenhouse decoration, large examples are easily obtained by giving additional pot room as they increase in size; the larger and stronger the specimens are, the more and finer flowers will they produce. T. B.

PROPAGATING.

ARALIAS. The genus *Aralia* is not a large one, yet several different modes of increase are called in requisition to propagate the various species. The handsome *A. Sieboldii* can be readily increased by cuttings of the weak shoots that are sometimes pushed out from the main stem, generally near the base, and which should be taken off with, if possible, a heel of older wood. These cuttings may be taken at any time during the spring or summer months, except just as the young leaves are pushed forth, and they should be dibbled firmly into small pots, the soil being of a light and very sandy nature. In the case of all cuttings the compost used should be passed through a sieve with a quarter of an inch mesh, as any irregularities in the soil will prevent the cutting being inserted as securely as it should be. When the cuttings are put in they do best if plunged in a gentle bottom heat and kept close till rooted, which they do very quickly. They may also be struck during summer in an ordinary cold frame. In the case of plants that have run up tall and naked, they may, if needed, be shortened by taking off the head and grafting it near the ground, the stock employed being the base of the same plant. The naked stem may be either cut up into lengths after the manner of *Drazenas* or divided into single eyes, as is done with *Vines*. All the above methods are available for the increase of the variegated as well as the green-leaved form, but of this latter seeds are sometimes obtained, and when that is the case quantities

of plants can be raised without difficulty. If the seed is sown as soon as ripe it germinates quickly, but should some time elapse before it is placed under conditions favourable to growth it will often lie in the ground for a lengthened period. *A. papyrifera*, which is very ornamental as a foliage plant, and interesting as being the plant from whence the Japanese rice paper is prepared, can be readily propagated by cuttings of the roots, a mode of increase that is also available for the hardy *A. spinosa*, the last especially growing with the greatest freedom in this manner. For cuttings the stouter roots should be taken and cut up into lengths of an inch or two, taking care when this is being done to keep the upper part of the roots all one way, for it is in many cases difficult to distinguish between the upper and lower portions when cut up, and should they be put in upside-down, failure will be the result. These pieces of roots should be dibbled in pots or pans of soil, and just deep enough to cover the upper portion of the root. If treated as cuttings of the branches, they quickly push forth leaves from the upper part, and numerous fibres from the lower portion. When sufficiently advanced the young plants must be potted off. The stove kinds of *Aralia* include among their number some with beautiful foliage, foremost among them being *A. Veitchii* and its variety *gracillima*, which can only with great difficulty be struck from cuttings, and layers take a long time to root. In that case it is necessary to graft them on some allied kind, and the stock generally chosen is *A. reticulata*, of which cuttings root readily. The grafts chosen should consist of the upper part of a shoot in little more than a half-ripened condition. It may be inserted either by fashioning it in a wedge manner and splitting the stock for the purpose, or by side-grafting. This last is to be preferred, as it is not necessary to cut down the stock till a union is complete, so that should the graft fail the stock is still available for another. At the same time, if the stock when left entire is too tall for the propagating case, it may be shortened back to half its height without injury. For side-grafting a slight incision is made in the stem at about an inch above the soil; then the same distance above this cut insert the knife, and make a slanting cut down to the first incision. The graft must be fashioned in such a way as to exactly fit into the cut portion of the stock, and then tied securely in position with soft grafting cotton. Coarse damping cotton will do very well for the purpose. After the operation is finished the grafted plants must be kept close till a union is complete, when they can be hardened off by degrees, and as soon as the grafts commence to grow the upper part of the stock can be cut away. For grafting, the stem should be from the size of a straw to that of an ordinary lead pencil, and must, of course, be young and vigorous, as when in that state wounds heal rapidly. It will be found a great convenience to have the plants of *A. reticulata* intended for stocks in small pots, as they will then occupy less space in the propagating cases, and also when shifted into larger pots they can be buried rather deeper than before, so that the point of union will be covered with soil. Though several of the other kinds will strike from cuttings, they are generally grafted as above directed, but, except in the case of *A. Veitchii* and its variety, grafting is not absolutely necessary for their propagation, though it is often carried out, from the fact that plants grown in this way attain an effective size in less time than those struck from cuttings. *A. Chabrieri*, elegantissima, leptophylla, reticulata, and the variegated-leaved *A. Guilfoylei* can all be propagated from cuttings; indeed, this last-named strikes freely and may be used as a stock for the others. To strike these different kinds, the cuttings should be formed of the current season's growth, and taken when in a half-ripened condition. A length of from 4 inches to 6 inches is very suitable for the cuttings, and being taken off at a joint and two or three of the bottom leaves removed, all is now ready for insertion. For this small pots are the best, as then each cutting can be put in singly, the foliage being in this way retained in a more satisfactory condition than if several are put together. The pot should be partly filled with broken crocks, and they strike

more freely if some pounded charcoal is mixed with the soil, which should be of an open, sandy nature. The members of an allied genus, *Panax*, some of which are occasionally classed with the *Aralias*, all strike root readily from cuttings.

CHOISYA TERNATA, that has been grown under glass to get the blooms early in the season, will be by now studded with young shoots, which strike root quickly if taken just before they become woody, and treated the same as most soft-wooded cuttings. One particular thing to bear in mind is that, like the variegated *Coprosma Baueriana*, this *Choisya* suffers greatly if the cuttings are at any time allowed to flag, so that they should be put in quickly when separated from the parent plant, and kept well attended to in the matter of water and shading afterwards.

COREA SCANDENS VARIEGATA is a plant that puzzles a great many to propagate, for even where it seeds the plants always die during their earlier stages, and it is by no means the easiest of subjects to strike from cuttings, although this is the method generally employed. The best results are obtained by taking the cuttings at this season, selecting for this purpose the weakest shoots available, as many of the large and stout ones will be almost certain to decay. If the shoots are small they may be inserted entire as cuttings, while in the case of the larger ones two joints should be allowed, leaving one from whence the leaf has been removed for the base of the cutting, and the other with the foliage entire for the upper portion. At the same time I have had a fair measure of success by putting in single eyes, and when this is done stouter shoots can be used, but it is more risky than with the smaller ones. In any case the cuttings may be dibbled around the edge of 4-inch pots, which should be well drained for their reception and filled, but not too firmly, with open sandy compost. The single eyes must have a piece of the naked stem below the leaf allowed to remain on, and this being inserted till the eye is just on a level with the soil will serve to keep all firm and secure. After this the cuttings must be placed in a close case, such as is used for ordinary soft-wooded propagating. The cuttings need careful attention in the matter of shading, air-giving, watering, &c. As the cuttings are very delicate, little air must be allowed to reach them, while, on the other hand, damp and decay must be especially guarded against. A friend of mine who had often unsuccessfully attempted to strike this *Coclea* propagated several by layers, and this method possesses the advantage of requiring but few appliances. A branch or two were loosened, and the shoots layered in 3-inch pots, the buried portion of the stem being cut through for a little distance.

THE OLEANDER (*Nerium Oleander*) and its many varieties strike root if the young shoots are taken and treated as other cuttings, but besides this they possess the peculiarity of striking just as freely in water alone if a piece or two of charcoal is placed therein to assist in purifying it. In the case of cuttings that are struck in water the roots are more delicate than those produced in soil, and require great care in potting them for the first time. T.

Seeding Primulas in the open air.—The placing of *Primulas* in the open air for the purpose of securing a good crop of seed is not, I believe, generally adopted. A large trade grower of my acquaintance stands the plants out of doors early in May, and allows them to take care of themselves, as regards the impregnation of the flowers, with the result that quite as good a crop of seed is secured as from plants which have been altogether grown under glass and the flowers fertilized. When the plants are first placed out doors they are slightly protected at night in all weathers. The plants do not remain out of doors until the seed is ripe, as, if so treated, much of it would be lost. Besides saving the labour of fertilising the flowers this plan saves a good deal of labour in watering, and at the same time renders the space they occupied available for something else. The seed of the plants which are intended to be treated in this way may be sown about the middle of July. J. C. C.

FLOWER GARDEN.

AN AUSTRALIAN BOTANIC GARDEN.

WE engrave this very pretty view of the Botanic Garden at Melbourne, and wish we could give our readers as good an idea of the floral treasures of the Australian woods. The flowers of the land have charms one would never suspect from the way the plants have been grown in our gardens. Pinched carefully, and all their charm and variety of habit reduced to a cushion, one has no idea of their beauty. The drawings brought over last year by Mrs. Rowan showed us how graceful the Australian flowers are when growing in their own way in the bush, and made us long to see them. We have just heard from our friend Charles Moore, of Sydney, who has been over forty years director of the botanic gardens there, and hope he will some day send

varieties, as these have hard, wiry habits of growth, bloom most profusely, and come freely from seed also.—A. D.

VISIT TO A NARCISSUS GARDEN.

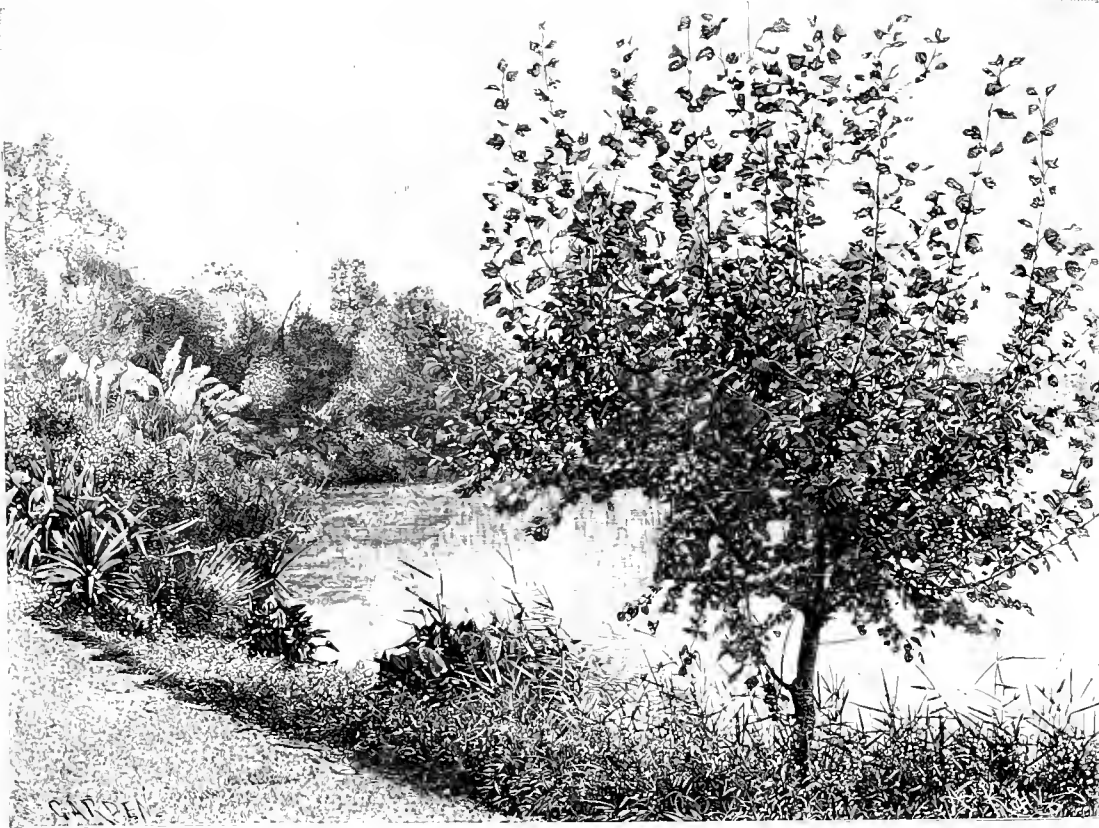
WHILE on a visit recently to the south of Ireland, I had an opportunity of visiting the Narcissus grounds of Mr. W. B. Hartland, and though I was pretty well acquainted with his bulbs from his "Little Book," and from having for several years purchased bulbs from him of any of the newly discovered and recently sent out varieties, I was quite unprepared for the feast that was before me. To see the masses of the rarest varieties in such luxuriance and health was a sight not elsewhere to be met with; and above all others this garden is rich in the finest forms of white Trumpet Daffodils. There are some, too, which I expect to hear more of at a future time, and which are not yet obtainable. The vigour and health of the stock all round are enough to induce one to replenish his own garden from such a

culture. The soil and situation of this garden are most favourable to the production of sound and well-matured bulbs, on which the future results in our private gardens altogether depend. Leda, Bishop Mann, and other white Daffodils attain to a height I have not seen equalled anywhere—from 18 inches to 2 feet. Amongst the vast numbers of *N. princeps* (naturalised in Ireland) are found many fine forms, golden, bicolor, &c., so interesting to lovers of the Narcissus. Gerard's double pseudo-Narcissus was well represented by a large bed having quantities of beautifully-shaped perfect blooms.

As my visit was for the purpose of comparing and observing Narcissi, I shall only add that this garden is also noted for rare Hellebores, Primroses, and Polyanthus, which would require a separate notice to do them justice.

A MEMBER OF NARCISSUS COMMITTEE.

Mr. Hartland's Daffodils (p. 297).—In justice to the numerous gentlemen who gave some con-



View in the Botanic Garden, Melbourne, Australia. Engraved for THE GARDEN from a photograph

us some views of his beautiful gardens there, or the plants growing in them.

Petunias.—"Cambrian" in THE GARDEN of March 19 (p. 247) wrote of Petunias as bedding plants in strong terms of disapprobation. It is very likely that in a wind-swept region, and specially where rain is excessive, such strong growers in good soil as Petunias are would do badly. But in many other localities where the wind is less fierce and the rain less persistent, we find beds of Petunias singularly effective and enduring. These plants do best in rather poor soil, because being naturally strong growers they need no stimulants. They bloom early and with wonderful profusion, and if a heavy rainfall does demoralise the flowers, a day of sunshine soon puts all to rights, and the bed is as gay as ever. The large-flowered, and more especially the double kinds, are unfit for bedding. The best are the smaller flowered striped and sel-

source. The profuse bloom of large masses of *N. capax*, the most distinct in form of all the double Daffodils, was a wonderful sight. So early is the bloom in that favourable district, that the myriads of Ard-Righ (Yellow King), some 20,000 in number, were almost all gone out of bloom.

Rip van Winkle was as bright a golden colour as any double *N. Telamonius*. When seen well grown and coloured, as it is here, and as I have it myself, it is a charming little flower, very distinct and most useful for cutting from. The woodcut of it in THE GARDEN (Feb. 21, 1885) is a faithful portrait of the form.

Large masses of the miniature white Daffodil Minnie Warren, which has also been figured, were most beautiful. This I have found very useful for pot culture. Many thousands of *N. moschatius*, collected bulbs from the Pyrenees, were producing blooms of varied form so interesting to compare with the large forms as we know them in garden

considerable time and attention to the specimens which Mr. Hartland sent to the last meeting of the Narcissus committee, I must ask you to allow me to reply to his statement that "they could not be reported on, as the English ones for comparison had to be produced from under glass." The twenty-four varieties which we received from him were gone through most carefully, and I wrote him on the following day a full account of our opinion concerning them. Some were varieties well known to us, others were varying forms of collected species, such as have been received in great numbers lately. One seedling we considered worthy of a distinctive name, and two others we requested to see again. It is true that we could not decide about one variety sent as Ard-Righ, because we had no flowers of Yellow King with which to compare it, but for the white sorts we were pledged to a competitive trial before giving any further names. If the distinctive points in Mr. Hartland's Daffodils are to

disappear when they are removed from his garden and planted elsewhere, I fear it will be of little use our troubling ourselves about them in future. We are perfectly ready to admit that many of the flowers which he sends us are distinguishable from one another, but of course that does not mean necessarily that they are worthy of distinctive names; far from it; the distinguishable features are often points of inferiority between one and the other. The large number of sources from which flowers are sent to the Narcissus committee, and the grateful letters which I receive in answer to our reports give one great encouragement in believing that our work is generally appreciated and of use, and I am sorry that we should have failed to give satisfaction to one who loves these flowers so well, and who possesses so many that are worthy of all attention.—C. R. SCRASE-DICKENS, *Hon. Sec., Narcissus Committee.*

PRIMROSES.

I THINK it was Mr. Douglas who said the other day that it was necessary to the successful culture of hardy Primroses that they should have shade. That is perfectly true as concerns the common or wild Primrose, for it is a weakly thing at the best, and fares badly when grown under the fierce light of day. Naturally a retiring, timid sort of plant, it thrives best in quiet and in shade, but still it likes a cool or holding soil, where the Oak strikes deep and the Hazel and the Bramble thrive luxuriantly. The garden Primrose, if I may adopt such a term, is so diverse from the wood variety, that it seems to thrive best in broad light and flower in the full glare of the sunshine. That, at least, is my experience of it. I do not think that, with the strain which beautifies our gardens now in such rich-hued variety, there is much that is allied or in common with *Primula vulgaris* beyond the fact that it is a family connection. As far as my own kinds are concerned, that beautiful mountain form once known as *Primula altaica*, and without doubt a distinct form of some foreign Primrose, is the chief or seed-parent; and from that, fertilised with what is probably the single red form of the double crimson Primrose, and better known as *Primula auriculiflora*, has come most of the rich-coloured Primroses I now possess. I fear the origin of these two forms which I have named is somewhat lost in obscurity; but at least both have been well known as exceedingly beautiful ones, and if not so common now is due perhaps to the fact that their progeny have given seed somewhat freely, and seed, again, has produced myriads of varieties, all so fine and beautiful as to leave the parents somewhat in the shade. The increase of Primroses by mere division has proved an exceedingly difficult matter. A season or two may prove specially favourable, and yet another season or so may prove very destructive. I write of a stiff soil, which retains water in the winter like to clay, and in the summer becomes quite baked—both conditions peculiarly adverse to the growth of Primroses. Winters, however wet or severe, are seldom so harmful as great heat and drought, because then trips are pretty sure to be rife, and with the loss of leafage comes bareness of crowns, and never afterwards the robustness which previously existed. Last year was a very favourable one, as not a leaf suffered, although the earlier portion of the summer was hot and dry. It happens, however, that plants suffer least before the middle of July, and worst later if the end of the summer be a parching one. However, it is satisfactory to be able to record the kindliness of one season at least, and I hope many more similar ones may follow. As a result, I can show now one of the most beautiful beds of Primroses I have yet had. There may be some 600 strong plants in the cluster, and, with very few exceptions, all of fine quality and blooming profusely; hence it is proved that hardy Primulas will thrive without shade, for I have none, neither do I wish for any.

From the time of making the cross mentioned, several years, perhaps some twelve or fourteen years since, till now I have fertilised no more Primroses. So far, the mere process of selection seems to answer every requirement, for I always

select seed from the finest, richest coloured and chiefly thrum-eyed flowers. No doubt some very interesting information might be obtained in regard to the capacity of thrum-eyed and pin-eyed kinds to reproduce their kind, but busy people can hardly give attention to matters of that sort. Still further, it would be interesting to note what would be the relative proportions of similar flowers from a thrum and pin-eyed cross. Saving chiefly from thrum flowers, because these please me much the best, I find that, on the whole, about one-half the progeny has thrum eyes. But the most satisfactory result is found in the evident gradual improvement of the strain in size and quality of flower through selection from the best flowers for seeding alone. The greatest difficulty is the tendency of the strain to produce Polyanthus stems and clusters. That feature may be due to race, for nearly all members of the *Primula* family carry their flowers in clusters on tall stalks, and this development is but the lengthening, by constant breeding, of the stem, which undoubtedly exists, though in a shortened form, in all true Primroses. It is very possible also that there may be some of the Polyanthus strain running in these coloured Primroses; hence the tendency; and there is the suggestion that as Polyanthus are largely grown near, the infusion of Polyanthus blood through insect agency is inevitable. Of course, all these tall-stemmed kinds are beautiful, but they are not real Primroses. But then in some years the tendency seems more marked than others, as thus the present season's bloom gives 90 per cent. true; that of the previous year was much less favourable, so that it is fair to infer that local causes operate more or less. This much, however, may be said, that it is a hundred times better to trust to seed as a means of perpetuating Primroses than by division or propagation. That much, at least, as far as the southern districts are concerned. Farther north, or in moister regions, diverse conditions may enable plants to thrive after division freely. We know that in some favoured localities the choicer double Primroses do well, and there the best single kinds may thrive well also. On the other hand, I think it doubtful whether seed would in colder or moister districts be freely produced. Here, apart from excessive drought such as now and then occurs early in the season, the greatest enemy to seeding of Primroses is found in late white frosts, the which have sometimes done great harm, but then chiefly when unduly mild winters have excited the plants into very early bloom. Very often have they been a month earlier in blooming than they are this year.

Mention of the effects of frost also reminds me of the fact, that whilst whites, reds, carmines, or similar striking hues suffer least, the deep crimsons, and specially the bluish-tinted flowers suffer most. I worked for blues largely a few years since, but found the defect I refer to so marked, that I have now omitted to select seed from them. Of all colours, especially on sunny days, none tell like the bright reds or reddish crimsons; hence I prefer to save from those tints as much as possible, because these are certain to retain their own hues largely, and yet give many other tints also. Next to these come the pink and carmine hues, the pure whites, and last the pretty tinted lilacs. Of course, all in combination reproduce all sorts of hues, but the above ones predominate. In sowing seed much is gained by doing so as soon as it is well ripened. Gathering may not always be left until the seed is dead ripe in the pod, as much will then inevitably be wasted; still, some will be riper than the rest when it is gathered. A fortnight's exposure under glass in paper bags usually makes the ripeness of the whole even, when it may be rubbed out and fairly cleansed of refuse, and with yet, perhaps, a few days' more exposure to fully harden it, is ready for sowing. Thus, the end of July perhaps is reached, but seed properly sown in shallow pans or boxes and in fine sandy soil, then placed in a frame and lightly shaded during hot sunshine, will germinate freely in about three weeks, and in a few weeks more the plants are strong enough to dibble out either into frames for the winter, or, if preferred, into the open ground. Primroses do not make any considerable amount of roots in the autumn, and may be lifted or disturbed appreciably in the soil

should severe frosts ensue. For that reason it is wise to winter in frames where the plants are encouraged to make growth, and early in the spring they may be dibbled out into their permanent quarters. As spring is the real rooting season, of course they soon become established, and stand the ensuing summer heat well. It is quite easy to ensure that a large portion of the plants will bloom the first spring, or within eight months of sowing, but the real character of the plants is best seen the following year, when being strong they bloom profusely.

A. D.

THE NEW ZEALAND FLAX (PHORMIUM TENAX) IN IRELAND.

AFTER the very severe winter we have just passed through, a few words in favour of the above plant can hardly be out of place. Here it has stood out, unprotected and exposed in several positions, without receiving the least injury, and I am sure, if better known in the south and west of England, it would be more generally grown. We find the leaves last a long time when cut and mixed with the flowers of Pampas Grass, with a spike or two of late *Gladiolus* and *Tritoma glaucescens*. The latter flowers here until Christmas. The above combination in tall glasses, with a few sprays of trailing Ivy to partly conceal the glass stem, has a very pleasing appearance. Planted out in clumps in rich deep soil or on the margins of ponds, where the roots have free access to water, the New Zealand Flax grows freely, and gives a tropical aspect to the landscape which few other plants can excel. When the leaves are ripe, we find them most useful for tying when cut into thin strips, the fibres being very strong. The plants flower and ripen seed very freely.

My experience of the variegated forms is that they are more hardy than the green variety, and in localities where their hardiness is doubtful they are quite worthy of a place under glass. If potted in rich tenacious loam, they will well repay for the little care necessary to keep them in health by giving a pleasing feature to the too-often formal arrangements of plant-houses. I am of opinion that the forms we now have under cultivation are only seminal varieties. I have a quantity of seedlings raised from *atro-purpureum*, many of which are quite as dark as the parent, and many from the same seed-pods are of a light green. I also find that after several years the variegated forms revert to the old green variety, especially when grown in a rich, moist, deep soil.

W. OSBORNE.

Fota Island, Cork.

Allium neapolitanum.—Though the genus *Allium* is a large one, but few members of it are worth growing for their ornamental qualities, and still fewer if a disagreeable odour be taken as an objection. In *A. neapolitanum* this is wanting unless the stem is bruised; indeed the flower possesses a rather agreeable perfume. It is a remarkably free-flowering species, and very useful as a hardy border flower, and what is more it can be very readily forced into bloom, which under glass will remain in beauty a considerable time. The flowers are borne in good-sized clusters, and individually they are about an inch in diameter, pure white in colour, on which ground the dark-tinted anthers stand out conspicuously. It is a plant of the easiest possible culture, and great numbers are now imported into this country for forcing purposes, all that is necessary being to pot them in fairly good soil, and after they are well rooted introduce them into a gentle heat. About half a dozen bulbs in a 5-inch pot will yield a good display. H. P.

Seedling Hellebores.—These do not always take five years to blossom, as mentioned in a note on Hellebores in THE GARDEN on April 2. In September, 1885, I sowed a box of Hellebore seed, covering it with slates and removing to a cold frame in November. During the next month and January, 1886, the seeds came up freely and were planted out the following June. In January, 1887, that is, a year and four months from the time of sowing, eight of them sent up strong flower-stems, and no doubt the remainder will all blossom next December.

The young plants are seedlings of *H. angustifolius*, crossed with *H. maximus* and some of the fine new Bath varieties. Among the eight blossoms, two were pure white, bowl-shaped, with green stigmas. The third, a blossom of lovely form, pure white with pink stigma, and the remainder pure white with pink tinge on the outside of the petals and pink stigmas. All the plants appear to have reddish brown mottled stems. — L.

THE GERMINATION OF SEEDS.

IN his book on "Alpine Flowers," Mr. W. Robinson, under the head of "Raising Plants from Seed," gives this very necessary caution: "Many seeds come up a long time after others; in fact, seed-pots are often thrown away, on the supposition that the seeds are dead when they are perfectly sound, and some will come up a year or two after being sown. All that is necessary with the seeds that do not come up during the spring is to give them an occasional watering, and to guard against the growth of the Lichen-like *Marchantia*." I have just had an illustration of the truth of this remark. Last summer the Rev. A. Rawson sent me from Windermere a few seeds of a fragrant form of *Primula Auricula* he had raised, asking me to sow them, but stating that he feared they would hardly germinate. In about six weeks I had three plants through the soil, but I kept the seed-pot all the winter with a piece of glass over it, and surfaced it about twice with a little silver sand. As soon as my *Auriculas* in the same house commenced to be active I gave the seed-pot a good watering, and again placed the piece of glass over it, doing this rather with the intention of encouraging the three tiny plants to grow rather than expecting that more seeds would germinate. During the past fortnight quite a crop of tiny seedlings has come through the soil, and so numerous are they that I think every seed must have germinated. Had I thrown the pot away in the autumn, I should have lost nearly the whole of the progeny. For some time past I have made a practice of keeping all my seed-pots of *Auriculas* from twelve to fifteen months in order that opportunity might be afforded for the seeds to germinate, if any have not done so, and I invariably secure a crop of stragglers, and I have the impression that these later developments may comprise the very flowers of the flock. I remember once hearing of a gardener who sowed some seed of herbaceous *Phlox* in a pan, doing it in early spring, and then placing it in heat. After keeping it four or five months, and finding that not a single seedling put in appearance, he threw the contents away on the ground of a shrubbery border. Judge of his surprise when passing the spot a few weeks afterwards to see lots of seedling *Phloxes* putting in an appearance, and an excellent crop of plants rewarded him. Since that time he has carefully kept his seed-pans and pots long enough to give the contents a fair chance of germinating. R. D.

Chinese or Indian Pinks.—The fact that these charming and varied perennials flower after the ordinary *Carnations* and *Picotees* have gone out of bloom is one among many reasons why they should be grown. They lack the fragrance of *D. caryophylloides* it is true, but then they are easily grown, remarkably free, and very persistent. *D. chinensis* gives us double and single forms, some of which have been considered good enough to name. A little seed sown thinly in the open air in good soil soon produces plants, and these should be thinned out, and then a good top-dressing of siftings from the potting bench placed on the surface. This is found very helpful. *D. Heddewigi* and *D. laciniatus* are but fine large single forms of *D. chinensis*, the latter having charmingly fringed lacinated flowers, and both give varying colours. Of *D. Heddewigi* there are two fine rich-coloured varieties, viz., *Crimson Belle* and *Brilliant*, the latter a fine vermilion selection from the former. During the past two or three years a pure white variety has appeared, and if it can be permanently fixed it will prove an excellent addition to the group. *D. hybridus*, double blood-red, or *atrosanguineus* is a plant that should have hosts of admirers, so fine

and rich in colour is it. It appears to be intermediate between the Indian and the Mule Pinks, the flowers double and of a rich crimson colour. A small packet of seed can be had very cheaply, and there is no difficulty in getting them to grow. — R. D.

DAFFODIL NOTES.

THE season of the Daffodil is again upon us, and in about a week or so we shall be gay with white and golden yellow trumpets. A few of the smaller trumpet forms, such as minor and minims, are already past, but they can hardly be said to commence the season. I consider the first early to be *obvallaris*, the Tenby Daffodil. This is one of the most useful Daffodils in cultivation. It is of a good colour and has a stiff form, which is very requisite in a Daffodil when it is required for carrying purposes. It is also a fair grower, but is not quite so satisfactory in this respect as might be desired. I have seen whole beds of it almost entirely disappear without any apparent reason. In the autumn of 1883 several beds were planted with this variety. They came up well and flowered splendidly next spring; in fact, everyone who saw them considered them a picture of health. The summer of 1884 was very dry and scorching. This is generally supposed to be favourable for most bulbs, as tending to ripen them; therefore, a fine display was expected in 1885. But on examining them about the month of February, I found they were coming up very irregular, whole patches of them failing to put in an appearance. On digging the ground where they had failed to appear, I found some bulbs half rotten, but could find no maggot or any other vermin which might account for it. The time of blooming of the Tenby Daffodils varies very much in different seasons. About four years ago the first blooms were picked on February 11, while this spring none were gathered before March 25.

One of the finest introductions of late years is *pallidus precox*. It is quite as early as Tenby, but although they are both found wild, the one in Wales and the other in the Pyrenees, in *obvallaris* I have never yet detected the slightest variation in form or colour, while in *pallidus precox* one can find the forms of nearly all other trumpet Daffodils. I noticed two a few days ago in form almost like Tenby and another similar to *bicolor grandis*. In growth it is, however, not so satisfactory as could be wished for, as in a lot of imported bulbs which have been planted three years, about half has died. Neither is it a very free-flowering variety, as I have seen a bed in which there was not more than one flower to four roots. Yellow King, which is now proved to be the same as Mr. Hartland's *And-Righ*, is a variety well worth growing, and should be in every collection. It flowers a few days later than Tenby, but it has a much larger flower, is a vigorous grower, and above all blooms freely. Golden Spur has a larger flower than Yellow King, and has very long petals which do not overlap. It is not quite such a vigorous grower as Mr. Hartland's pet, but still with ordinary care it can be grown successfully.

Umberto I. and Regina Margherita were introduced from Italy a few years ago, but though novel they cannot be considered very striking. They may be easily recognised by the yellow bars in the centres of the petals of the perianth. Regina Margherita is the largest, most distinctly marked, and altogether the best of the two. I have also seen several other forms from Italy. One or two of them are very good flowers, but no improvement on any of our yellow trumpet forms, and some of them are very puny and weak and unworthy of cultivation. Among them I noticed a princeps almost like Mr. Hartland's, also a nobilis. This last variety varies very much in form and colour. Most of them are very bicolors. One I noticed with a trumpet like Horsfieldi, but with a much narrower and flimsy perianth. One is almost exactly in shape like the pseudo-Narcissus I have seen from Dorsetshire. *Pseudo-scoticus* is another sturdy little flower, and is one of the best of the pseudo group.

A variety, which the Rev. Mr. Wilks calls *trilobis* is a neat-shaped flower, and has a I cautiously im-

ported trumpet. It is to be hoped that it will be brought before the Daffodil committee this spring, and passed as a recognised variety. It is a very free grower and a most profuse flowerer. The common form of *spurius* is now in flower, as are also General Gordon and Henry Irving, varieties which have been picked out of *spurius*. The common form is a most unsatisfactory grower, and is much inferior to the two varieties above mentioned. Mr. Hartland's princeps already shows a few flowers, but they do not possess quite so much weight as the Dutch princeps. It is a moderately free bloomer, and at present its growth is healthy. Double Daffodils show a tendency to become single this season. Among some forced blooms of *Telamonius pl.* which I saw in Covent Garden, I noticed some which were almost single, and a great many of them had the trumpet only half filled. They were from, I believe, English-grown bulbs. For the first time, too, I see that pretty little double *albo-aurea* coming with the trumpet unbroken, and in one or two cases it shows a tendency to turn single. This variety is blooming better this season than I remember it to have done; indeed, it is not a very strong grower at best. *Narcissi* in general seem to be throwing up plenty of flower. That useful variety *Leedsii amabilis* in particular is looking remarkably well, and a bed of them is quite thick with buds. A few warm days would bring on a host of varieties which are now being checked by the biting north-east blasts which we have experienced nearly all last week. Those fine varieties Emperor and Empress and the northern champion *N. Horsfieldi* are, as usual, growing very strongly and showing plenty of flower. D. W.

Flowering branches in water. I have been trying the plan of putting large branches of flowering shrubs such as Lilac cut off in winter and put into a warm house with the ends inserted in water, and it is surprising how well they burst into leaf and flower, so that one would think they were well established bushes with all the roots entire. I have no doubt that many amateurs would find it very interesting to watch the bursting of the buds and gradual development of the leaves, without the aid of a single root, but simply by the moisture being carried up by the sap vessels. I have also some Apple shoots in full bloom that have been put in bottles of water to try if they would root better in water than in soil. J. G. Hoots.

Hypericum olympicum.—In reference to the note of "T. C. L.," on p. 319, about the hardness of this plant, I agree with what "W. G." says, on p. 303, that it is perfectly hardy; that is to say, I have kept plants out in Cheshire through such winters as 1880 and 1881. Its ordinary duration of life in gardens, however, is about three years. It is what may be called an herbaceous shrub, dying to the ground-line in autumn, and breaking from the base about the same time; but when the woody base gets very hard and thick it fails to break again, or the circulation between the roots and young shoots is insufficient to maintain them. Under these conditions it dies, generally in its third or fourth winter, whether the weather is severe or not. It is easily kept by taking a few cuttings every year in spring. I do not find either *H. oblongifolium* or *H. patulum* hardy here unless the winter is mild. If killed to the ground they never recover here.—C. W. Dob, *Edge Hall*.

SHORT NOTES.—FLOWER.

Bromus sterilis aurea.—I have found at Sandiacre *Bromus sterilis aurea*, which I think would look very bright in the spring garden. It is a clear yellow, and comes true from seed.—Wm. Elliott.

Primula altaica.—This seeds but sparingly, and may be known by its thin calyx and its thinner foliage, is more subject to red spider, and will grow in a lighter soil than *Primula vulgaris*. If I am wrong, I shall be glad to be enlightened upon this subject.—W. Elliott.

Will you kindly inform me what would be likely to grow in a dark corner in an angle formed by the walls of two portions of a house? No sun ever gets to it. The walls are covered with Ivy, but the piece of ground in the corner is very bare. Would Lily of the Valley grow in such a place? Or how would it do to form a rockery there, and if this is to

succed, what plants would be likely to thrive in it?—T. CARMICHAEL.

Ranunculus bulbosus.—The white *Ranunculus bulbosus* is a charming British plant I found at Sandiaere, and if it comes true from seed, of which I have little doubt, we shall have one plant more worthy of introduction to the flower garden. I have also seen some very pale forms of *Ranunculus acris* in the same locality. I will report further in the season about them.—WM. ELLIOTT.

THE CHIONODOXAS.

Two years ago I received a large number of bulbs, collected by Mr. Edward Whittall, of Smyrna (the discoverer of *Chionodoxa sardensis*), in the mountains near that place. These are now well established at Brockhurst and are blooming vigorously. The well-known forms of *C. Lucillie* and *C. sardensis* are amongst them, but there are several well marked varieties. One is the pure porcelain white, a real gem, which will be a very popular flower, if it can be obtained in quantity. We have about half-a-dozen bulbs now producing flowers. One form has a delicate pink shade of colour, and another has a delicate blue, but in both cases the flowers are pure white when fully opened. There is a single plant of deep purple, like the colour of *Hepatica Barlowi*. There are many varieties in the shading, from the blue of the *Nemophila*, to white at the centres, and of violet-purple, such as could be picked out in any large group of *C. Lucillie*. The plate in your Vol. XVIII., p. 12, is an admirable illustration, and therein is shown also the white variety, a few bulbs of which had been found by Mr. George Maw on the summit of the Nymph Dagh, near Smyrna. In the *C. sardensis* there is but little variety. It has no shading, the perianth being of a deep even blue. A mass of it has a charming effect, even more beautiful than its sister form.

Mr. Whittall sent with these a large number of bulbs of *Scilla bifolia*, and these have interested me greatly for the last two seasons. I have at length come to the conclusion that they are not *S. bifolia*, and that a new name will have to be found for this variety. They are to be found in any large lot of *C. Lucillie*, if the gardener has not weeded them out as rogues.

The *Scilla bifolia* of our gardens is figured in the *Botanical Magazine* (vol. xx., p. 746), where it is stated to be a British plant. It is also to be found in many illustrated works on British botany. The example here given must have been taken from a garden variety, as it certainly differs altogether from the British plant, having a darker colour and a more diffuse habit. It is, however, not unlike the *Smyrna Scilla*, especially as regards the shading of the perianth from blue to white, as in the *Chionodoxa Lucillie*. It differs, however, materially from the plant, which is dwarfer and smaller in every part than *S. bifolia*.

There is another *Squill* figured in the *Botanical Magazine*, *S. pumila* (pl. 3023), which bears considerable resemblance to the *Smyrna* variety, and this is stated to be a native of Portugal. I have searched in vain through all the plates in our botanical literature, and cannot find any likeness of this *Scilla*. If it is to be called *S. bifolia*, it should be *S. bifolia minor*, but even this would not distinguish it sufficiently. It is very likely indeed to be a hybrid with *C. Lucillie*. It blooms three or four weeks before any *Scilla*, and in colour, whether self-blue or shaded, it exactly resembles it; and it is so like it in habit, that, but for the *Scilla*-like disposition of the stamens, I should have said it was a variety of *Chionodoxa nana*, a plate of which is given in vol. ex., pl. 6453, of the *Botanical Magazine*, taken from a plant found in the neighbouring island of Crete. There is a great variety of colouring, although of a minute sort, in this *Scilla*, just as there is in *Chionodoxas*. Some are self-blue, like *C. sardensis*; others shaded like *C. Lucillie*, which again suggests the idea of their being hybrids.

The *Chionodoxas* seed very freely here, and there are hosts of young plants coming up around the old ones. They also multiply at the roots. The long and cold winter we have passed through has not harmed them in the least. They were our earliest spring flowers, and have continued now over two months in great beauty. The *Puschkinias* are fol-

lowing them closely, and now as they are on the wane the numerous varieties of *Scilla bifolia* are beginning to bloom, following the *Smyrna* variety by at least four weeks. WM. EROCKBANK.

Brockhurst, Didsbury.

THE VISCARIAS.

THE season for sowing our annuals is rapidly drawing near, and no time should be lost when favourable occasions offer. The number of these annuals is increasing rapidly year by year, and it may be well to draw attention to a few of the good, though much neglected, kinds that are still grown in places where they found a home on their first introduction to this country. The class, of which the annexed illustration is an excellent example, will be found useful in many ways besides that of a prominent position in the mixed or annual border. They will also be found useful for sowing over bulb beds, &c., during the summer months. These beds are generally of a permanent character, and would otherwise have an unsightly appearance during



Viscaria elegans picta nana compacta.

the best months of the year. The number of these annuals is now so large, and the habit and time of flowering so varied, that if properly selected and cared for they will give a succession of flower through the summer and autumn months. From their hardy nature they may be sown in the open border any time after the end of March for the first batch, and a month or so later for a succession. All the varieties in cultivation at present seem to be derived from the two species *V. oculata* or *aspera* and *cecliorosa*; the former, however, is the race from which the variety figured has originated. Numerous other varieties, all varying more or less in habit and colour of flowers, are at present in cultivation. Among the best may be mentioned *Burridgei*, *cerulea*, *Dunnetti*, *elegans picta*, *cardinalis*, *rosea*, *hybrida*, and among the dwarf or *nana* set are *alba*, *carnea*, *picta*, *rosea*, *caerulea*, &c. They grow from a few inches to a foot or more in height, are compact in habit, and produce abundance of the most charming and brilliantly coloured flowers. They are natives of Algeria. K.

Aubrietias.—Aubrietias are an interesting class of plants, and are useful for the beautifying of the

flower beds in the spring and planting among the stones where these are used instead of Box. On the rockery also they are most useful, filling up spare places between the regular occupants. *A. Campbelli* is best suited for the latter purpose, while *violacea*, *purpurea*, and *graciosa* answer admirably for the other places named. A stock of plants can be readily obtained by sowing the seed during the early part of June in pans in a cold frame. Transplant the seedlings as soon as large enough; by these means sturdy plants are obtainable by the early part of October. The stock may be increased in the following manner, viz.: when the plants are taken up from the beds after blooming in the spring, cut off the growing parts to within an inch or so of the ground line. New growth will spring from the base of each plant, when they should be divided and planted out.—E. M.

CLEMATISES AS WALL CLIMBERS.

As Clematises are among the best plants we have for the embellishment of the fronts of houses, screens, or walls, it is surprising we do not see them more largely grown, and now is an excellent time to plant them. The plants are generally procurable in pots, and in such a manner they are easily transferred to their permanent quarters without occasioning any serious check, the main point being to make sure that any shoots which have started into growth are not broken. Where the soil is poor naturally, it is better to renew it entirely. The compost should consist of some turfy loam, peat, and some partially decomposed horse manure. When the plants are growing freely during the summer months apply copious soakings of water to the roots, and occasionally liquid manure will be of immense benefit. *Jackmanni*, deep purple, is one of the best varieties to plant, as it grows freely in any position, be it a northern or a southern aspect; this is a great consideration, as there are so few flowering climbers that will succeed in a northern position. It should be pruned in closely, say to a single eye, in February of each year; this sort is well suited for low walls. It commences to flower in July, and continues to bloom profusely during that and the next two months. *Lady Bovill* is a capital companion, as it flowers at the same time and requires exactly the same treatment as to pruning; the flowers are large greyish blue. *Venosa* is another of the same section, flowering abundantly, with purple flowers. *Sir Garnet Wolseley* is a good variety of the *patens* section, flowering in May and June, to grow where a high wall needs covering, as it requires no pruning. The flowers are pale blue, with a plum-red bar in the centre of each petal. Varieties of the *lanuginosa* type requiring moderate pruning only are numerous. *Lanuginosa* is pale lavender, having large flowers; *Gem* is a rich lavender-blue, very striking in colour; *Lady Caroline Nevill* is a fine sort, with flowers of a bluish-white colour having many bars. *Duchess of Edinburgh* requires no pruning, is a fine double white variety, blooming freely during the early part of the summer. One of the most useful kinds in a cut state, as the flowers are very fragrant and last a long time in water, is *montana*, for rambling over trellis-work or amongst other deciduous climbers. It flowers during May and June. E. M.

Lotus peliorhynchus, or Pigeon's Beak.

—It may interest those readers of THE GARDEN who have seen the mention and description of this beautiful and rare trailing plant given by my friend, Mr. E. H. Woodall, in his last interesting letter describing the flora of the Fortunate Isles, printed on p. 320 of the last issue of THE GARDEN, to know that they can see a coloured portrait of it on plate 6733, vol. ex., of the *Botanical Magazine*, drawn from a plant flowered in the cold house at the Royal Gardens, Kew, in the summer of 1881, from seeds received, in 1881, from Herr Wildprecht, director of the Botanic Gardens at Orotava, Teneriffe. It is also botanically known under the names of *Heinekenia peliorhyncha* and *Pedrosia Bertheloti*. Its local name is *Pico di Paloma*, or Pigeon's Beak. It bloomed abundantly and well during last summer

and autumn on the open-air rockwork at the Royal Botanic Gardens at Glasnevin, near Dublin, where its bright scarlet flowers were much admired. I have not, however, yet heard from Mr. Moore whether the plant has proved hardy with him or not. I should, however, fear that it would be hardly able to withstand the damp sunlessness of our winters, even if able to bear our frosts with impunity. — W. E. GUMBLETON.

FRUIT GARDEN.

W. COLEMAN.

THINNING CHOICE FRUITS.

To thorough-going practical gardeners a paper on the above subject is, of course, perfectly useless, as all good cultivators know how impossible it is to overload a tree, and yet look for superior quality. So far good, but taking the country through, I greatly question if two-thirds of the best trees in most of the leading gardens are not at times found heavily handicapped by their taskmasters. The question why and wherefore naturally arises, as all good gardeners are well aware of the fact, that the lives of their trees are shortened, the size and flavour of their fruit is depreciated, and last, but not least, their reputation as cultivators is sadly damaged. Although we occasionally walk through the millionaire's garden, in which the head is monarch of all he surveys, to find wall Peaches, of which we have heard so much of late, crying aloud for relief, it is in the smaller places where men who also understand their business, but are not allowed to have a will of their own, that this cruelty is most prevalent. Many of these gardeners would, if they were allowed, thin down to reasonable crops, which, other conditions being right, would not injure the trees in a lifetime; but in more ways than one they are debarred from exercising their own judgment. In some places the employer steps in, and quite within his right, although possibly against his own interest, insists upon this tree or that being allowed to carry so many dozens of fruit. In others, no uncommon case, the supply is unequal to the demand, and the gardener is obliged to lay on the last feather, not only to enable him to meet the pressing orders, but also to secure permission to be allowed to toil. Again, we find gardeners in good old places, from which much of the fruit is sent away as presents, cropping, as though want of colour in Grapes and size in Peaches were the very pivots on which their reputation hinges. To many these remarks may seem overdrawn; but such is not the case, as chapter and verse might be given for these and many more instances of over-cropping were they necessary. These, however, are so frequently chronicled in the pages of every horticultural paper, that all we have to do is to run over a back volume in search of notes and queries, not infrequently bearing their own answer, for strong proof of the disposition on the part of owners to overtax their gardeners' patience, as well as their fruit trees' capabilities. If this overloading brought better Grapes or Peaches to the dessert, or greater bulk to the culinary department, there would be an end of the matter; but it does neither; consequently, the only persons who suffer are the owners, whilst those deriving most benefit are the fruit-tree nurserymen. I have often pointed out the importance of timely thinning, and only last week I directed attention to the thinning of the flowers before they expand, as I know from experience that this operation is the stepping-stone to the greatest weight, the finest quality, and, as a natural consequence, the highest market value.

So far employers may appear to have the worst of the argument, but, unfortunately, it is only half exhausted and the most difficult part has yet to come, as it is generally admitted that prejudice stands firm where intelligence gives way to the mildest practical arguments. If anyone doubts this, let him turn to the question put by a lady ("H. R. C."), who, at p. 317, asks if "her gardener is right in waiting to thin the fruit till it stones, as he says it always drops off then." Further, she says, "may it not be that the fruit falls from being too crowded?" Now, this unfortunate employer is only one amongst thousands who are ready and willing to leave details to their gardeners, were they only competent and ready to wield this discretionary power in a rational way. Failing in this, it is only reasonable to suppose that employers must hold the reins until their gardeners have proved themselves competent to carry out trifling details. The lady is quite correct in her surmise that over-cropping is the most potent, although perhaps not the only, cause of dropping, as it is quite evident that something is radically wrong in the arrangement as well as the management, otherwise Peach trees would not be planted against the back walls of vineries, which are not only too hot and close, but certainly too damp and dark for them. If against his will the gardener has planted Peach trees against the back wall of a vinery the fault is not his; but he does not mend matters by deferring thinning until the fruit has passed the stoning. Indeed, were all the details thoroughly explained, it is just possible much credit may be his due for having induced the trees to set a crop that requires thinning. I once saw a house in which a gardener of some note had planted some Vines and Peaches, but the result was far from satisfactory, as it was simply impossible for him or his successor to induce the sun to shine upon two full sets of foliage at one time; consequently the two crops were reduced to mediocrity. Better, far better, give each fruit its own compartment, be it ever so small, cultivate well, and thin early. Treat the trees as trusty friends, and they will carry their fair complement of fruit to maturity.

LATE-KEEPING APPLES.

At the recent Bath bulb show prizes were offered for the best dishes of Apples, and these attracted several surprisingly good dishes of fruit. The awards were made to Ribston Pippin, the examples of this popular variety being highly coloured, plump, and of excellent flavour. Only slightly inferior to these were the handsome dishes of Cox's Orange Pippin, Blenheim Pippin, King of the Pippins, and Dutch Mignonne. Reinette du Canada and Golden Noble were also shown in good condition. From the Royal Nurseries, Exeter, came several good dishes of Apples, the best being Lord Burghley, Lane's Prince Albert (very strongly recommended as a profitable and good variety), Cornish Aromatic, Royal Pearmain, Annie Elizabeth, Blenheim Pippin, Court Pendu Plat, Cocker Pippin, Wellington and French Crab. In reality, we are not so very badly off for keeping Apples after all, and if more pains were taken in the cultivation, gathering the fruit, and storing, a supply of really good fruit might easily be maintained up to the present time, or even later. None but sound, clear-skinned, fully developed fruit will keep satisfactorily, nor should these, as was pointed out by a successful exhibitor, be gathered prematurely. If they are gathered before they are ripe, shrivelling will in all probability result; whereas if left on the tree till the seeds are brown, they will, other conditions being favourable, keep plump and good. They ought not to be moved about in the fruit-room, nor should they come into contact with straw or hay, either of these substances soon communi-

cating a musty, objectionable flavour to the fruit. Apples may be spoiled, as far as flavour is concerned, almost as quickly as Strawberries; yet, in spite of this, probably half the Apples stored in this country rests on either straw or hay. A cool, yet dry, room, clean shelves covered with paper, careful exclusion of all currents of either hot or cold air, are the conditions best calculated to ensure a long supply of good Apples. Under such treatment the season of good sorts may be made to extend over a period of five months. We had King of the Pippins fit to eat in September, and a few plump, well flavoured fruits were available during the last week in March. Very frequently those who have every facility in the shape of a well appointed fruit room do not keep Apples so well as others having no fruit room of any kind. A gentleman in this neighbourhood usually has choice varieties later than most people, and his simple plan of keeping the fruit ought to commend itself to many other amateur fruit growers as well as professional gardeners. When the Apples are ripe they are very carefully gathered, and all the soundest fruits are at once packed in clean deal boxes, which, after the lids are put on, are stored in a cool, dry room over an outhouse. They are protected from severe frosts, but never disturbed till required for use. Apples always keep better in heaps or in large boxes, only those on the surface being at all liable to premature shrivelling.

W. IGGULDEN.

HARDINESS OF STRAWBERRY PLANTS.

THE remarks in THE GARDEN (p. 333) lead one to believe that Pauline and Earliest of All are hardier Strawberries than President and others named by Mr. Gilbert. It is to be observed that Earliest of All and Pauline were grown in different quarters from the others. Might it not be a matter of local conditions, shelter, or something that makes all the difference? Even if two quarters were adjoining each other the conditions might be more favourable on one than the other; the state of moisture in the soil might tell for or against, and one might be more sheltered from the north and east. I am much interested in the degree of hardiness of Strawberry plants and fruit trees. As to the Strawberry, I have studied it and grown all the most highly recommended varieties during the last quarter of a century. If we dispense with some sorts, we are always trying others, and seldom get below twelve varieties. At present we grow thirteen, in young, well-established plants, all set out at one time as near as we could. I had noted their relative degrees of hardiness by the appearance of the old leaves, for none of them are materially injured in the heart, and the following are the hardiest, viz., Black Prince, Keen's Seedling, President, Sir J. Paxton, Waterloo, a new variety. The second hardy varieties are Pauline, James Veitch, Duc de Malakoff, Mr. Radcliffe, or British Queen, Unser Fritz, Loxford Hall Seedling, King of the Earlies, Frogmore Late Pine suffered the worst. The young leaves are now developing rapidly, and in a week or two it may be difficult to say which suffered most, and the loss of all the leaves seems to incite the plants to greater efforts to make good the loss. The whole of the varieties named have been planted together on an open space of ground. There are two to three rows of each variety containing about thirty plants in a row. March was very cold here, and even now (April 9) we have very cold east winds, with slight frosts every night. The lowest temperature in March was 17° Fahr. We have no vegetables left except some Early York Cabbage plants. Sprouting Broccoli, Scotch Kale, &c., all killed.—J. DOUGLAS.

— Supplementary to the remarks of Mr. Gilbert on page 333, may I be allowed to add the following? By far the hardiest Strawberry with us here in the north-east of England is Sir Joseph Paxton. This excellent variety has a vigorous habit of growth, with strong rooting powers, hence robust foliage, which renders the effect of a severe winter upon it scarcely perceptible. Along with Sir Joseph Paxton we may place in point of hardiness, President, Dr. Hogg, and James Veitch—all strong, vigorous growers, and remarkably large-

fruiting kinds. Another hardly class includes Elton Pine, Eleanor, and Wizard of the North. On the other hand, Sir Charles Napier is cut down considerably, as is also the British Queen; and Filbert Pine has also been damaged. The foregoing remarks chiefly refer to old plants on a strong clayey loam in a fully exposed situation. Amongst young plants Vicomtesse Hérient de Thury is our hardiest and most prolific kind. Keen's Scelling and its ally La Grosse Sacrée nearly always suffer, and their early character exposes the young and unfolding leaves to the cold north-easterly gales. All we can do is to plant them in sheltered situations, thus procuring a healthy growth in autumn; and on the approach of seasonable warm westerly winds and growing weather in the spring they grow away strongly. One of the chief causes of unfruitfulness in some kinds is the severity of the winters. Sir Charles Napier is one of the worst in this respect, and partial bareness can only be avoided by early planting and good cultivation, thus enabling the crowns to ripen before the winter commences. Of course, young plants bear the severe weather much better than old worn-out plants, and this may in some measure account for the appearance of some of the quarters where Pauline and Earliest of All are planted at Burghley. We much question, however, whether the new varieties (we have no wish to speak derogatorily of them) are very much hardier than our older and well-tried standard kinds. — J. LOVELL, *Driffield, Yorks.*

TREATMENT OF GROWING VINES.

Those who have charge of Vines during the growing season should be careful to keep well up to their work. This can be done very easily by forming a resolution to look over them once every week. As the season advances work becomes more and more pressing, throwing one's notions of punctuality rather out of gear. These remarks may be pondered by young gardeners who have charge of hothouses. They know that their work is cut out for them; a certain quantity must be done, and it can only be done well if it is seen to at the right time. Every young gardener should take this saying to himself, "Never leave until to-morrow what can be done to-day." Success in life depends upon the rigid observance of every-day duties. Let us see how these remarks bear upon the cultivation of the Vines and the necessity of looking over them once every week. In the early houses growth is very rapid at the present time, and the shoots have to be gradually brought down to the wires. Very carefully must this be done, else the most vigorous shoots may be broken off at the base, and another one will not be formed, so that an ugly blank will be prominent all the season. I stop the lateral growths two leaves beyond the bunch, and this is done as soon as the point can be taken out with the finger and thumb. Very soon other laterals will be produced from the base of each leaf-stalk, and these also should be pinched out to one leaf, and they can only be kept well under control by weekly attention. The points of the shoots to be pinched out should not be allowed to run out more than an inch or two. The smaller the quantity of leaves removed so much the better for the Vines. It is not uncommon to see superfluous laterals allowed to grow as much as 2 feet and 3 feet, and armfuls of them are cut out at one time; whereas they ought to have been removed in a handful or two. I remember the late Mr. J. R. Pearson, of Chilwell, who was a most ardent cultivator of the Vine, stating that he believed shanking was caused by the shock to the system of the Vine, brought about by this evil practice of allowing the laterals to grow too much, and then cutting them all off at one time. The mi-chief might not be discerned the first, or even the second, year of the practice of it, but that it ultimately tells upon the constitution of the Vines I have no doubt. Punctuality is equally necessary as regards the thinning out of the berries. Ten days after the first flowers open, thinning should commence, and all the berries intended to be removed should be taken out at one time. Those who have not much experience

of this work are apt to leave too many berries, and when they attempt to go over the bunches a second time they thin out too many berries from the upper part of the shoulders. When the bunches are all thinned and the berries rapidly swelling, the laterals do not grow very freely, but pinching must still be continued, the object of the cultivator being to prevent any over-crowding of the leaves. It is well to remember, too, that Black Hamburgh Grapes colour best when moderately shaded by the leaves, but Muscats ought to be rather freely exposed to sunlight.

J. DOUGLAS.

APPLES.

WHILST such gloomy contemplations concerning the large imports of foreign Apples are being indulged in, it is worth noting the splendid promise found on the trees this season, for almost universally the buds are large, plentiful, and evidently capable of presently producing a grand display of bloom. We might have had in the Apple bloom that which was as colourless or small as that of the Plum or the Whitethorn. Happily, such is not the case, and even if no fruit follows, we get some enjoyment from a glorious feast of Apple blossom in its season. That alone would not, however, repay for orchard planting. There is indeed good reason, now that the trees promise so admirably and the season is so late, to believe that the joys of spring bloom and of autumn cropping will this year be realised to the full. "G. H. E.," in discussing the subject of English *v.* American Apples, recently went a little out of his way to charge me with an excess of patriotism because I thought English Apples were after all the best. It was a rather absurd notion, and quite outside the topic being discussed. I rather based my estimate of the merits of the respective fruits, home and foreign, upon a wide experience of Canadian Apples gained at South Kensington in October last, when one of the finest collections of Apples from the Dominion was staged in the conservatory, and beautiful as they were, superb in size, colour, and finish, yet not one was equal in quality to our best English Apples. Such was the opinion, not merely of myself, but of a body of experts. However, I have urged that the best test of the respective merits of these American Apples with our own would be found after Christmas and early in the year. I suggested that the fruit committee of the Royal Horticultural Society, having special advantages, should obtain both home and American samples, and test them for quality occasionally. That there were recently plenty of good Apples of home growth in the country was evidenced at Chester, and it is morally certain that had the committee but invited samples for the purpose named, plenty would have been forthcoming. Mr. Coleman unearthed a comparatively unknown Apple in Pomeroy as a really good winter variety. Possibly there may be many others, but we want to know how far we fail at present in the production of good Apples, which only want to be known to be widely grown. If we should get a heavy crop of Apples this year, might it not prove worth while to promote a company, the object of which should be to purchase whilst cheap all the best samples of keeping Apples, properly store or tub them, and then see how far it would be possible to oppose American Apples with selected or picked home-grown fruits. Unfortunately, we take ten years to perform what the quick-witted Americans would do in as many months.

A. D.

Spur-pruning Grosse Mignonne.—My advice to "X." (p. 301), who complains of this Peach being a poor bearer, is to grub it up and fling it on the rubbish-heap. If you happen to get it true (which is not at all a sure thing, as there are no fruits so much mixed in nurseries), you will find that it is a good grower, free from insects and other pests, and never bears any fruit worth speaking of, and what it does bear is inferior compared to some varieties. I know it well, having a fine tree of it at one time that grew and flowered well, but never bore any

crop worth mentioning, and I grubbed it up. It is the worst bearing Peach in cultivation, and very tender skinned. I would advise all nurserymen to exterminate it wherever found. Well grown, you cannot find a finer flavoured Peach than Royal George, nor one that bears so well and constantly; and Walbarton Admirable is a later one, equally fine in every way. Since writing the above, I see Mr. Coleman praises the Grosse Mignonne. Is he sure he has it true? I have had more difficulty in getting Peaches true than almost any other fruit, but I believe my Grosse Mignonne was true. It is a large-flowered kind, and the skin is so tender that the fruit will hardly bear handling. — S. W.

LABELLING FRUIT TREES.

MANY disappointments would be avoided if this important item was better attended to both by nurserymen and gardeners. If more attention was paid to the subject, gardeners would be less ignorant as to the names of fruit, for, as a rule, pomological knowledge is not so extensively disseminated amongst gardeners, and a less number of boxes of fruit would be sent to our obliging editors, accordingly less work for their already over-taxed brains. It is gratifying to know we have some nurserymen who devote the greater part of their time to the culture of fruit trees, and do their best to have them correctly named, but the practice adopted by a certain class of nurserymen is far from conducive to correct naming. Someone from the nursery is perhaps sent to some gardening friend close at hand for grafts, or perhaps some are sent to them from different parts of the country, and whatever name is given with the grafts, is of course, affixed to the young trees without any inquiry as to its correctness. Again, the grafting in some nurseries is too often performed by men who care little whether they affix the right label or not, and then such trees are sent out to customers as being correctly named, thereby contributing much towards the evil complained of, for very few nurserymen plant out trees of each sort specially for fruiting in order to prove the correctness of the nomenclature, and, as a rule, such as do fruit in their nursery quarters have the fruit taken off at an early stage for the purpose of encouraging as much growth as possible. Not long ago I saw a consignment of fruit trees opened that had just arrived from a nursery, and amongst a bundle of supposed correctly named Apple trees a Pear tree was found having a name of an Apple affixed to it. When such a thing occurs there exist grave doubts as to the correctness of the names of the other trees, but as none of the trees mentioned have yet fruited it is difficult to say whether such is the case or not. When fruit trees are received from nurseries the labels attached to them are often of the flimsiest description, many being merely slips of paper, and others being narrow strips of wood tied to a branch with a small piece of string. Such labels ought to be regarded as merely temporary, and should be replaced by a more durable article at the earliest convenience.

Much has been written as to which is the most durable material for labels, some preferring one thing and some another. Zinc is an excellent material, possessing lightness, cheapness, and durability. The name should be written with indelible ink, and the label suspended from the tree by copper wire. It will last for years, and at the pruning season a glance will show whether the wood has swelled and the wire is cutting the bark. Even good stout wood labels may be used if well painted and renewed every two or three years, but they should be fastened on with wire, for if string and bad wood are used the string decays and the label falls to the

ground, and is either dug into the soil or raked off with the leaves and weeds and wheeled to the rubbish heap, or if made of bad wood and not renewed every year or so, the names become illegible. In the case of wall trees the labels can be nailed on to the wall at a distance of about 4 feet or 5 feet from the ground, so as to catch the eye easily. Some may object to having the labels made too conspicuous on the walls. In this case pieces of lead with the name of the tree impressed upon them answer well, and will last for many years. But on standards, bushes, or pyramids the labels should be suspended from the trees, so that the young gardeners may acquire a knowledge of the sorts grown, as when nailing and pruning they cannot but notice the difference between the sorts in habit of growth; also during the summer, when working amongst the trees, they have an excellent opportunity of comparing the different varieties as regards the leaves and the fruits. Besides having the trees carefully labelled, many gardeners write out a list of their fruit trees and number them, but here we adopt what I consider a very good plan, *i. e.*, draw a plan of the garden or orchard and make a dot for each fruit tree and number it; then write a list of the trees, with their names and numbers corresponding with the plan in a book. When this practice is adopted there is no trouble in finding the name of any particular tree should it happen to lose its label. C. COLLINS.

Howick.

Shading fruit houses.—Some of the houses here are glazed with inferior glass, and in these plants are very liable to injury by scorching, unless shaded much more than is necessary with good glass; and in vineries the greatest care in ventilating will not prevent scorching. I had, therefore, decided to put on a light shading this summer, but if the result is the same as in the case described by Mr. Coleman, it will be worse than the scorching. I should, therefore, be glad to know if any other readers of THE GARDEN have had any experience in shading Vines, especially with fixed shading, and if so, will they kindly state in these columns what result? W. CRANE, *Ballywalter Park, Co. Down.*

Two good Apples.—We are now using Flanders Pippin and Northern Greening for culinary purposes, and can strongly recommend them to cultivators, as they are sound, plump, and as sharp in flavour as they were at Christmas. This latter quality is, in my opinion, the point which should receive first consideration in making a selection for late use. Given a first-rate fruit-room, the keeping of Apples for some months beyond their allotted period is no difficult matter, but unless they retain their brisk flavour they are of little value. Flanders Pippin, when cooked, changes to a rich amber colour; the pulp retains its bulk, and for this reason is well adapted for all pastry purposes. The flavour is delicious, and now, even the middle of April, the juice is brisk and lively. The tree is hardy, a fairly good bearer, and deserves extensive cultivation.—W. C.

SHORT NOTES.—FRUIT.

Pear Pierre Joigneux.—This is said to be a most vigorous Pear, a large yellow fruit, with melting, juicy, sweet flesh; ripe from September to November.

Early Grape Gamai de Juillet.—This Grape was introduced by Messrs. Ballet, of Troyes. In that part of France it is said to ripen in the open air in July. It is a free bearer and has a good flavour.

Pear Charles Cocnee.—This Pear is said to be a very fertile kind, and excellent as a late dessert fruit. Fine specimens were sent by Messrs. Ballet, of Troyes, to one of the April meetings of the National Horticultural Society of France.

Vine leaves diseased.—I wish to ask your opinion or any of your contributors as to the Vine leaves sent. They are from young Vines two years planted, and now showing fruit and fine canes. Can it be the dreaded Phylloxera? I have read of it and the symptoms, but I never saw the insect. Can anything be done with it at this stage? The Vine borders are fresh made and well drained, and composed

of clean loam, old lime and mortar rubbish, and a few half-inch bones.—H. MARRIS, *St. Andrew's, Bridgwater.*
* Your Vine leaves are covered with green excrescences that form on the back of the leaves, a sort of extravasation through the skin of the leaf. They are injurious to the leaves, no doubt. This disease may be caused by a close, t. o warm atmosphere saturated with moisture. Consult Barron's "Vines and Vine Culture."—Ed.

MORE WALL AND HOUSE PEACHES.

YES, this is what is wanted. I care not to pit one against the other; we really want more of both. For a good many years Grapes have been monopolising more than their due share of space indoors, and Peaches spreading more widely over the walls in the open. Both are kings among fruit; but if these deserve regal praise and honour, Peaches and Nectarines must rank as emperors. Like Mr. Coleman, I should hesitate to affirm whether out-of-door or indoor Peaches are best. Judged by the eye, indoor Peaches would mostly be preferred; by the palate, out-of-door fruit would rank first. Out-of-door crops are, of course, somewhat more precarious. Climate comes in as a disturbing factor of great force in the open air. But climate is an old enemy, and we ought to know pretty well by this time how to meet and vanquish it. And we do. It is astonishing how successful the wary cultivator is in obtaining an annual crop of Peaches from the open wall. Of course, there are exceptional seasons now and then when the major portion of our hardy fruits is destroyed by spring frosts. But even in these exceptionally severe springs it is no uncommon thing to find more Peaches and Nectarines on walls than Apples, Pears, Plums, or Cherries in the open.

Neither is our climate one whit worse than it used to be, notwithstanding the laboured statistics of great authorities to the contrary. Hence, wherever Peaches have been well grown on open walls in the past, they may be as well or better grown now. And they are, where due care and skill are devoted to them. Nay, Peaches are better grown in the open air to-day in this country than they ever were before improvements of culture and of treatment have told upon them, as upon other things. Of course, poor, neglected Peach trees in abundance may be found on walls. The trees are usually labour, soil, and manure-starved. They may have grown in the same soil for half a century, and have to battle every summer with drought, starvation, and hosts of insects. When they do bear a crop of fruit, most of it is left to add sheer exhaustion to all the other evils the trees are subjected to; and then not a few such trees, on which hardly any labour and almost less skill are expended, are duly trotted forth in our journals as proofs of climatal deterioration and the impossibility of growing Peaches to perfection on open walls.

HORTUS.

THE EARLIEST STRAWBERRIES.

Ripe Strawberries are now fairly plentiful in most gardens where forcing is practised, and those who have relied upon the variety *Vicomtesse Héricart de Thury* will doubtless find there are none to surpass it at this time of the year. Earlier sorts there are, notably the *Princess of Prussia*, and it may be that larger fruited varieties will also be shortly available, including *La Grosse Sucrée* and *Sir J. Paxton*, but *Vicomtesse* is the best in point of quality, and it is also of excellent colour and firm. It sets readily in heat, and attains its full flavour in a forcing house, which is more than can be said of any other variety that I am acquainted with. It may not be so generally known that it is of a more accommodating disposition than most other sorts. It is rarely found in a perfect state of rest, and those plants wintered in cold frames, or protected in any way, are nearly always active at the roots, and can soon be excited into flowering. This habit of growth renders it possible to lift young plants from the open ground and force them at once. In December last we potted up a number of young plants from an open border, and these, being plunged in a bed of leaves that had been for some time previously placed in a heated pit, soon commenced rooting strongly, plenty of bloom following in due

course. Before the flowers were expanded the batch of plants was transferred to shelves in a plant and Pine stove, and here they have perfected good crops of fruit, nearly equal to any I have yet seen so early in the year, on plants treated in the orthodox fashion. At other times we have potted up the *Vicomtesse* and other varieties for fruiting under glass in quantity, and to ripen in advance of the earliest outside. The preparation of a number of plants in pots suitable for forcing, or only slightly forwarding under glass, entails a considerable amount of labour, and may well deter owners of small or under-manned establishments from persevering in the practice. If warm shelves, or even sunny pits or frames, are available, and early Strawberries be in demand, there is no reason why a number of strong young plants should not be profitably potted up, or they may be transplanted to the pits and frames. They should be lifted with good balls of soil about the roots, and be firmly bedded into rich loamy soil, and kept near the glass. I do not aver that lifted plants are suitable for immediate hard forcing, but if brought on gently, new roots will soon take possession of the tempting compost, and it may be do better service than do the roots of established plants that are crowded in an impoverished handful of soil. It may not be advisable to break up a newly established bed in order to obtain plants for fruiting under glass, but one row might be spared, the produce from this perhaps being more appreciated than ten times the quantity of fruit that may be ripe when Strawberries are most plentiful. Those we lift are merely strong runners that are allowed to establish themselves in a border, the only attention they require in the autumn being in the way of thinning out and regulating. Those transplanted to frames or pits ought to be given good room, and the bunches of fruit should be lightly supported above the foliage, or it may not ripen properly. On no account should they suffer for want of water, as should once the old balls of soil become quite dry it is certain to lead to the loss of the crop. W. L.

SEASONABLE WORK AMONG FRUITS.

CUCUMBERS.

If winter fruiteders are to be kept on through the summer, cutting over, to which I have often directed attention, must still be followed up. It is not necessary to cut over a whole house or pit at one time, but individual plants most in need of relief may be taken in hand first, and when they have grown into a fruit-bearing condition others may be similarly treated until the whole house is renovated. When divested of their old leaves, and all the fruit and straggling vines have been thinned out or shortened, a sharp bottom-heat, combined with good syringing and top-dressing, will speedily restore them to a healthy and fruitful condition. If practicable, it is a good plan to remove a portion of the old top-dressing and inert compost just when the young growths are breaking, and forthwith to earth and pack them up with fresh, light turf, charcoal, or rough pieces of old lime rubble. The bottom-heat being right, a few days' careful attention to shading will favour their complete recovery, when more tepid liquid may be given to the hills, airing, and the usual treatment may be resumed. The rapid decline in hard-forced plants is generally due to over-cropping and insect pests, including red spider, thrips, and green fly, but complete relief from their load of fruit followed by an extra supply of wholesome food corrects the first, and the facilities which thinning out offer for cleansing, not only the foliage, but the house, place the latter in an untenable position. These remarks apply to plants that have been overworked, but whose condition otherwise is sound, and these, I say advisably, may be kept in bearing throughout the season, or certainly until such time as spring-planted houses and pits come into bearing.

Spring-sown plants growing in well-appointed pits will now be making rapid progress, and provided they have plenty of room their management will be extremely simple. The main points are plentiful supplies of water both to the roots and through the syringe, a tropical temperature ranging

from 70° at night to 85° by day, ventilation when air can be admitted without creating a draught, and scrupulous cleanliness. The great mistake which many whose space is limited fall into is overcrowding, for no sooner are the plants fairly started than they begin to overlap, when the knife is introduced and canker follows. To such persons I would say, cut out every alternate plant, allow those retained to extend, pinch the laterals at the first joint beyond the fruit, and avoid the use of animal manure, as stimulants in a liquid form can be applied when needful.

Frame Cucumbers.—Although a great number of gardeners have given up growing Cucumbers in frames, as they can produce them quicker and cheaper in hot-water pits, it does not follow that the system must or will become obsolete. Indeed, many people in small places must either depend upon fermenting material, or dispense with a continuous supply of Cucumbers. I have seen good fruit cut from manure frames on the 9th of March, but each plant required incessant care and attention. Those days, thanks to hot-water pipes, have gone by, but for all this I should be sorry to see summer culture in frames done away with, the more so as the well-managed frame, even in large gardens, forms a most excellent nursery for supplying houses with healthy plants of Cucumbers and Melons. The best time to commence is early in April, as the most inclement part of the spring has then passed away before they come into bearing. Moreover, with care and attention to coverings and linings, the conditions under which the plants are grown favour a vigorous and fruitful state throughout the season.

Beds.—As half the battle depends upon the proper manufacture of the bed, the greatest care should be devoted to the fermenting and preparation of the materials. When fit for use the beds cannot be made too firm, as beating and treading in a great measure prevent violent fermentation. The situation for the bed should be dry at the base, well sheltered from cold wind, but open to the sun and convenient. Many growers are obliged to use stable manure pure and simple, but having plenty of Oak leaves I always use them with the manure in equal proportions. The frames, clean and sound, are put on at once, and as soon as the heat has declined to 90° the bed is again made firm and level, sods of fresh turf, Grass side downward, are placed upon the surface, and it is then ready for the

Compost.—This consists of turf from the igneous hills, and being deficient in lime, burnt garden refuse and old lime rubble are rather freely added. A narrow ridge is then formed along the centre of the frame, and this time we wait for the heat to ascend before we proceed with planting. Young plants from single seeds sown in 4-inch pots or small pieces of turf are then turned out from 2 feet to 3 feet apart, and allowed to take to the soil before we pinch them. Some pinch before they plant, but by planting very young and allowing the roots to get established the vines start well and proceed without further check. When two-thirds of their allotted space is covered, these vines in their turn are pinched, and in a few days fruit-bearing laterals furnish the centre of the frame. More compost, little and often, and previously warmed, but innocent of manure, is added as the roots show on the extremities of the hills, and into this the joints are firmly pegged as growth proceeds. By adopting this old-fashioned plan every joint throws out roots, and not only becomes a separate plant or capable of being separated, but the numerous roots speedily take possession of the soil, and fruit-bearing can be commenced and supported at a very early stage. From this time forward culture is simple enough, and may be summed up in a few words. Warmth, dry, heat and moisture, being imperative, we never discontinue matting at night the summer through, and periodical turning keeps the linings in a state of steady fermentation. A chink of air at night is the safety-valve against steam and impure air; but the wedges are withdrawn when we uncover in the morning, and fresh air is admitted when the temperature begins to rise. With slight fluctuations, which cannot be avoided in frames, 80° to 85° is the

aim until closing time, which ranges from 2 p.m. in the spring to 4 p.m. in the hottest part of the summer. Some are afraid to close thus early, but there is no danger, provided the plants and bed are thoroughly syringed and the frame is kept full of vapour. When the plants come into bearing we give them plentiful supplies of water, tinged with liquid or soot water, and manipulate twice a week. The best time to perform this work is immediately after the turn of the day, as the lights can then be closed with a nice overhead watering, when the temperature soon rises to the maximum. Space being limited, all laterals are pinched at the first joint beyond the fruit, and the latter is, or should be cut rather under full size. If grown quickly, frame Cucumbers, although not so clean and handsome, are quite equal to house fruit; whilst the mode of culture, without the aid of dry fire-heat, renders them almost exempt from the ordinary run of insects.

MELONS.

These, like Cucumbers, by those who do not begrudge the time and labour, may also be grown, and grown well in frames without the assistance of fire heat. The latter, it is hardly necessary to say, is a powerful aid, but those who cannot command it must fall back upon methods practised by the past generation or do without Melons. The month of April is a favourable time for making up the beds precisely as has just been advised for Cucumbers, but reveling as they do in a high temperature the succeeding month answers better. Many people run away with the idea that the Melon will grow in a swamp, and so it will through the early stages, but once the fruit has attained its full size, the high and dry temperature of Persia is absolutely necessary to the production of rich flavour. Where the heat in these beds has subsided and the surface has been covered with sods of stiff, calcareous turf, the compost, also heavy, should be thrown loosely in to get warm. Meantime, two boards, 12 inches to 18 inches in width and the length of the frame, should be set up on edge to form a centre compartment not more than 2 feet wide along the centre. Within this compartment very small cones are firmly built with a portion of the compost, and a single plant is turned out upon each centre. Like the Cucumbers, I prefer using very young plants as soon as they have made one rough leaf, as we then avoid a pot-bound ball, and they have time to take hold of the soil before we pinch for the vines intended to form the main ribs. If one plant only is placed in the centre of each light, four vines, one running to each corner, form the proper complement, whilst double the number of plants can be pinched earlier, as two breaks from each will be found sufficient. When these begin to elongate and white roots creep through the sides of the hills more compost is placed round them, but the final earthing up is deferred until the vines are pinched for the production of fruit-bearing laterals. The remainder of the space is then filled in with pure loam and lime rubble, which cannot be too firmly rammed, especially if lighter than the compost recommended for house Melons. Plenty of heat, moderate ventilation, an abundance of water and atmospheric moisture must now be made the cardinal points, and the better to secure these the linings and night covering must not be neglected. Under high tropical treatment every lateral will produce a female flower, which must be carefully fertilised from day to day until a full crop is secured, and the better to ensure a good "set" syringing and root-watering for a short time may be discontinued. Space being limited, all these laterals must be closely pinched at the first joint beyond the fruit; others at the first joint from the main vines, otherwise the frame will soon become crowded with useless spray to the detriment of the main foliage and fruit, if not the plants themselves, as overcrowding is one of the common causes of canker. I may observe that each plant should be slightly higher than the general level of the bed, as it is not wise to earth up the stems, neither should they be saturated with water. As to training, that is a matter which the grower must decide. Some fill in the back and front spaces with rough

birch or pea sticks to keep the vines a proper distance from the glass, but the best and cheapest contrivance in the long run is a set of portable trellises made of rough laths, for dropping in before the vines begin to run. Upon these they can be neatly trained, and the fruit can be elevated well up to the sun and out of the reach of slugs and other midnight marauders. Unlike hothouse especially pot plants, which sometimes give way under heavy cropping, frame Melons upon manure beds often gain strength in spite of their load, but this disposition to produce laterals must be kept in check by constant pinching to one joint and the careful preservation of every old leaf.

Insects and diseases.—The most prevalent insects are green fly and red spider, but these are not nearly so troublesome in well managed frames as in houses, the moist atmosphere charged with ammonia being antagonistic to them. Still, the plants are always liable to attack, and prevention being better than cure, the weekly puff from Bloxham's patent fumigating machine introduced through a hole bored in the front of the frame will keep fly away. Although very light smoking answers, the frame the following morning should be aired early and slightly shaded from bright sun until the time arrives for syringing. The syringe is, of course, the best implement that can be used against spiders, but the collars of the plants and the vines being slightly elevated, an occasional flooding with warm diluted liquid whilst feeding the swelling fruit will render their position untenable. The only disease to be feared is canker, and this can be checked by rubbing the parts affected with quicklime and sulphur. The most common cause of this disease is want of heat, a too moist, dank atmosphere, crowding about the collars of the plants, and the removal of or injury to the main foliage. A man cannot stand against a subtle enemy in the dark, but having pointed out the predisposing conditions, the fault must be his own if he allows canker to interfere with frame culture.

W. C.

GARDEN FLORA.

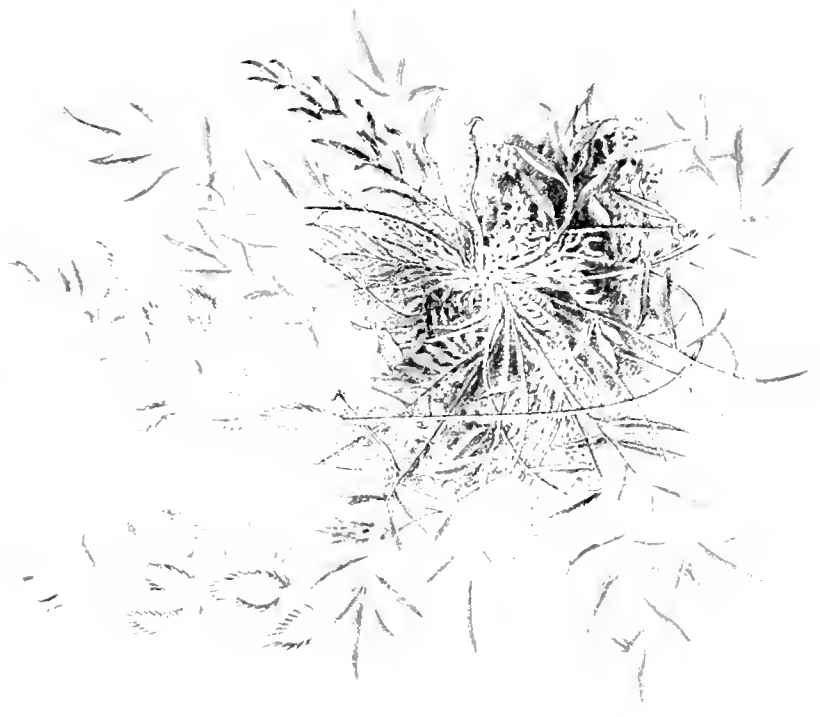
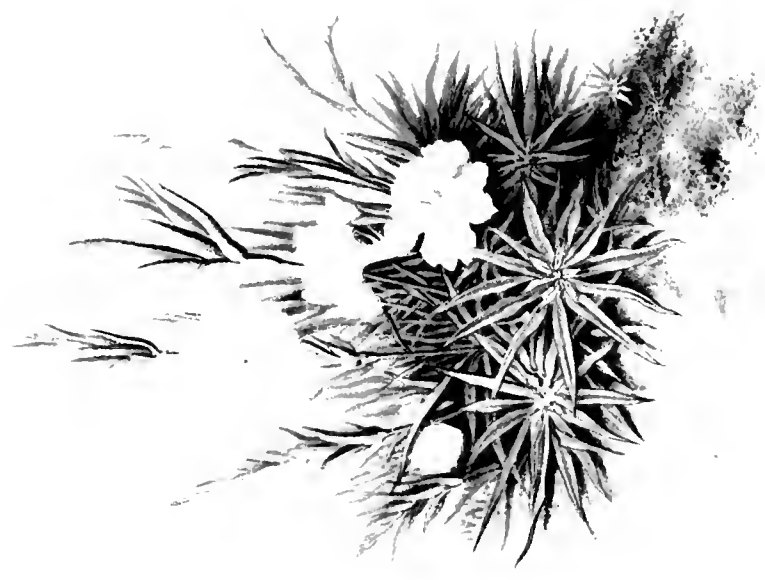
PLATE 592.

OXYTROPIS AND PRICKLY THRIFT.
(WITH PLATE OF O. LAMBERTI AND A. GLUMACEUM.*)

THE genus *Oxytropis* is a very large one, containing something like 100 species, and inhabiting mountain regions in Europe, Asia, and North America, and ranging in the colour of their flowers from violet-purple, rose, yellow, and in some varieties often white. A few are natives of our own country, and these we often see cultivated in our gardens. Being true alpine in their habit of growth, they are most suitable plants for the rock garden, and even the border, when the situation is rendered of a rocky nature by the addition of stones or brick refuse. They seem to thrive best on dryish positions, and we find them more sturdy and floriferous when exposed to the full rays of the sun. The soil in which they are grown should be light and porous, and the roots should have free scope to go downwards, as they often do to a considerable depth. They are increased by seeds or division, the former being by far the best and in the end the most satisfactory. Besides those enumerated, there are in cultivation *O. foetida*, *sulphurea*, *lapponica*, *campestris*, *ochroleuca*, &c.; all are worthy of attention, and are equally beautiful on the rockwork.

O. CYANEA.—With the exception of *O. Lamberti*, none of the others which I have seen as yet equal this handsome species. It has a large, woody root-stock forming many crowns, with stems not quite an inch in height; leaves medium-sized, with small, silky leaflets. The flowers are produced in clusters

* Drawn for THE GARDEN by the late Noel Humphreys in the York Nurseries, and printed by G. Sereyans.



on numerous slender stems, very large in proportion to the size of the plant, deep purple and very striking; the pods are large, inflated, and generally produced in abundance, the flower-heads elongating to a spike when the seeds are ripening. Besides being useful for the rockery or border it makes a most charming little pot plant, and never fails to flower in June and July. A native of Zermatt, Valais, &c.

O. LAMBERTI.—This is the Loco weed of the Americans, and is without doubt the most charming, though perhaps the most variable, of all the species at present known in cultivation. The prevalent colour of the flowers appears to be sky or deep blue, though it varies through all the tints of purple, rose, and yellow, and is also found of a pure white. C. A. Geyer, in a note, says that it is not unusual to meet with it having flowers yellow, rose colour, often white, or with the banner violet-tipped. A plant with such an extreme variation should be a favourite in gardens, especially when its habit and manner of growth suit it so well for rockery cultivation. Though the worthiest and certainly the showiest of the Oxytropis, we have rarely seen it in gardens, unless, indeed, those where only the choicest kinds are grown. This is the more to be wondered at, as the plant is a robust grower, easy to keep in health on the rockery, and increases perhaps faster than any of the others. It stands almost alone among its contemporaries with the long flower-spike, as may be seen in the coloured illustration, the other species generally having round or globose heads of flowers, few elongating to any length, and none to such an extent as this. The leaves, too, even apart from the rare beauty of the flowers, are at all times graceful, of a lively fresh green, showing most prettily in the dense tufts in which it always grows. The pods are also beautiful, smooth, shiny black, and when produced in quantity a source of great interest. It is abundant on the high plains and on the mountains from British America to Mexico, flowering with us in May and June. Introduced about 1819 by Mr. Lambert, whose name it bears.

O. MONTANA is also a charming little species with branched flower-stems in the stronger growing plants; the flower-heads more or less round, deep purple, and very handsome when well grown; the pods are inflated, giving the plant a very striking appearance when in fruit. Alps above Moritz, Tarasp, Grisons, &c.; flowering June and July.

O. PILOSA.—A robust and striking plant growing from 6 inches to 1 foot high; the whole stem elongated, and the flowers on longish stalks, produced from the axils of the leaves, and somewhat resembling those of *O. Lambertii*. Each stem produces from ten to twelve flower-heads 2 inches to 3 inches high, carrying numerous large yellow flowers; leaflets larger and longer than in most of the others, narrow, blunt, and entirely covered, as well as the stem, with long silky hairs. Botzen, Tyrol, &c. June and July.

O. PYRENAICA is a somewhat dwarf species with leaves composed of from twelve to twenty leaflets, concave, and covered with silky hairs. The stems are very short, scarcely rising above the ground, and when very robust rarely exceeding a few inches in height; flowers borne in round heads, each containing from six to fifteen flowers, purplish lilac, and very striking when produced in quantity. Native of the Pyrenees; flowering in early summer.

O. URALENSIS (the Stud flower or purple Oxytropis) is an elegant little plant, rarely exceeding 6 inches in height, and an excellent subject for either the rockery or the border. In the latter position, raised on stones or little mounds, it makes a brave show. On the rockery, where it can get plenty of sunlight, it is beautiful, and when in robust health almost hides the leaves in a profusion of its purple flowers. It has a stout, woolly root-stock; the leaves 2 inches to 4 inches long, and covered with an abundance of soft, silky hairs. The heads contain from six to ten bright purple flowers densely packed. It flowers from the end of May to July, and is a native of dry and rocky pastures in Scotland and Northern Europe. *O. Halleri* is a synonym, under which it is often found in gardens.

ACANTHOLIMONS.

Although there are not more than about three or four of these lovely Statice-like-flowered plants in cultivation at the present time, the number of species known amounts to something like sixty-one, according to Boissier, and Bunge says seventy-four. They are to a large extent, if not wholly, Asiatic, and it is to be regretted that we do not possess a larger number in our gardens, seeing how well the districts where many of them are said to be found have been explored by botanists of late years. The few we already have are quite a unique class of plants among our other alpinists, flowering all through the summer in such profusion as to make them desiderata of every garden, however small, where alpinists are grown. They affect dry rather than damp situations, and to see large plants flowering in the full blaze of the sun is a sight never to be forgotten. Our soil is well filled with broken bricks, &c., and we find this a good medium, as their health testifies; the centre is elevated, and it is a good plan where possible to plant them so that they may overhang clefts or ledges. The species most common in gardens is that figured in the accompanying coloured plate; it is the most beautiful I have yet seen, and is certainly by far the most floriferous. It is a dwarf growing plant, rarely more than a few inches in height, with crowded, short Grass-like foliage, the leaves stiff and armed with sharp spines. The annual shoots bear a tuft of closely imbricated, spreading, and recurved leaves, the older ones generally withering as the growing point advances, which it does very rapidly, the whole quickly forming large tufts of a very pretty appearance. The flower-stems are generally two or three times longer than the leaves, and bear a distichous spike of numerous and charming large rose-coloured flowers. It continues a considerable time in bloom, and is perfectly hardy in the neighbourhood of London, and does not seem to be affected in the least by the smoke. It may be propagated freely from cuttings or layers, simply singling the branches and notching and pegging down as many as may be required. When increased by cuttings they should be placed until rooted in a moderate heat, kept close, and gradually hardened off as they become established. It flowers in June, July, and August, and was cultivated about London as early as 1840. Native of Armenia. Synonym, *Statice Ararati*.

A. ACEROSUM is a rare species, forming dense cushions of stiff leaves, glaucous, and armed with sharp points; it is, however, rather a shy flowerer; flower not so large as the above; rose. July and August. Anatolia, Tauria, &c.

A. ANDROSACEUM is a synonym of *Statice Echinus*, and is nearly allied to the above. *A. Kotschyi*, a handsome species with white flowers, and *A. melananthum* and *A. venustum* are also desirable for rockeries or borders. D. K.

Calcectasia cynea.—This plant is a native of South Australia, and belongs to the Rush family (Juncaceae), a group of plants which is not remarkable for showy flowers. The plant in question is a branching shrub, with small, subulate, sheathing leaves, and large, starry flowers, with a flat, six-lobed, spreading limb of a shining, dazzling blue, with conspicuous yellow stamens; these flowers are produced on short, lateral branches forming a raceme some 9 inches long, the blooms all expanded at the same time. This plant has not yet been introduced to this country in a living state, although the Messrs. Rollisson imported seeds upon several occasions, but never succeeded in growing them; but, judging from the great numbers of Australian and Cape plants which are now flowering with Messrs. Low in their nursery at Enfield, this class of plants would appear to be again coming into

favour with the general public, and the *Calcectasia cynea*, if introduced, would prove a stimulus to the cultivation of these once popular ornaments of our greenhouses.—G.

CHRYSANTHEMUMS.

E. MOLYNEUX.

Now that the weather has so much improved, plants are gaining ground rapidly both in size and healthy character. A want of sun and a continuation of cold easterly winds have tended to make some collections present a sickly appearance. Plants grown for any purpose should now be in cold frames, as being more conducive to that still, short-jointed growth so necessary to the highest success. Abundance of air should be given to them upon all favourable opportunities, although avoiding direct draughts as much as possible by tilting the lights on the opposite side to that from which the wind blows. Careful attention must now be paid to watering, never allowing any of those plants growing in small pots which have not yet had the necessary shifts into larger ones to suffer for want of it. These, owing to the mass of roots they possess, soon become dry, and if allowed to flag for want of water they are apt to lose some of their bottom leaves, which renders the plants unsightly and interferes considerably with their future welfare. Tepid water should also be used, as cold water applied to the roots at this early stage oftentimes renders them sickly in appearance. Continue the potting of all plants in their various stages as required, never allowing any to become pot-bound for any length of time. If possible, those newly potted should be kept a little closer for a time, until the roots have taken hold of the new soil. See that none are overcrowded, but thin out as soon as the leaves touch each other. Those plants intended for the production of large blooms will now require support, as some of the weaker-growing sorts are apt to become bent or broken down by the weight of foliage. This is better effected by attaching a small stake to each. Continue the stopping of the branches of such plants as are grown for specimens, pompous and single varieties included.

SOIL FOR CHRYSANTHEMUMS.

THE preparation of the soil for the final potting into flowering pots of a large collection of Chrysanthemums, no matter for what purpose they are intended, entails a certain amount of time and forethought, particularly when the necessary ingredients are not at hand. It is better to look ahead in this, as in all other matters of detail. Successful results depend much upon the soil used; therefore, any preparations now made will be found an advantage, such as placing soil, &c., under cover, to be sufficiently dry when used; the ordering of bones, or whatever artificial manure is thought best. Soils of a complex nature are often recommended, as if elaborate mixtures necessarily possess extraordinary virtues. Good soil is important, but it is only one element in the case. The effects of the best compost that can possibly be obtained may be completely nullified by errors in watering and general management. The after treatment of the plants is the all-important part to be studied, as these plants have such a short season of growth and so much has to be done in a few months, that they must have every attention. To this end the composition of the soil is not of so much importance as after feeding. The soil, then, while it contains food, must be regarded as a store for additional food which may be required, and given from time to time. It is a mistake to suppose that soil must be prepared and stacked for six or twelve months previous to using it. No absolute rule can be laid down as to what mixture is the best, as soils differ so much in their nature in different parts of the country. I will endeavour to make this part as

clear as I can to suit various localities, just describing the different ingredients used.

Loam, as it is called, is composed of the top spit of an old pasture, cut according to the depth of the fibrous roots of the Grass, in some places 3 inches deep, in others 1½ inches, according to the time the pasture has been laid down. It should be cut some time previous to using, just long enough for the Grass to decay, but preserving the fibrous roots intact. If the turf is light in character and cut from where the land is of a sandy nature, ground oyster shells should be added; but if the turf is taken from a district where chalk and limestone abound, add more charcoal and wood ashes in lieu of oyster shells. Charcoal is of great assistance in keeping the soil in the pots porous and acting as a store-house for ammonia. If the turf is of a retentive character, remove the fine soil, as this prevents a quick passage of the water when applied copiously. Those growers having a rather light soil at disposal are much more favoured than those who have to depend upon soil which is of a clayey nature. When light soil is used the moisture escapes from it quickly; consequently, feeding can be more frequently and safely carried out than in the case of soils of a retentive nature.

Manure is the ingredient second in importance, and must be applied in some form or other. Well decomposed cow manure is often recommended. This is wrong, because what beneficial properties can there possibly be in manure entirely decomposed. It is the same with decomposed botch manure. The violent heat of the mass during fermentation dissipated the ammonia, which, above all things, should be preserved for the benefit of the plants. I do not approve of cow manure in any shape. I consider it most injurious when used with soil of a heavy character, it being too close in nature and far too binding. The best manure is that prepared as if for a Mushroom bed, shaking out more of the straw than would be required for the growth of Mushrooms, and retaining little else but the droppings. It is thus sweetened whilst most of the ammonia is retained. This is the best manure to employ for soils, both of a heavy and a light character. Finely ground bones are better than half-inch bones, as the latter do not give out their manurial properties sufficiently during the short period in which the plants make their final growth and bloom. Dissolved bones are also beneficial when used in proper quantities. Soot is a powerful agent when cautiously applied, but when used excessively it has a most injurious effect upon the plants. I have seen plants which have lost all their leaves and others presenting a very sickly appearance through the misuse of soot. Lime in a quick state is useful for the destruction of worms, and every means should be taken to destroy these. The best time to add lime is when the soil is being prepared for potting; a handful occasionally during the operation is all that is required. The sand used should be coarse and gritty; that which is fine and liable to bind the other materials should be avoided. Clean, coarse silver sand is the best. Leaf mould in a half decayed state is an excellent ingredient to add, more especially in the case of heavy retentive soils, as it is of great assistance in keeping the whole mass porous. I will now give as near as I can the necessary quantity of the materials described. To be precise I purpose taking the two cases in hand—heavy and light soils—giving the details required in each composition. Taking the former kind first, I would advise as follows: Three parts of fibry loam broken up roughly, taking out the fine soil, one part of horse manure, one part of half-decayed leaves, one part of coarse silver sand, one-fourth part of fine ground bones, and the same quantity of dissolved bones, one part of charcoal and wood ashes, the former to be used in a rough state, about the size of small walnuts. Add a 6-inch potful of soot to every 1 bushels of soil. The many kinds of artificial manures are all much better used as a top dressing than for mixing with the soil. Where the loam is light in texture, use four parts as fibry as possible, adding two parts of horse manure, one part of leaf soil, half a part of coarse silver sand, the same quantity of ground oyster shells, half a

part each of finely crushed and dissolved bones, and the same quantity of soot as advised for the heavier soil. Thoroughly incorporate the various parts, using all as roughly as possible. The action of mixing reduces the parts considerably; therefore if the turfy loam and other ingredients be chopped small at first, the mass becomes too fine through frequent turnings. E. M.

KITCHEN GARDEN.

W. WILDSMITH.

RENOVATING A GARDEN BY SUBSOILING.

SOME years ago I well remember attention being called to a system of subsoiling and the good results that sprang from it, then carried out at Woodstock Park, Ireland, by the late Mr. Charles McDonald. Not long since I happened to meet with an old gardener in a country district who had been instrumental in converting an old and worn-out garden into a new one by the process of subsoiling or something similar.

The garden that underwent this transformation was probably 300 years old, and when an old mansion was pulled down and a new one re-built in a different position it was continued as an orchard garden simply, and the new garden being made at a considerable distance from the old one, very little manure found its way to the latter. Everything that it could yield was taken away.

When my informant first saw the old garden it appeared to him a remarkable sight; the many generations of old fruit trees—some of them decayed to the ground—were covered with masses of Lichen and Moss; the smaller branches of the Apple trees were hardly discernible for the Lichens, and it was startling to hear "It used to be a good fruit garden." In looking round for the cause of such phenomena, the tall forest trees on three sides were credited with assisting in such a development of Lichen growth, but there was something that indicated excessive moisture in the soil, and draining was at once commenced, and the digging of the trenches for the drains revealed the state of matters under ground. The natural formation of the garden was found to be a cold clay slate, with an iron pan running at from 1 foot to 2 feet from the surface, rarely exceeding 1 foot in thickness, and under it there was about 3 feet of the loose clay slate, and under that a rocky bottom. The old garden lies on a slope with a fall of nearly 1 foot in 10 feet, and the excess of rain water from a range of higher ground filtered over the pan all the winter. After matured deliberation, the conclusion came to was that no substantial renovation could be achieved without breaking up the inveterate pan, which was so hard that the pick would not break it up, and crow-bars and powder had to be employed. In proceeding with the work one object was kept in view—namely, the production of a new soil to replace the surface soil, which was worn to a black, brittle substance about the consistency of coal ashes. A first trench of 35 yards long and 4 yards wide was made to the depth of 4 feet; as the work proceeded, the cleanest of the small stones were strewn equally over the bottom of the trench in the form of a drain; over these stones were placed small branches of Laurel, &c., to the depth of about a foot, and over the branches a quantity of rubbish and vegetable matter; over this was thrown the top soil of the next trench, and the bottom clay brought to the surface; the depth of each trench was increased until the last was made about 6 feet in depth. When this work was begun, a system of burning part of the clay was put in operation, and was continued for some time after, as opportunity served, for the purpose of supplying potash and other fresh salts to the ground. This, then, is the history of subsoiling the old garden.

Now for the results. It should be stated that the very worst of the old fruit trees were destroyed; some were allowed to stand, some transplanted. The appearance of the trees before the commencement of the work has been described; except a few scraggy Cabbages, no other vegetable would hold in the soil, and such things as Spinach and Parsley could never be gathered fit for use. But afterwards

good crops of vegetables were obtained, and no manure save the burnt material was placed upon the ground for a space of something like six years. Previous to the draining there was rarely one-third of the Apples on the best of the trees fit to keep, or worth putting into the fruit room; but afterwards fair crops of clean fruit were grown. The crops improved in course of time, and the ground became in good condition for planting young fruit trees, which was a necessity.

Here, then, is a proof of the truth of the proposition that soils generally are of inexhaustible fertility if properly turned up and mixed. R. D.

HARDY BROCCOLI.

OUR friend, Mr. Gilbert, has great faith in the crowbar, and never loses an opportunity of extolling its merits for planting out seedlings of various kinds, and in THE GARDEN (p. 309) he seems to imply that if gardeners would only go in for crowbar-planting, there would be plenty of Broccoli in all kinds of seasons. Now, I cannot give much information about this kind of planting, as not one in a hundred of our market growers has such an instrument as a crowbar in their list of garden tools, but, nevertheless, they grow Broccoli to perfection in open fields. And here I can fully agree with Mr. Gilbert on the value of a firm and not over-rich root-ruin for Broccoli, and, above all, an open, sunny aspect, so that the growth may be hard and well matured. It is simply impossible to get such stocky, short-legged plants in close-walled-in gardens, frequently overshadowed by fruit trees, as one gets in the open fields of the market grower, as the private garden too often has to do duty as orchard, flower garden, and kitchen garden combined; while market growers, as a rule, find it best to do one thing well.

Now, with us Broccoli for spring use is not sown or planted nearly so soon as in more northern counties; in fact, when the winter season sets in, a good many of the Broccoli fields look very thinly covered with foliage, as the plants look only half grown and stand out quite clear of each other; but by keeping the surface soil stirred the plants keep on growing gently through the entire winter, unless in such severe seasons as the past, when the soil is hard frozen for weeks. The soil is simply ploughed, and is therefore very firm but a short depth below the surface, and to this fact alone the safety of the field crops of Broccoli is largely due, as even in this comparatively favoured locality the garden crops have suffered heavily. I think we should be doing far more good with Broccoli and many other garden products if we devoted more time to growing the sorts we have got, well, rather than in always hankering after something new; for the idea of any Broccoli of the true white kind standing such a frost as we have had registered in some parts of the kingdom during the past winter, when strongly grown, appears a hopeless task, as they are much harder when treated to full exposure and a rather poor soil. And that good spring Broccoli can be grown in this way, and be quite safe from anything but a frost that gets dangerously close to zero, can be easily verified. Winter or very early spring Broccoli that needs to be fully grown before winter sets in, must, in my opinion, be always liable to great losses from sudden visitations of severe frost. If we have many more winters like the past, I shall predict that the Purple Sprouting Broccoli will be again in great request, as, unless we had put out an extra stock of it last year, our supply of good green vegetables would have been very limited indeed.—J. GROOM, *Gosport*.

— Such is the heading of a short paragraph in your issue of THE GARDEN, April 2 (p. 309). Have your correspondents, "One who Smells Them" and Mr. Record, who also wrote on the subject the previous week (p. 286), ever given Vetch's Model a trial? I have now grown this late spring variety several years, and have never known it fail. With me here in the north it stands the winter well, and I am speaking of two years' experience of it here—both bad winters for Broccoli. The winter before last it was the only one of many varieties grown that stood the winter, and this last season I have

not lost 5 per cent. of my plants. It is a stiff, short-legged variety, and does not make such thick, pithy stems as Broccoli generally does, and one which, if not sown too early and planted on good firm soil, will not fail to stand the winter and give every satisfaction as to quality. Whilst writing on this subject I would like to emphasise some remarks in Mr. Gilbert's letter of April 2. One is, that Broccoli is often sown too early. Here I find the first week in May quite early enough. As to planting on good firm soil, I am quite at one with him, nothing, in my opinion, being so injurious to Broccoli as planting on recently dug or manured ground, conducing as it does to thick, pithy, watery stems, which the first severe frosts will destroy.

H. E. GRIBBLE, *Wynward Park, Stockton-on-Tees.*

It will be good news to most gardeners to read in THE GARDEN (p. 309) that "a hardy Broccoli is not wanted, because we have plenty." There is not one pure Broccoli in existence that is perfectly hardy either at Buzby or anywhere else in England where severe frosts are occasionally experienced, and when the editor asked for a hardy Broccoli he expressed a general-felt want that has been long experienced. Purple Sprouting, Eclipse, and Carter's Champion types are the nearest approaches to a hardy Broccoli we possess, but they are not quite hardy, and the Purple Sprouting, though a good sort and much esteemed by gardeners on account of its productivity, is not liked on account of its colour. If a hardy Broccoli is not wanted, why, pray, has Mr. Gilbert been preaching up his *cross-heads* of that ilk for years on the plea of their hardiness! "Want men to grow Broccoli!" Why, I could produce him cuttings by the score that grow Broccoli of the best quality, and as long as it can be had, Mr. Gilbert's way of making Broccoli stand severe winters must be new even to him, for it is not so long since he sent me heads of his Cabbage Broccoli to cook that he said *were the only vegetables of the kind alive in his garden then*, all the others having been killed by frost, and those sent, though good, were *Cabbages, not Broccoli* at all. J. S. W.

I note Mr. Gilbert's letter on the above in THE GARDEN (p. 309). It only, however, states about half the truth. As one of the first cultivators to insist on a hard soil for Broccoli I endorse all he says of the hardening influence of this on the plants. A hard regimen, arising either from lack of food or looseness of texture, produces a sturdy if not a stunted growth, and thus presents a smaller area to the cold and stronger power of resistance than larger or more lanky plants. A good crown of leaves is also a capital protection for Broccoli stems, but the stems are often safe enough while the crowns are frost-bitten, and sound stems are a poor consolation for rotten hearts. The value of Broccoli rests in its crown, and the frost bites that with equal impartiality whether it be within 6 inches or a yard of the ground. In fact, it not seldom seems that the nearer the ground the harder and sooner they are frozen, though of course dwarf Broccoli has a better chance of being protected with snow. However, the latter, and notably this year, has not saved the Broccoli; the majority of ours were so covered, and all but the Purple Sprouting, as in your own case, have perished. This has been the worst and most destructive winter for Broccoli ever remembered in an experience extending over forty years. Hence, with much feeling, I echo your advice to Mr. Gilbert to give us a hardier Broccoli. They would be more gladly welcomed than his Broccoli Cabbage, which will never become popular, as so many have never yet found out where and when the Cabbage ends and the Broccoli begins. As a Cabbage it is tender, luscious, sweet; but as a Broccoli, well, let us have something hardier, if possible, and with more Broccoli in it. HORTUS.

Not far from here is a large breadth of the late white Broccoli growing in an open, exposed field and in a stiff clay soil. The outer leaves, as is so generally the case, had been killed by frost, but the hearts and stems are sound. The heads will not be large, but the price may in such a season as the present help to recompens in the other direction. Inquiring as to whether this Broccoli was planted

in the hard soil on to another crop, I learnt, so far from that being the case, that it followed upon Cabbage, the soil being well manured and ploughed before planting. The planting was, however, rather later than usual, and that may have conduced to the saving of the crop. Then, again, this old kind may be hardier than are some of the newer sorts. Close by was seen the odd circumstance of about a couple of acres of dark red Wallflowers, the plants very large, but 80 per cent. of which had been killed by the frost, inflicting a very heavy loss indeed on the grower. Then adjoining these were about half an acre of also stout bushy plants, nearly the whole of which were sound. This curious case prompted inquiry, and here I found that the injured stocks were from an autumn sowing in 1885, the plants standing in the seed-bed for the winter, and being planted out in the open ground early in the following year. It is of so much importance to obtain early bloom on the Wallflower, if any profit is to be derived from its culture, that it is often striven to take time by the forelock, though not always with success, as this instance showed. The injured breadth was from a sowing made last spring, and if the plants were neither quite so large nor so early, they were at least safe and sound, and worth twice as much as the whole of the larger breadth. A. D.

MARKET SALES OF GARDEN PRODUCE.

AS most gardeners have now to turn all spare produce into money, or grow crops specially for market, very many of your readers are greatly indebted to you for your most useful and practical article on this subject. The sales that you have succeeded in establishing will no doubt prove useful, and it is high time that something were done in the matter. Some years since I was sending Gardenias to London, and had a penny apiece returned for them. My master was staying in London, and went to the same house and purchased some on one occasion, and was charged 2s. 6d. apiece for his own flowers. The private seller is nowhere as against the salesmen and shopkeepers. The latter mostly give the best prices, but the returns are not seldom slow and uncertain.

Another great grievance is the matter of empties. Useful flower boxes can hardly be had at less than 6d. or 1s. apiece. Biscuit and other boxes used to be cheaper. But now that commercial and agricultural depression have driven so many private growers into the market, all suitable boxes are bought up greedily and the prices have risen; hence the purchase of boxes really becomes a heavy first charge on produce. No matter how carefully you endorse your name and address on them, nor how particular and frequent your instructions, it is hardly possible to get your empties returned. True, after writing perhaps a dozen times, a package of empties is sent. These as often as not consist of a ponderous mass of heavy old soap or other boxes, without tops, utterly and wholly useless, and after paying 2s. or 2s. 6d. for them you discover that they are only fit for firewood, and not one of your nice handy boxes is among them. This is really a serious matter, as the bill for boxes often runs up to several pounds in the year.

I presume the difficulty arises through the selling of the produce in the sender's boxes, and the purchaser keeps them when they are good for anything. A remedy might be found by adding the price of the boxes to their contents, or by selling the contents without the boxes. The latter would probably be impracticable. Possibly the Messrs. Draper, with their great experience, might be able to solve the box problem to the satisfaction of the consignors to their Monday, Wednesday, and Friday's sales. As soon as the box problem is solved, I will contribute to them cut blooms of Niphetos and other Roses and flowers, and probably fruits.

A MARKET VICTIM.

Sea sand.—I am very suspicious about using sea sand for plants, but there is sea sand and sea sand. Had your correspondents, who recommend it for cuttings, procure it from a spot that is frequently covered by the tide, or from

those sand dunes and banks so common on some parts of the coast, and consisting of old beaches now left by the sea or blown sand-hills? I have often tasted the sand on the beach and near it, and found a great difference to exist in respect to its saltness, that from the dunes being practically saltless, while that on the beach and periodically covered by the tide was too salt for pot plants, for it is the salt that makes sea sand dangerous.—S. W.

KITCHEN GARDEN NOTES.

CARROTS. Drying north-easterly winds have been so continuous during the past fortnight, that the ground is in the best form for seed-sowing; hence, though somewhat early, we have sown the main crop of Carrots, James's Intermediate and Long Surley. The ground was deeply trenched, but no fresh manure added, having been well manured for the previous crops, Celery and early Broccoli. The early Carrots sown on a south bank are now well through the soil, and the ground being so dry, hoeing has been done between the rows with a view to destroy weeds and promote rapid growth, that there may be no break in the supply between the frame-grown Carrots and the early open-air crop.

PLANTING ASPARAGUS. Before this last spell of cold weather Asparagus had begun to show through the soil, but 8° of frost and dreadfully cold winds destroyed every bit that showed. There is plenty of underground activity, and with a genial change of weather, cutting will soon be general. As a rule, we do not care to make a new plantation till the roots have got into full activity; that is, till new stems are about an inch long. Though not this yet, but only just forming at the crowns of the plants, the conditions as to soil being favourable, we have transplanted them to form a permanent plot. The ground has been in preparation ever since the autumn, when it was trenched as deep as the sand and gravelly subsoil would admit of, two layers of the best stable manure being put in at that time and the soil left rough, that frost might have the fullest pulverising effect on it; a few weeks since a dressing of salt and soot was given, and afterwards the ground was levelled down by digging it with forks. The planting has been done in lines a yard apart, and 2 feet from plant to plant, and in trenches 6 inches deep, the plants being covered over to the ordinary ground line. If we had manure to spare we should thickly mulch the lines throughout; as it is, a little over the crown of each plant is all they are likely to get, and this is really necessary to keep the plants growing through dry weather, for watering is quite out of the question. To old plantations we have given a second dressing of soot, which is an excellent fertiliser and a sure slug preventer. A small piece of ground has been sown with Asparagus, some of which may possibly be large enough to plant out next year, but it will be two years before the bulk of the plants is ready.

DRILL.—It is now time to make the principal sowing on ground free from fresh manure and that has been deeply dug or trenched. We sow in drills from a foot to 15 inches apart, and thin out to 9 inches. Probably no other kitchen garden crops, whilst in the seedling state, are so tempting to slugs, and to guard against their depredations we scatter soot in the drills with the seeds, and also as soon as the plants emerge from the ground, and we repeat the application as often as necessary till the thinning out of the plants is done, when they are too large for the slugs to have any damaging effect on them. Dell's Crimson is our favourite variety.

FRENCH BEANS.—We have made a small first sowing on a south and well-sheltered border. Sometimes such an early sowing does well; but, as a rule, there is little gained by sowing earlier than the end of the month. Some sow in boxes in warmth, and transplant to open borders as soon as danger from frost is past, but it is a plan not to be commended. A more successful way is to sow in small 3-inch pots, about four seeds in a pot, and plant out as soon as safe without disturbing the ball. This growth goes on without check, and, barring injury from frost, a fortnight or three weeks may be gained over those sown at the earliest date in the ordinary way. Osborn's and Fulmer's Forcing for the earliest, and Canadian Wonder for general crops, are amongst the best varieties. The

two first-named may be sown in rows as near together as 2 feet, but a yard apart is none too much for the last-named, and small twiggy sticks are needed as supports, as it crops so heavily.

POTATOES.—We have completed the planting of all kinds. The distance apart of sets varying from 2 feet by 14 inches in the short-hauling kinds to 3 feet by 2 feet in the strong-growing late kinds. The early kinds planted on south borders are all up, and to prevent injury by frost we keep them well ridged up, and as soon as they get too high for this, a little long litter will be put over them each night when there are indications of frost, and be placed between the rows at all other times, or at least till all danger from frost be past, when it will be cleared away, and the ground be lightened up either by shallow forking or deep hoeing.

HERBS.—Sowings of annual kinds have been made in shallow boxes in warmth, to be presently planted out on any spare bit of ground that has a sunny exposure. The kinds now sown are Sweet and Knotted Marjoram, Borage, Basil, and Chervil; Thyme and Sage we have also sown, as we wish to replace with young plants the old ones that have got woody and crippled by the past two severe winters. Pennyroyal we have lifted, divided, and replanted, and also increased our stock of Farragon by division of the roots. Of Mint, the supply being ample, it was only necessary to clear off decayed stems and weeds and apply a fresh top-dressing of good soil.

GENERAL WORK.—To give plenty of air on all favourable occasions to Potatoes, Carrots, Lettuce, and Radishes in frames; the lights will be quite drawn off in mild, and particularly during mild, showery weather. Carrots are sown so thin, that thinning out of plants is not required, but weeding and stirring of soil between the rows is of prime importance. To plant remainder of Seakale cuttings that have been made from the roots that have been forced, and also to plant the forced Rhubarb roots after dividing them, that we may increase our stock. Thin out Spinach, stake Peas, dig out trenches for Celery, and plant out remainder of autumn-sown Onions that were too small for transplantation when the others were done a few weeks since.

W. W.

BOOKS.

THE CONSULTING ARCHITECT.*

By this rather clumsy title (not the less awkward and incorrect because it is already in use in another profession) the author of the work before us intends an architect who is called in for consultation and advice, as distinguished from one who makes a design and controls the execution of it. "The Advising Architect," one might more fitly name him. Professor Kerr does not, however, limit his book to the evident intention of its title, but expatiates over all matters that concern the architect in any capacity except that of artist. "The Architect as Man of Business" would perhaps be the best title for the volume. We have "sections" on consultation and evidence, arbitration cases, cases of structural damage, questions of easements, questions of ancient lights, questions of support, sanitary cases, leasehold questions, questions of valuation, questions of building, Building Act (London) questions, and on architects' disputes and etiquette. The book is a valuable and unique one, wide in scope and closely compacted of experience (not all of it pleasant!); altogether such as no architect can afford to dispense with, since it has become obtainable. As regards the experience, indeed here and there we detect a half-suppressed bitterness of tone, where the topic reveals to the author's mind some injustice of which he or another has been made victim by the aid of hungry and unscrupulous rivals—"cannibals," justly so named. Written by an architect for architects, "The Consulting Architect" probably does not expect any large number of readers among the general public. The final section, however, which deals at large with architects'

* "The Consulting Architect," by Robert Kerr, Architect. John Murray, London.

services, charges, practice, authority, and so forth, should be perused and considered by everyone who is likely to be concerned with architects and their works. By the greater number of people who employ an architect or "do without" one his labours and qualifications are little understood or appreciated, and will so remain; but those few who are both capable and desirous of being better informed in this respect may there find matter worthy of their contemplation.

W. SIMMONS.

TREES AND SHRUBS.

W. GOLDRING.

THE MANNA ASH.

(FRAXINUS ORNUS.)

THIS is the *Ornus europæa* or Flowering Ash of old writers, and a very handsome tree it is. Considering its great merits as an ornamental tree, it is comparatively neglected by planters at the present day, though years ago, in the tree-planting age, as we might call it, it must have been a great favourite, judging by the many grand old specimens that exist in arboreta and gardens throughout these islands. The list of the fine Flowering Ashes in this country which Loudon gave in his "Arboretum Britannicum," published fifty years ago, would be lengthened considerably were all the large trees that exist now enumerated, for there are few important gardens I have visited that I have not met with remarkable old Flowering Ashes. Old specimens, however, of this tree are not always the most valuable from an ornamental standpoint, for in maturity it is too much like the common Ash. It is when it is half grown, say about 20 feet high and very vigorous, that it is most

Cluster of bloom of Manna Ash (*Fraxinus ornus*).

remarkable as an ornamental tree, for then it has a dense head of luxuriant leafage, and produces in early summer a profusion of feathery clusters of flowers, which being almost white make the tree a conspicuous object and diffuses their fragrance widely. When old it flowers less freely, and its foliage is not so vigorous. It is, in short, a tree not to be lightly esteemed as a lawn tree or a park tree. It is only a medium-sized tree even when fully grown under the most favourable conditions, therefore is suitable for places where space is limited, but it is not advisable to plant it too near a dwelling house, as the perfume of the blossoms is sometimes overpowering. Until it reaches maturity the tree possesses, as a rule, a dense head of regular outline, and is different in aspect from any other species of *Fraxinus*. It is a tree not at all fastidious as regards soil or situation, but, like most other trees, enjoys a sheltered spot and

a deep good soil. Like all the Ashes, it is a surface-feeder, and soon exhausts the soil about it; in fact, it is what one would call a hungry tree, one that should not be planted near any

Foliage of Manna Ash (*Fraxinus ornus*).

choice or weaker growing trees or shrubs. It thrives best and looks best when planted singly, or in a group of three or four on a lawn.

CORNUS MAS.

THIS is amongst the most attractive of all deciduous shrubs just now, by reason of the still leafless branches being thickly studded with clusters of small yellow blossoms. Loudon says, concerning this *Cornus*, that as an ornamental tree the *Cornel* is valuable, not only on account of its early flowering and the fine display made by its ripe fruit, but because it is a low tree, never growing out of bounds, and one which, after it has attained the height of 10 feet or 12 feet, is of slow growth, and of very great duration. To this might also be added the desirable fact that it will succeed in almost any soil, even in light sandy places. The fruit is, when ripe, of a very bright crimson colour, but at times it does not berry freely. There is a variety of this with variegated leaves, known under the name of *elegantissima aurea*, in which the foliage is deeply margined with gold, and the young leaves, when exposed to the sun, become suffused with a pinkish tinge. Another highly ornamental species of *Cornus*, and one whose principal features stand forth more conspicuous during winter than summer, is the Dogwood (*C. alba*), the bright red bark of which forms a very attractive object when the plant is devoid of foliage. It should be planted in such a position that it will be lit up by the rays of the sun, for in winter the effect is greatly heightened thereby, especially if there is a background of Evergreens. When associated with the golden barked Willow (*Salix vitellina*) the two form a beautiful picture on a bright winter's day.

There is a variety of this (*sibirica*) less vigorous than the type, but it is one that must be by no means passed over, for the bark is of a lighter and more vivid red than that of the older kind, added to which that of the young shoots is covered with a lightish bloom, thus stamping it as very distinct. A form of this last has the leaves edged with the clearest white. This must be planted where it will not be too much roasted up during summer, as the dry hot weather is liable to injure the foliage. *C. alba* takes its title from the colour of its fruit, and is also known as *C. stolonifera*. The name of *sanguinea* is often applied to this kind, but the true *sanguinea* is a totally different plant, as the young bark is green, but the decaying leaves are bright red. The flowering Dogwood (*C. florida*) is a very handsome species, but one that is frequently seen in a by no means satisfactory condition. In the United States it takes high rank as

a beautiful flowering tree, and bears a profusion of white flowers in early spring. Another kind, which in a young state, at least, appears likely to bear out its character of being very desirable, is *C. brachypoda*, a native of Japan, and one of Messrs. Veitch's introductions from that country. It is by them described as a handsome deciduous tree, attaining a height of 30 feet, and quite unlike any other *Cornus* in cultivation.

It has an erect trunk, from which the branches grow horizontally, and the secondaries also grow in a similar manner, so that the whole branch has a tabulated appearance. The leaves are bright green above, glaucous below, and die off crimson in autumn. The flowers are produced in June, in cymes as large as those of the common Elder, but of a purer white. The remarkable habit of the tree, its handsome foliage, and the profusion of its white flowers, give it a high rank among ornamental trees for the park or landscape. Now, our specimens, though small, bear out to a certain extent the above description, and their flowering is awaited with interest. There is a variety of this in which the leaves are margined with white.

H. P.

Dwarf Furze (*Ulex nanus*).—This is not so frequently met with as the common kind, but of all

times! Those who have a fancy for more than one colour can use the rose and white-coloured to mix with the crimson. There is this further to be said in favour of the Japan Quince, that scarcely any manner of neglect can spoil its beauty. It can be easily and quickly brought into shape again. It will always retain its beauty, though it may lose its primness by neglect to be pruned. No amount of pruning, however, can ever give it that hard, solid, expressionless surface so common to evergreen hedges. The newer *Cydonia Maulei* is a similar and quite as beautiful shrub for hedges, but the flowers do not display that variety of colouring which the common Japan Quince possesses. One of the finest hedges of Maule's Quince is in Mr. Stevens' garden at Byfleet, where every season it is one of the most beautiful features of the place.—W. G.

Pyrus Maulei—This naturally assumes a neat bushy habit of growth, and as it produces a considerable number of fibrous roots it can readily be lifted from the open ground and potted up for flowering under glass. As this *Pyrus* flowers out of doors very early in the season, little more than protection from frost is necessary to have it in bloom by the beginning of March, and it will last at least a month in flower. Apart from its adaptability for indoor decoration, this is a valuable low-growing



Flowering twig of Manna Ash (*Fraxinus ornus*); full-sized flowers, detached. (See p. 354.)

the wild flowers that bloom in the autumn it is by far the brightest. In its highest state of luxuriance it does not attain more than 1 foot, and in a general way not more than 6 inches in height; it would, therefore, be just the thing for carpeting a dry sunny bank where perhaps but little else would thrive. In woodlands, in a suitable position, this little Furze should have a place, for it blooms early through the dreary and flowerless months of November and December when fairly open and mild. Now is a good time to plant both this and the common Furze, and it is the best season for sowing their seeds if large quantities of seedlings are required for future planting.—W. G.

Hedges of Cydonia—As an ornamental hedge in places where a hedge of the ordinary stamp would be objectionable there is nothing to surpass, if it equal, the Japan Quince (*Cydonia japonica*). There are numbers of deciduous plants that make pretty hedges, but the majority of them are difficult to form and troublesome to keep in good shape and order. The *Cydonia* is almost entirely free from these objections, provided only that young plants be used to start with. What a lovely sight it is when in bloom, and how picturesque at all other

shrub, for it is perfectly hardy, flowers most profusely, and at a time when it is additionally welcome, besides which the comparatively large ruddy-checked fruits form in autumn a most conspicuous feature. Its propagation is of the simplest, for suckers are produced freely enough, and though they may not be rooted when detached from the parent plant they will soon strike if stuck firmly in the open ground. Two or three of my plants pushed up a great quantity of these shoots from below the soil, and being desirous of increasing our stock, I lifted the plants, and with a knife cut off every sucker at its base. Those that were rooted I planted out, and the others were put in a couple of nursery rows, where they all rooted and have now become nice little plants. Besides this, seed-ripen in this country from which young plants can be easily raised.—T.

The Larch as a lawn tree.—Mr. W. Goldring breaks comparatively new and most useful ground in calling attention to the common Larch as an ornamental or lawn tree (p. 310). Your graceful illustration of a young European Larch on the same page gives additional force to his commendatory remarks. We have hardly any tree that is

more strikingly beautiful in all its stages. The soft green of its tender shootlets clothed with its glowing cones, so vividly described by Mr. Goldring, are hardly more beautiful than the brilliancy of its golden hues in early autumn. And yet it is so seldom ornamented with groups or single trees of Larch on lawns or in home woods. Being so generally grown as a nurse or forest tree, the Larch somehow seems to have got removed from the ornamental landscape for the very vulgar reason probably of its being thought too common, and yet we have no tree that will take its place, or provide similar forms, colours, or odours; hence it is to be hoped that Mr. Goldring's timely remarks on its unique beauty and effectiveness may lead to its more general introduction. Not a few landscapes are spoiled by impossible attempts to grow semi-tender and comparatively rare trees that might be furnished with rich arboreal beauty through the planting of such common trees as the Larch, the Scotch and Douglas Firs, the Birch, Lime, &c. May I venture to recommend to Mr. Goldring the Lady of the Wood, or Birch, in its many forms as a companion tree in the landscape to the Larch? Groups, or groves, or even single trees of Birch are at once exquisite in grace and fragrance; while the stems of the Silver Birch add a brightness and beauty to garden scenery that no other tree can impart, and yet the Birch is almost less used than the Larch in the formation of landscapes.—D. F. F.

TWO EARLY WALL SHRUBS.

CONSIDERING the extreme beauty and floriferousness of *Ribes speciosum*, the most brilliant and the best of all the flowering Currants, it is surprising it is so seldom planted on walls. Many years ago I remember being so struck with a large plant of this in flower on a farmhouse in the early spring, that I turned off the public road for some distance to verify its identity. It can hardly be surpassed in brilliancy of colouring and profusion of its graceful racemes of drooping blooms; whilst the tender Currant-like leaves, which almost run abreast with the blossoms in this fine variety, are of the softest and most pleasing hues in the early spring-time, and remain clean and beautiful throughout the season. A large panel or piece of a wall so furnished gives new life and beauty and peculiar brilliancy to the spring-tide. Placed side by side or between the plants of the early yellow *Jasminum nudiflorum*, the effect is still more rich and beautiful. Both may become yet more artistic if the two plants are allowed to overlap or intermix somewhat the two colours, each contributing to enhance each other's beauty. It is a somewhat singular coincidence that just as the beautiful flowering Currant is grown on the wall, so this hardiest and most showy of all the Jasmynes is seldom or never found on it. But throughout the whole of Ireland and the milder parts of England this golden Jasmine is hardy in the sheltered shrubbery or home woods, and as on walls, so in the foreground of shrubberies, the two plants go admirably together.

Every planter of experience is familiar with the charming habits of most of the *Ribes*. All they need is room and to be let alone to grow into fine bushes of matchless symmetry and exceptional grace. It is very different with the Jasmine. It is a trailing plant, though not exactly a climber, for if left to itself it will form a huge mass of almost any desired area. But so treated, it is readily knocked about by high winds or borne down almost flat with the ground by heavy falls of snow.

To avoid this, the simplest way is to furnish each plant with a stout stake from 2 feet to 1 yard high when planted. This imparts stability to its centre, and beyond this almost any sort of pruning or training, or no sort of either may be adopted. In general, the less of either, the more effective and strikingly beautiful the Jasmine becomes as a shrub. Another simple and striking way of treating these plants is to plant them together and allow the Jasmine to grow up with and among the *Ribes*. In this case it will be needful to interfere somewhat vigorously to prevent the Jasmine overrunning too much and too far the *Ribes*. It is easy for the eye of taste and the hand of skill so to adjust the balance

of crimson and golden as to make the contrasted combination as perfect as may be.

There is yet another admirable method of combining these two plants. In shrubberies liberally furnished with this fine Ribes or the more common species *R. sanguineum*, plant a good many golden Jasmines against the stems of deciduous trees or among masses of scrambling or climbing Briers or Roses, train the Jasmine lightly to these, and allow it to scramble down to meet or partially overrun the Ribes. The effect will be as rich and pleasing as any that the entire season affords, and it is one that may be enjoyed by almost every possessor of a garden, as hardly any two plants can be more plentiful and cheap than these two delightful hard-bingers and substantial enrichers of our shrubberies and woods in the springtime. D. T. F.

THE FRAGRANCE OF THE DOUGLAS SPRUCE.

WHILE "W. G." gives almost an exhaustive list of the merits of this useful and handsome tree, he omits to name its sweet and pleasant fragrance. Its branches, merely handled or slightly squeezed in the hands, emit an odour at once pleasing and sanitary; few branchlets are more welcome in sick or sleeping rooms to those who are in the secret of its refreshing fragrance. As they fade, and before the needles fall they may be burned in the grate or on a hot shovel, and medical men who have had experience of this Spruce as a febrifuge are sure to ask for it again. A few plants are worth growing in small gardens for their fragrance only. Permit me to endorse "W. G.'s" views about the great superiority of the glaucous variety of the Douglas Spruce. The paler the strain, the worse and the weaker; the more verdant and semi-glaucous, the more rapid the growth and robust the health of this fine Spruce. It is the existence of these two or more varieties that has originated and sustained the great variety of opinion about this fine tree. In some localities one meets with few of the viridis type; and in such, be the soil or shelter what it may, the Douglas Spruce is more or less sickly and stunted. The trees are mostly thin of foliage and branchlets, and have a sickly hue.

While experience with this fine Spruce in widely differing localities leads me to endorse all that "W. G." so well says upon the need of considerable shelter and good soil to its rapid growth, I would nevertheless emphasise even more than he does the necessity of starting with the verdant variety if success is to be reached in the growth of this Spruce for timber. Side by side with the common Spruce it beats it a long way in speed, while the timber is altogether cleaner, easier worked, and hence more valuable. It is also said to be equally durable, though here possibly the ratio of growth may come in as a disturbing force. Probably the fastest grown Douglas Spruce from the bottom of a fat valley may not yield such durable timber as that grown more slowly on poorer soils and in more exposed localities. HORRUS.

Magnolia Campbelli. In THE GARDEN March 19 (p. 280) "T. B." speaks of this Magnolia as a beautiful white-flowered kind, suitable for the back wall of a conservatory, and further states it is a native of China. *Magnolia Campbelli* is a native of the Himalayas, and is in this country so shy flowering, that it cannot be the plant intended. All tree-lovers were for many years anticipating with interest the blooming of *M. Campbelli*, for it was described by Sir Joseph Hooker in its native country as flowering abundantly in April, at the end of all the branches, when the tree is as yet perfectly leafless, the blooms varying in colour from white to deep rose, or almost crimson, and in size from 6 inches to 10 inches, the scent being faint. The first and, so far as I know, the only place it has flowered in Great Britain is in the gardens of Mr. W. Crawford, Lakelands, near Cork, where it bloomed in 1881, when a drawing of it was made for the *Botanical Magazine*. If "T. B.'s" plant is really *M. Campbelli*, many of your readers will, I am sure, be pleased to hear of its flowering, but I strongly

suspect there has been a mistake, and perhaps "T. B." will enlighten us on that point. The description of a deciduous kind with white flowers, and a native of China, will apply to the Yulan (*M. conspicua*), but it is quite a hardy tree, though the blooms from their earliness are occasionally injured by late spring frosts. H. P.

ROSE GARDEN.

T. W. GIRDLESTONE.

ROSE-GROWING IN AMERICA.

IT is most satisfactory to feel that a mere touch of Rose lore or love makes all men and nations kin. Difference of race, country, nationality, vanish as we meet among and feel we are all but one family among the Roses. One of the chief charms of Mr. Falconer's notes is the home-like character of his cultural instructions, and the home ring of the names of his Roses singled out for special praise. With the two exceptions of *Bon Silene* and *American Beauty*, most of his favourites are also ours. America being a big country, full of big things, it is only natural to expect that size in Roses should score more points there than in our tight little island. But there is small exception to be taken to Mr. De Forest's selection on this head, unless, perhaps, in regard to Paul Neyron. But there is more to be said in favour of this giant than has yet been said on this side the big pond. Even with us there is a great difference between Paul Neyron at midsummer and in the autumn. At the latter season it loses much of its size and nearly all its coarseness, and is in many gardens in great request for autumnal cuttings. Under glass Paul Neyron becomes yet more refined alike in form and colour. Forced yet earlier, as it seems to be by Mr. De Forest, it is easy to understand its becoming popular for other qualities besides its mere size. It is refreshing also to find such an old favourite as *General Jacqueminot* still held worthy to rank among the most valuable Roses for forcing in America. This fine old Rose has greatly degenerated of late years at home, or possibly it would be more true to say that its cultivation has been given up for that of newer Roses of less merit either in constitution, continuous bloom, or brilliancy of colour. As to *General Jacqueminot*, it may have equals, but can never be eclipsed. And that how home-like are most of the other names—*La France*, *Niphetos*, the two *Mermets*, *Captain Christy*, *Madame Gabriel Luizet*, and *Magenta Charta*, the latter of which Mr. Falconer seems to run abreast with Paul Neyron as approximating to it in size and contrasting well with it in colour. *Catherine Mermet* and its white sport *The Bride* seem the most extensively grown. It is remarked incidentally that *Niphetos* is not grown on its own roots, without any information being given as to the stock used. My experience with this fine Rose is that few or no Roses need a stock less, as it grows freely indoors and vigorously in warm sheltered nooks and corners out of doors on its own roots.

It must be confessed that it is a serious disappointment to us Britishers that *Her Majesty*, even under the fostering conditions provided for it by Mr. De Forest, has not yet become, but is still waiting for more porous soil to make it supremely beautiful. We trust the new and lighter treatment will restore *Her Majesty* to her pristine splendour in this her jubilee year. Mr. De Forest's compost, liquid and solid dressing, and general treatment seem all eminently calculated to bring forth those brilliant results Mr. Falconer has so vividly described, and in which rosariums on both sides of the Atlantic rejoice in common. As to reaping the almost harvest of flowers from maidens rather than cut-backs, it is doubtful whether this experience coincides with that of the majority of Rose growers in this country. By the way, one is tempted to inquire, what becomes of the maidens? Surely they cannot be sacrificed; as after one year's rich fostering under such strengthening conditions they must be splendid stuff for a second venture or out-of-door furnishing. Mr. Falconer's list can hardly be termed exhaustive, as otherwise the omission of our

favourite golden or fawn-coloured Roses, such as *Maréchal Niel*, *Céline Forestier*, *Triomphe de Rennes*, *Lamarque*, *Gloire de Dijon*, *Ophirie*, *Mdme. Welch*, &c., seems strange. It can hardly be that *Maréchal Niel* is not grown on account of its large size by a nation in which Paul Neyron is popular; neither can it well be that such lovely pink Teas as *President* and *Souvenir d'un Ami*, or such exquisite creamy whites as *Souvenir d'Elise Varden*, *Marie Van Houtte*, *Mdme. Bravy*, *Innocente Birola*, to say nothing of *Devoniensis*, are not grown by Mr. De Forest. Many other fine and brilliant Roses do not seem to be grown largely or at all by this successful cultivator under glass. It would be interesting to know if difference of climate greatly affects the character, beauty, or usefulness of the following Roses in America: *Alfred Colomb*, *Beauty of Waltham*, *Baroness Rothschild*, *Boule de Neige*, *Charles Lefebvre*, *Dr. Andry*, *Duke of Edinburgh*, *Edouard Morren*, *John Hopper*, *Jules Margottin*, *Mdme. Victor Verdier*, *Marchal Vaillant*, *Marie Baumann*, *Marie Rady*, *Prince Camille de Rohan*, *Senateur Vaisse*, and *Victor Verdier*. It will be seen that these are rather representatives of classes of Roses than an exhaustive list of the best varieties; and any particulars of their doings in the open or under glass in America will be welcomed by all your Rose readers. D. T. F.

A never-failing Rose.—This term may be justly applied to *Gloire de Dijon*. We grow it against walls and as standards in the open air, and in various positions under glass, and it never fails to bloom freely everywhere at the right time. One plant under glass is very old, and I have cut thousands of blooms of it in past years, and now it flowers as freely as ever. It is the alpha and omega of Roses. Its qualities cannot be overpraised, as it grows so freely and blooms so profusely without any particular care. I cannot imagine any garden being without it, and I can advise its universal culture without fear of a mistake being made in growing it. —CAMBRIAN.

Pruning Roses.—It is stated in THE GARDEN (p. 275) that "the objection generally urged against late pruning is that the plants bleed so much more than when pruned before any material growth has been made at the ends of the shoots." May I ask what authority on Rose culture has urged this plea? I am curious because, so far as my experience goes, the Rose does not bleed to any appreciable extent. One understands what bleeding means in the case of the Vine or in a tree like the Sycamore, from which the sap literally runs, but who ever saw a Rose bleeding freely; and if it does not bleed, why discuss the subject in relation to pruning? Why some plants bleed so much more than others is a mystery, and it is well to bear in mind the fact that some plants do bleed to their injury, but they are the exception instead of the rule, fortunately.—J. S.

Mulching Roses.—If the present low rate of rainfall continues, all Roses will be greatly benefited by having a mulch laid on the surface over the roots. Especially is this necessary in the case of newly-planted Roses whose roots have not had time to get a good hold of the soil, and nothing is equal to half-rotten cow manure. To be of any benefit to the plants, it requires to be laid to a depth of 3 inches, and when the plants are in beds the whole of the surface should be covered with the manure. Single plants growing in the form of standards or bushes should have the ground covered 18 inches from the stem all round; where the ground round the plants has been much trodden, the surface should be stirred up a little before the mulching is put on. In dry, sandy soils the short Grass may be used for mulching if there is no manure available. As this quickly dries up fresh applications will be necessary at intervals of two or three weeks.—J. C. C.

Ensuring flowers on Marechal Niel Rose.—There are many *Maréchal Niel* Roses grown, but all do not flower freely. The reverse is almost the rule, and in many cases a plant which produced a fine lot of blooms last year will only bear a few this season. As an instance of the kind, I may say

that at Easter, 1886, we had a *Maréchal Niel* which produced scores of grand blooms, but the results at Easter, 1887, were almost nil, and yet the plant is as bulky and quite as healthy, but the wood is quite different in character. The plant in 1886 was mainly composed of long, thick shoots, which were produced and matured the previous year. These burst into growth at every eye, and each of the shoots produced a flower. This was satisfactory, but in the summer of 1886 a few very long strong growths were formed, the wood only developing into a great number of small branches, and it is these which are now failing to flower freely or produce large blooms. In the future we will take care that these small growths be cut off early in the season, and only long shoots will be encouraged to grow and mature, when they will develop fine blooms, as was the case in 1886, and by securing these robust growths annually, free blooming will be the invariable result. — CAMBRIAN.

HEATING BY STEAM IN AMERICA.

If what Mr. William Falconer says in his deeply interesting article from the *American Florist* in THE GARDEN (p. 207) concerning the economy of steam heating can be confirmed, then we in this country have been advancing backwards for many years, and must once more return to the use of steam. Were the difference one of a trifling percentage the matter might be of little moment, but when it becomes a matter of saving almost half the coal consumed, the question of economy between steam and hot water must needs be fought over again. Nothing can be more positive than Mr. Falconer's statement. Eight tons of coal in the steam-heaters give the same results as fourteen in the hot-water apparatus. Assuming that the quality and price of the coals used for both are alike, we have had no statement advanced of such superlative horticultural importance for years. For coal being the most costly factor in producing horticultural produce out of season, it follows that if the quantity can be thus reduced, producers and consumers alike must share in the benefits, and the science and practice of horticulture receive a new and powerful stimulus.

Before forming a correct judgment on the matter, further information must be had as to the exact nature and character of the steam-heaters and the hot-water apparatus pitted against each other by Mr. De Forest. Possibly Mr. Falconer or the *American Florist* will kindly furnish full details and plans of both. Are each the best and most economical of their kind? It is the more needful to be assured on this point, for even among hot-water apparatus it is no uncommon thing to find some that will do equal or even more work with half the fuel as others.

The sources of waste are too numerous to mention, and only one will be named at present — boiler setting. The waste of coal cast into this great gulf every year is probably equal to that which sustains our semi-tropical climates under glass in spite of wind and weather. Ignorant stoking also wastes its thousands of tons of coal a day. But I will not dwell on those points. My great object is to obtain further information as to this fuel-saving steam-heater used in Mr. De Forest's huge Rose nursery across the Atlantic.

It may very well be that what Mr. Falconer says is perfectly true. A good many horticulturists in this country are of opinion that steam-heating never had a fair trial here. Steam as a source of heat, as well as a motive power, was almost in its infancy when it was ushered into our hothouses. Little or nothing was known then of the economical production or use of steam. The science of the evolution and economical application of so much calorific or motive power from each pound of fuel had hardly been discovered. No one conversant with the use of coal in horticulture can affirm that the science of scientific economy in its use has yet been perfected. Every day almost more driving, lighting, or heating force is got out of our coal for manufacturing or commercial purposes. But it must be admitted that our coal-saving expedients in horticultural heating

are still far behind those employed for trade and commercial purposes.

This brings me to the following probable explanation of Mr. Falconer's facts. Possibly the steam-heater is the last and best thing out of its class furnished with all the fuel-saving, heat-concentrating, and economising appliances discovered by the latest science, and used by the most advanced practice. Further, it is just possible that this latest and best steam-heater is pitted against an antiquated and wasteful hot-water apparatus. If the two are thus inequally matched, there is nothing wonderful in the facts recorded. But if both are the best of their kind, and the consumption of fuel is as eight to fourteen in favour of steam, then, indeed, are we on the eve of a great revolution, or rather retrogression, in our modes of heating. No one need fear any injuries through the adoption of Mr. De Forest's steam-heaters, as steam-heat, though of a higher temperature, is, as everybody knows, as pure as that from hot water. We want, first of all, plans and descriptions of these steam-heaters, and as soon as practicable a few of them in operation at our great shows in London, Manchester, Edinburgh, and other large towns. If reasonably cheap, and as economical as stated, their introduction here will mark a new era of greater wealth and enlarged prosperity to British horticulture.

D. T. FISL.

FERNS.

W. H. GOWER.

CLUB MOSSES.

(LYCOPODIUMS.)

THIS division of the Lycopods contains many plants of great beauty totally distinct in character from the Selaginellas. They have been much neglected by plant growers, and consequently have gradually become scarce. On a recent visit to Kew, however, we observed numerous examples thriving in the Fern house there. These plants are well deserving the notice of those forming a collection of Ferns and their allies. Amongst the beautiful tropical kinds now growing at Kew may be noted *L. verticillatum* (a native of the Mascarene Islands), which is a stout-growing plant, with branching, pendent stems, densely clothed with linear lanceolate dark green leaves, arranged in whorls. *L. phlegmaria* is a handsome species of quite a different type of beauty; its stems are much branched, from 1 foot to 2 feet long, bearing numerous shining, bright green, cordate leaves, the ends of the stems ornamented with long, many-branched, pendulous tassels of catkin-like sporangia. It appears to be abundant in the Fiji and Philippine Islands, and also found in the northern parts of Queensland and various other places. *L. phyllanthum*, from Tropical Asia, is a similar plant, but somewhat more robust in all its parts. *L. taxifolium*, from Jamaica and various others of the adjacent islands, is a stout, pendulous plant, growing a foot or more in length, the stems being abundantly furnished with bright green acuminate leaves; the sporangia are not produced in tassels at the ends of the shoots, but are situated at the bases of the upper leaves. *L. squarrosum* grows to 3 feet or 4 feet in length, its stout, forked stems being clothed with large, linear-lanceolate, deep green leaves, the points of the shoots ornamented with pendent spikes of sporangia. It is a native of the Polynesian Islands. *L. dichotomum*, from Brazil, and *L. gnidioides*, from the Cape, are thriving well in this collection. Various other species were recently to be found in the principal London nurseries, notably *L. ruscifolium*, introduced from Borneo, by Mr. Low, of Clapton; it has slender, red stems, which are much ramified, sparingly clothed with shining, dark green leaves, somewhat cordate

at the base, tapering to a sharp point. *L. laterale* is another interesting plant, introduced from New Zealand by the Messrs. Veitch, of Chelsea. It is erect in growth, with slender, much-branched, terete stems, densely clothed with slightly spreading linear, sharp-pointed leaves of a bright green. Several species have also been introduced by the Messrs. Jackson, of Kingston, the most noteworthy being *L. Hookeri*, from the East Indian Islands, a bold and handsome form, resembling a gigantic *L. phlegmaria*, the stems are stout, branched, some 2 feet or 3 feet in length, with large, flat, lanceolate-acuminate leaves of a bright shining green; whilst its pendulous tassels of sporangia are from 4 inches to 6 inches long. *L. linifolium* is a native of the West Indian Islands, and is also found in Venezuela on trees at an altitude of 5000 feet to 6000 feet. It has long, slender, much-divided stems, with linear-lanceolate, shining, bright green leaves. The pretty little, erect-growing *L. uliginosum*, from Australia, thrives admirably in Wardian cases. Lycopodiums were great favourites with the Messrs. Rollisson, of Tooting, also, who introduced numerous species, of which we may mention *L. serratum*, from the neighbourhood of Yokohama, in Japan. Its stems are about a foot high, once or twice forked, profusely clothed with flat, ovate-lanceolate bright green leaves, which are stalked and serrate on the edges. *L. aloifolium*, from the Neilgherry Hills, is a remarkable plant, 12 inches or 18 inches long. The stems are stout, branched, and densely clothed with broad, obtuse, dark green leaves nearly half-an-inch long. *L. reflexum*, introduced from Merida, where it was found upon trees at an altitude of 6000 feet to 7000 feet, is a very handsome species, some 12 inches or 18 inches long, the stout stems thickly clothed with long, linear, reflexed, dark green leaves. This plant enjoys heavy shade. *L. dendroideum*, a species from North America, which is perfectly hardy in this country, and which gives a pleasing variety to the open-air fernery, may be likened to a miniature Fir tree. *L. densum*, from New Zealand, grows about a foot high, its numerous and many-branched stems being clothed with closely-set, short imbricating leaves, the plant resembling a miniature Juniper. Mr. Williams, of Holloway, must be credited with the introduction of some few species, the most notable of which are *L. cernuum*, *scariosum*, and *L. volubile*. The first is a plant widely distributed in the Tropics, but although a plant with so wide a range it does not differ much in anything except in the height. The stems are woody and much branched, furnished with small, linear, needle-like, pale green leaves, the tips of all the branches ornamented with a small, pendulous, hairy, cone-like catkin containing the sporangia. This plant is said to grow upon limestone rocks. *L. scariosum* is a beautiful plant that should be well known in Fern collections by this time; it is found on the mountains of Jamaica, and is common in the woods which clothe the mountains in the northern island of New Zealand, and also occurs in similar situations in the Andes of South America. It grows from 1 foot to 2 feet high, branches spreading and leafy, leaves alternate-lanceolate, winged to the stem, and soft pale green; the spikes bearing the sporangia are erect, cylindrical, some 3 inches long, the ends of the bracts turned back (revolute). *L. volubile* is also a native of New Zealand and various islands in the Pacific Ocean; its leaves are somewhat similar to the last-named species, but the sporangia are borne in short catkin-like tassels on separate branches, and the plant, moreover, is scandent, ultimately becoming a lofty climber.

The cultivation of Club Mosses has not hitherto been attended with a great amount of success, and hence, notwithstanding their extreme beauty, they have been somewhat neglected, and many kinds once grown in this country have been lost. These plants appear to suffer greatly by removal from their native haunts, the check they receive through having their roots torn and lacerated proving fatal in most instances. This source of failure, however, could be to a great extent remedied by sending them home upon portions of the material on which they are found, thus avoiding any disturbance to the roots. In the case of epiphytal kinds, these should always be suspended in baskets, the drainage free and open, and the soil used should be in the shape of knobs of spongy peat, and mixed with a little Sphagnum Moss. The terrestrial kinds should be placed in well drained pots or pans, and potted in the same compost, to which may be added with advantage some sharp sand and a few nodules of charcoal, for although they enjoy an abundant supply of water, they ought never to become saturated. In the treatment of these plants the cultivator often errs in placing them in too high a temperature; some few species, however, require the heat of an East Indian house, but nearly all the epiphytal kinds grow at as great an elevation, and oftentimes associated with *Odontoglossums*. This in some measure should be a guide as to their requirements.

ORCHIDS.

W. H. GOWER.

ORCHIDS IN THE HOUSE.

THAT Orchids may be grown and flowered in a satisfactory manner by those who do not possess glass houses was strikingly exemplified

did not receive much sunshine were two large Wardian cases, one being filled with a pretty collection of Filmy Ferns, the Killarney Fern (*Trichomanes radicans*) being specially notable, and the other contained numerous Orchids, many of which were flowering; these also had been established a little over two years. They had been purchased as established plants (not newly imported pieces), and the cheap kinds had been selected to try the experiment. The interior of the case had been fitted up with virgin



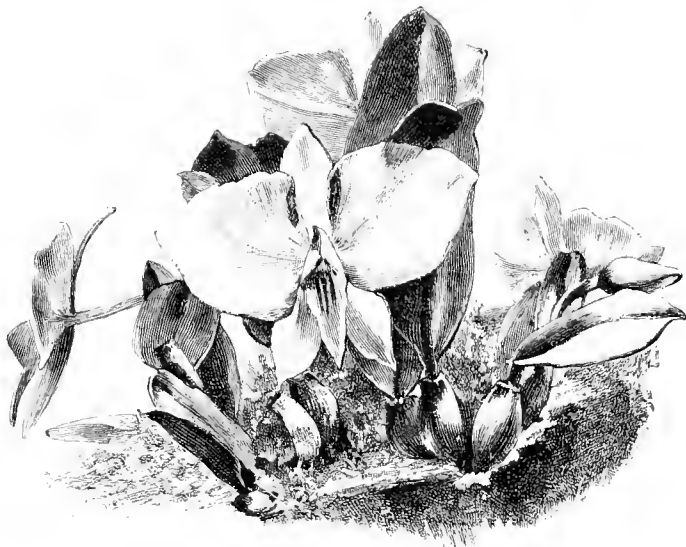
Sphronitis grandiflora growing on cork.

cork to represent a rough, rocky boulder with many cavities, these cavities or pockets being filled in with a mixture of fibrous peat, Sphagnum Moss, and nodules of charcoal of different sizes, and in which the plants were placed. The whole had been surfaced with live Sphagnum Moss, and judiciously planted with several kinds of the creeping Selaginellas, the effect produced being truly charming. This style of Orchid growing should not be overlooked by dwellers in towns, for nothing appears to be

one or two seasons' growth in this country, as newly-imported plants are by no means ornamental, and oftentimes require considerable care to establish. The species flowering in the case in question at the time of our visit were *Odontoglossum Rossi majus*, *O. Lindleyanum*, *Oncidium cucullatum*, *Masdevallia ignea*, *Sophronitis grandiflora* (which is well illustrated in the accompanying cuts), and *S. cernua*; whilst *Odontoglossum Alexandrae* (*crispum*) and *roseum* were just pushing up a spike each; so also were *Cypripedium insigne* and *Ada aurantiaca*. *Epidendrum vitellinum* and *Cypripedium venustum* appeared quite happy in their situation, but were not flowering. Several examples of these twelve kinds were dotted about, and all appeared to be in a thriving condition. This system has been adopted by one who formerly possessed glass-houses, and a nice collection of Orchids which were grown by himself, so that a certain amount of knowledge as to the best kinds to select and of their requirements was brought to bear upon the experiments at starting. The plants growing in shallow baskets in the south window were *Lycaste Skinneri*, *Oncidium tigrinum*, *Laelia anceps*, *L. albida* (the three latter flowering), *Lycaste aromatica*, and *Cattleya Harrisoniana*. These plants were suspended outside the window in the open air in the summer, sometimes when a soft warm shower was falling and sometimes during the bright sunshine, but they had never remained in the open through the night. The plants all appeared to be in fairly good condition, and we shall be curious to watch their progress. One great want to render the growth of such plants in the house agreeable is a hanging basket that will prevent drip.

Orchids at Welham Hall.—There may now be seen at Welham Hall, the residence of Mr. W. Birks, a very fine collection of Orchids. *Dendrobium Wardianum* and the albino variety are flowering very freely, as also *D. crassinode*. The *Phalaenopsis* are also well done. Some fine forms of *Cattleya Trianae* are grown, and the choicest varieties of *Odontoglossum Alexandrae* and *vexillarium*. The plants are all in rude health.—F. C.

Cœlogyne cristata.—I am glad to see further remarks on this subject, as it is only by comparing notes that we can get at the real truth. When I first wrote about it it was to take exception to some remarks which stated that it would succeed well in a cool greenhouse. There is considerable difference between this and a cool Orchid house. Where *Masdevallias* are usually grown in winter the temperature is not materially different from that of the cooler *Cattleya* temperature—50° as a minimum. Mr. Vicary states that his plants were grown with *Masdevallias*, but does not give temperatures. His remarks are of no practical value because of this. The East India house is too warm. When he states that the plants were shifted from the *Masdevallia* house into warmer quarters, viz., the back stage of one of the lean-to houses, no one can tell what the temperature was; it might be too warm, which would be a greater evil than too cool. Again, the back stage of a lean-to house, probably a long distance from the glass, where they would not get sufficient ventilation, is the worst possible position for them. The remarks by "C. R." come under the same category; he saw "a batch . . . grown under what might be termed cool treatment, as heat was only applied in cold or dull weather." He says nothing about the nature of the other occupants of the house, nor does he give the winter minimum temperatures. Applying heat in cold weather necessitates



Sphronitis grandiflora (natural size).

recently when visiting a gentleman's residence in the suburbs of London, where *Laelia anceps* and *L. albida* were flowering in a sunny window of a sitting-room. These plants were not recently purchased from a nursery, but had occupied the same position for two years, saving an occasional removal to the open air on genial days in the summer months. In the recess of a window on the opposite side of the room which

more easy of accomplishment than to obtain and maintain a good display of these showy and popular flowers if the kinds are carefully selected. The taste for these plants may, moreover, be indulged in by those of limited means, as the majority of the varieties suitable for this purpose may be purchased for a few shillings each. It is necessary, however, to commence with established plants, that is to say, plants that have made

its application all through the winter. No heat is necessary during summer, even for Cattleyas. My contention is this: *C. cristata* will not thrive in a cool greenhouse at all. It will grow and flower in an ordinary cool Orchid house, and all the better if the house is span-roofed and well exposed to the sun. The East India house is too hot. The best place is the Cattleya house, with a winter temperature of 50° to 55°; summer temperature, 55° to 60°—minimum, of course. If the cool-house temperature comes near these figures, I have no doubt the *Celogynes* will succeed remarkably well.—J. DOUGLAS.

Dendrobium fimbriatum. This is one of the easiest cultivated plants in the whole Orchid family. We have half-a-dozen plants of various sizes crowded with spikes. None of them ever fail to flower freely. The treatment is this: when the plants have passed out of bloom we place them in a high temperature, say, 65° at night, shutting up the house with sun-heat until the temperature reaches 90° to 100°. The plants may be repotted at this time, if it is necessary to do so. Fill the pots half full of drainage. The potting soil should be turfy peat and Sphagnum in equal proportions, with some potsherds and charcoal to keep it open; we press the potting soil in moderately firm. The plants will make roots freely and grow with great vigour all through the summer and early autumn months. When growth is completed, gradually reduce the water and give none at all in winter, unless the stems are showing signs of shrivelling, when enough must be applied to prevent this. I do not keep them very cool in winter; they are placed in a light position in the Cattleya house. I ought to have stated that when making their growth they are not shaded much, only sufficient to prevent scorching. They produce their flowers in the Cattleya house.—J. D.

Angræcum citratum.—This is a small free-growing plant, introduced from Madagascar about twenty years ago. For a long time it was very scarce in this country. In growth it resembles somewhat the habit of a small *Phalenopsis*, such as *P. rosea*. It should be grown upon a block of wood, or in a small basket, and be kept well exposed to the light, but shaded from the influence of the burning sun. The spike is pendulous, 9 to 12 inches long, and bears fifteen to thirty flowers; these are flat, slightly less than an inch across, arranged in a two-ranked manner, and closely set together. The colour is pale citron-yellow, and in some varieties almost white; the lip is furnished with a long flexuous spur. This *Angræcum* is a prolific bloomer, and many dozens of plants are now flowering in Mr. Low's nursery at Clapton; most of these bear three or more spikes each, and the whole have a charming effect.—G.

Steaming Orchids.—This system is now quite the recognised method of destroying insect pests in Mr. Williams' nursery, the advantages claimed for it over fumigation being, 1st, that the house is rapidly filled; 2nd, that the operator is not required to be inside the house; 3rd, that Orchids that could not be fumigated (without causing them to become spotted and lose their leaves are not in the least affected by steaming; and lastly, although not least, the operation may be performed in a house full of flowers, and Ferns with delicate fronds, without the slightest damage accruing therefrom. On a recent visit we saw such flowers as *Celogyne Lemoniana*, *Odontoglossum Ruckerianum*, *Cymbidium eburneum*, besides a host of Cattleyas, Calanthes, and various *Cypripediums*, which had been subjected to the steaming, but the flowers did not exhibit the slightest speck or blemish; neither had the young and immature fronds of the Ferns which had passed through the ordeal suffered in the least.—G.

SHORT NOTES.—ORCHIDS.

Odontoglossum triumphans—Referring to the remarks by "G." in THE GARDEN (p. 325), I agree with him that this is a very beautiful species. Indeed I think it the finest and brightest of all the yellow ground *Odontoglossums*. The only reason it is neglected I should imagine is that growers cannot afford to purchase quantities of it. It is usually found growing with *O. Pescatorei*, and those purchasing unflowered plants of the last named may find

O. triumphans among them, just as we get *O. bystris*, *O. luteo-purpureum*, *O. Wilckeanum*, &c., amongst importations of *O. crispum*.—J. P.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL.

APRIL 12.

THE meeting of the fruit and floral committees held in the conservatory was rendered remarkably gay and effective by the large groups of *Narcissi* staged by Messrs. Ware, Barr and Son, and Collins and Gabriel. It was also rendered particularly attractive by the new feature of cut *Roses* from America, which were staged in excellent condition; and by numerous interesting and showy groups from various exhibitors.

The following first class certificates were awarded, viz., to *Rose Paritan*. Plants in flower and cut blooms of this *Rose* were staged; they had been sent from America to this country for exhibition, eleven days being occupied in transit; they arrived in excellent condition. The foliage of this variety is stout and of a deep metallic green; the flowers large, creamy white, of exquisite form; petals round, and of good substance; whilst its staying properties may be judged of by the journey to which they had been subjected. One dozen of the cut blooms had been enclosed in an hermetically-sealed box, and an equal number had travelled in tubes of water in an ordinary close box; there did not, however, appear to be any appreciable difference in their condition. Judging by the examples staged, it is a great acquisition. It was exhibited by Messrs. W. Paul and Sons, of Waltham Cross, by whom we believe it will be distributed in this country. *Rosa polyantha minutifolia alba* and *Rose Golden Fairy*, exhibited by Mr. H. Bennett, Shepperton; the first, a dwarf plant with small leaves and pure white double Daisy-like flowers; the latter being freer in growth, with ample leaves and flowers of a delicate creamy golden colour. Violet *Victoria*—a large group of this as shown by the raiser, Mr. Chambers, of Isleworth, proved to be a most profuse bloomer; the flowers are very large, double, of a dark purple colour. It is said to be a cross between *The Czar* and *Neapolitan*, having the colour of the former and the fragrance of the latter parent. *Cattleya Trianae Schroederæ*, shown by Baron Schroeder, Baron F. de Rothschild, Tring Park, and Mr. F. Wigan, Clare Lawn, East Sheen, is a form with large and stout flowers, the sepals and petals being white, flushed with pink or flesh colour; lip slightly deeper in colour, with orange in the centre, which colour is continued round the convolute middle lobe. *Odontoglossum Pescatorei virginale*, with a long raceme bearing large pure white flowers, stained at the base of the lip with yellow, the form of the flowers giving one an idea of its being a probable hybrid between *O. Pescatorei* and *O. citrosum*. Exhibited by Baron Schroeder. *Adiantum cuneatum Gordonii*, a crested variety indistinguishable from *grandiceps*; and *Cineraria Alexander Warwick*, of dwarf habit; flowers crimson, the lower petals being quilled, the turned-over portion soft rose. Both were exhibited by Messrs. Gordon and Son, nurserymen, Edinburgh. *Narcissus cyclamineus*, shown by Messrs. Barr and Son, King Street, Covent Garden; *Cineraria Wm. Pratt*, a large double blue form, shown by Mr. Pratt, Longleat Gardens, Warminster; *Cyclamen Queen of Crimsoms*, a very deep crimson-flowered variety, exhibited by Mr. J. Odell, Hillingdon; *Cypripedium leucorhodon*, a cross between *C. Sedeni* and *C. Schlimi albiflorum*, a bold growing plant with pale rose-coloured flowers and a large pouch; *Amaryllis Nonpareil*, a flower of exquisite shape, good substance, and rich, deep crimson in colour; *Amaryllis Edith Wynne*, a form of the reticulata section, petals crimson, broadly margined with white, exhibited by Messrs. James Veitch and Sons; *Auricula Sir Wm. Hewitt*, a deep purple, maroon-flowered variety, and *Abbé Lizst*, green-edged, both shown by Mr. J. Douglas, Great Gearies, Hford; *Odontoglossum crispum* (Mr. Thompson's variety), bearing a spike of very bold and handsome flowers, each measuring some 4½ inches across; white, distinctly blotched with bright cinnamon-brown, the raceme bearing nine flowers arranged in a very dis-

tinged two-ranked manner; shown by Mr. W. Thompson, Stone, Staffs.

Messrs. Barr and Sons, King Street, Covent Garden, staged a very fine group of *Narcissi*, containing most of the leading forms, for which a silver Banksian medal was awarded.

Mr. Ware, of Tottenham, received a similar award for a large group of *Narcissi*, fringed with *Chionodoxa Luciliae*, *Anemone fulgens*, *Allium neapolitanum*, *Freesia refracta*, and other spring flowers, also an interesting mixed group, amongst which were fine examples of *Primula rosea*, *cashmeriana*, and *nivea*, *Anemone Pulsatilla*, *Zephyranthes carniola*, *Ophrys tenthredinifera*, *Lachenalia*, &c.

Messrs. Collins Bros. and Gabriel, Waterloo Road, London, were also awarded a silver Banksian medal for a magnificent group of *Narcissi*, edged with *Anemone splendens*, both single and double forms; *A. fulgens multipetala*, and various other spring flowers. A silver Banksian medal was awarded.

Mr. B. S. Williams, of Holloway, staged a pretty group, amongst which we noted a very distinct and novel form of *Anthurium Scherzerianum* named *atrosargineum*, in which the spathe was of a very deep blood colour, the blue-flowered *Tillandsia Lindenii*, various *Sarracenias* bearing handsome flowers, the rare *Vanda cristata*, *Ochna multiflora*, a finely-flowered specimen of *Rhododendron Veitchianum*, and numerous profusely-flowered plants of the best form of *Boronia megastigma*, &c.

The Royal Gardens at Kew contributed a very interesting group of plants which have somewhat gone out of fashion of late years, but assuredly would again become popular if more frequently seen at such gatherings as these. The most notable were several kinds of *Boronias*, *Epacris*, *Acacias*, and *Chorozemas*; the beautiful and rare *Pentapterygium rugosum*, various *Grevilleas*, *Darwinias*, &c. From the herbaceous department also came the exquisite *Primula Reedi*, with hairy leaves and white flowers, almost like a *Snowdrop*; *P. marginata densiflora*, and *P. spectabilis Clusiana*. A silver Banksian medal was deservedly awarded.

Messrs. J. Laing and Son, Forest Hill, staged a large plant of *Dendrobium Ainsworthii*, bearing some 200 of its beautiful and deliciously fragrant flowers, for which a cultural commendation was awarded. Messrs. Laing also staged several specimens of *Cattleya Lawrenceana*.

Messrs. Veitch and Sons, of Chelsea, staged a handsome group, consisting of *Amaryllis*, *Azalea*, &c.; notable were *Amaryllis Illustrious*, crimson flushed with carmine; *Nonpareil*, rich crimson; *Pannure*, bearing six flowers on the truss. *Azalea calyciflora*, a variety in the way of *obtusa*, but with the calyx enlarged and coloured, and a pretty white form of *Azalea obtusa* named *alba*, were noteworthy. *Andromeda japonica*, bearing a profusion of pendent racemes of white, bell-shaped flowers, was also conspicuous.

Mr. F. Wigan, Clare Lawn, East Sheen, contributed a well-bloomed specimen of *Dendrobium Findleyanum*.

Baron Schroeder, of The Dell, Egham, sent *Odontoglossum Pescatorei*, a cut spike of the unique and beautiful *Odontoglossum Pescatorei Veitchianum*.

Mr. G. F. Wilson, Heatherbank, Weybridge, sent a basket of cut flowers, containing hybrid *Hellebores* and seedling *Primula denticulata*, &c.

Mr. J. Douglas staged a few excellent new seedling *Auriculas*, the most notable being *Snowdon's Knight*, *Lady of the Lake*, *Innocence*, and two others previously referred to.

Mr. Measures, of Cambridge Lodge, Camberwell, sent cut blooms of a very fine, pure white-flowered *Pelargonium* named *Miss F. Measures*, which was stated to retain its purity, which the majority of the white varieties do not.

Mr. R. Dean, of Ealing, exhibited the pretty little *Primula longibarda*.

Sir G. Macleay, of Pendell Court, sent a collection of cut blooms, amongst which we noted large panicles of *Fuchsia arborea*, *Hardenbergias*, numerous varieties of *Vandas* and other *Orchids*; *Paulownia impe-*

rials, and the Natal *Streptocarpus Polyanthus*, &c. A bronze Banksian medal was awarded.

Messrs. Lane and Son, Berkhamstead, contributed a remarkably fine group of the Japanese *Azalea mollis*, with very large flowers, the colours being extremely variable. A silver Banksian medal was awarded.

Mr. H. B. May, of Edmonton, staged a striking and well-grown group of small Ferns, containing many species and varieties. A bronze Banksian medal was awarded.

Mr. F. A. Philbrick, Q.C., Bickley, sent *Cymbidium eburnum* Philbrickianum, with pure white flowers, and the old, but seldom seen, *Cattleya amethystina*.

Scientific committee.—Mr. Maw exhibited the following species of *Crocus*: *C. biflorus* var. *Pestalozzei*, from near Constantinople, with a very small white perianth; *C. minimus*, DC., from Ajaccio, Corsica, with dark purple outer petals and lighter coloured ones within; *C. Imperati*, from Baviolo, South Italy, the only species with a rose-coloured perianth; also a white variety of the same, first introduced by Dr. Lowe, who sent it to the late Rev. H. H. Crewe. Mr. Maw observed that the obesa form of *Corbularia*—not a distinct form—was characteristic of many, as of *C. nivalis*, both of larger and smaller kinds, *N. nanus*, found wild near Bewdley, Salop. Mr. Maw also showed specimens of a species of *Chionodoxa* from Crete, having a much smaller flower than *C. Lucilise*. Dr. Masters observed that the latter will degenerate in a wet soil so as to assume a diminished stature, which was, therefore, probably solely due to its habitat. A *Fritillaria* from Erzeroum, Armenia (chocolate-flowered), and which was figured in the *Botanical Magazine* with a yellow form from mountains near Smyrna; also a vernal form of *Colchicum* from the Dardanelles were exhibited by Mr. Maw.

Mr. G. F. Wilson exhibited a small species of *Primrose* which had come up amongst Himalayan seed, and several blossoms of seedlings of Scott Wilson, showing the retention of the blue tint, though exhibiting great variety of colours. Mr. W. D'Arcy Godolphin Osborne sent a plant of a white *Primrose* found wild near Biarritz. Though a common cultivated form it is probably rare in a wild state. It was growing in red clay. Colonel Clarke exhibited blossoms of a hybrid of *Primula ciliata* crossed by pollen of a dark alpine *Auricula*. The colour closely resembled the latter, but the corolla was very large, being quite half as large again as the *Auricula*, while the centre was of a deeper yellow. Colonel Clarke also showed a leaf of a hybrid between *Rheum palmatum* and the common garden *Rhubarb*, *R. undulatum*. Rev. G. Henslow exhibited a mauve-coloured bloom of an *Azalea* which had appeared on a shrub with nearly scarlet-coloured flowers. The foliage on the sport was much larger and more hairy than on the usual branch. Moreover, in the sport there was a tendency to doubling, but not in the normal flower.

A communication was read, giving details of Mr. Tait's and Mr. Barr's observations in North and South Portugal.

Corbularias.—Of these was found a large form, perhaps *conspicua* or *serotina*, in marshy ground, and in sandy woods of *Pinus maritima*, edging the marshes; there was a much dwarfed form, varying in colour from a rich orange to pale yellow, distinctly striped with greenish white; all probably of one species, but with variations, due to environment, as some of the larger kinds, planted in 1855 in a dry situation, have become reduced this year. On higher ground in North Portugal the *Corbularias* are small, with Rush-like, twisted, and drooping leaves; but at 2000 feet in the Gerez Mountains was *C. nivalis*, with erect leaves and small flowers, varying from a rich yellow to pale sulphur. In February a fine form, probably *C. obesa*, *Salisb.*, was found in Estremadura, at Montegil. Mr. Tait remarks upon the varying lengths of the styles in this species, and thinks that it is an unstable character for classificatory purposes. He notices—that has been already observed by others—a similar instability in the stamen of *N. triandrus*, an approximation towards heterostylism. It is rare, he adds, to find the style deep down in the Ajax section.

A small-flowered form of *Ajax*, transplanted in 1855, has now borne flowers equal in size to the larger form, the small size being attributed by Mr. Tait to poverty of soil. He notices great variation in the forms of the flowers representing *maximus*, *major*, and the *Tenby*, suggesting to Mr. Barr that these forms originally came from Portugal. Near Braga forms with the perianth paler than the crown, as in the English and Scotch wild form, were met with. *Ajax bicolor* occurred in abundance, and was the nearest approach to pl. 1187, *Botanical Magazine*. Mr. Barr has found *N. Johnstoni* in several localities in North Spain. *N. triandrus* is specially remarkable for the extraordinary variations in form of flower, foliage, size of bulb, &c., together with the curious trimorphism of the sexual organs. *N. triandrus* var. *concolor* was found in a few mountainous situations by Professor Henriques, and Mr. Tait identifies it with Parkinson's *N. juncifolius* *flore-luteo reflexo* (*Parad.*, p. 92), remarkable for its golden-yellow colour. *N. Jonquilla*, a remarkably large form, has flowered with Mr. Tait. Mr. Tait concludes his interesting communication with some remarks on hybrids, all of which are of a creamy-white colour when due to the natural crossing of pseudo-*N.* and *N. triandrus*. Other hybrids from Gerez are uniform in size, colour, &c., and partake of the features of both the parents, viz., *C. nivalis* and *N. triandrus*. He asks, Why are these hybrids so rare, and do they die out?

NOTES OF THE WEEK.

Narcissus Corbularia conspicuus.—We enclose a few blooms of *Narcissus Corbularia conspicuus*. We think it a good thing when established.—COLLINS BROS. AND GABRIEL.

* A very fine, large-flowered form of the Hoop Petticoat *NARCISSEUS*.—ED.

Curious Gloxinia.—I send you a curious *Gloxinia*, producing in addition to the usual flower two blooms at the bottom of the flowering stem. Is this unusual?—R. FAISBY.
* The *Gloxinia* sent had flowered in the usual way, and at the same time there were two blooms at the base of the flowering stem. This is not unusual.—ED.

Clematis indivisa lobata. This is a half-hardy climber, far less known and grown than its merits deserve. It differs from the typical form in having lobed leaves and larger flowers. It is generally distributed throughout the New Zealand islands, where it is said to festoon the trees on the skirts of the forests. In cultivation it proves to be a free-growing plant, and an abundant bloomer throughout the winter months, if planted out in the border of a cool greenhouse or conservatory in a mixture composed of about two parts loam and one of rough peat. The flowers are star-shaped, pure white, and sweet scented. We noted this variety blooming in the large *Gamellia* house in Mr. Laing's nursery at Forest Hill, where it has been a conspicuous object for some weeks.—G.

Streptosolon Jamesoni.—This very showy, free-flowering greenhouse plant, originally introduced by the Messrs. Veitch, nearly forty years ago, under the name of *Browallia*, is a native of Ecuador. It appears to have been lost, and was re-introduced some few years back. It is a compact growing plant, and readily forms a handsome specimen if struck from cuttings taken early in spring, and grown in the greenhouse or the open air in summer, producing dense racemes of flower, which are orange-yellow when they first open, but change when fully expanded to cinnabar-red. Although this has usually been considered a summer bloomer, we saw it laden with flowers, in the middle of March, in Mr. Laing's nursery at Forest Hill, forming a conspicuous object in the intermediate house.—G.

Royal Horticultural Society. Any honorary, foreign, or corresponding member of the society may obtain a copy of the Frost Report free of charge by applying to the secretary of the Royal Horticultural Society, South Kensington, S.W. Mr. George Maw, F.L.S., of Bentham, Kenley, has been elected a member of council vice Mr. A. B. Mitford, C.B., who has resigned. It has been decided to hold a Chrysanthemum show and conference on the 8th and 9th of November next. The idea of holding a conference on Grapes has been abandoned for this year. Arrangements will shortly be made

by which residents in the neighbourhood of the Royal Horticultural Society's gardens at Chiswick, who are not Fellows of the society, will be admitted to the gardens on easy terms.

Seedling Carnations.—I herewith enclose a bloom from one of my last year's seedling Carnations, which well shows the sportive character of these growing favourites. The seed from which the above came from was supposed to be white, and of the Tree section; whereas the habit and manner of flowering of this partake almost exactly of the border class, and, as you will see, the colour is nearly the exact counterpart of the old dark Clove, while the scent is quite as powerful. I was curious to measure it, when I found its circumference to be exactly 9 inches.—J. KNIGHT, *Epsom*.

* A fine large flower of a rich crimson-scarlet colour, the perfume very strong as in the old Clove. It does not split the calyx.—ED.

LAW.

OVERSEERS OF LEWISHAM I, H. J. COBB.

This was an application of the overseers for the payment of £2 11s. for rates in respect of his cottage and nursery grounds, Derby Villas, Forest Hill. Mr. Coxwell appeared for Mr. Cobb, and contended that after the decision Purser v. The Worthing Local Board, heard in the Divisional Court before Mr. Justice Day and Mr. Justice Willis, Mr. Cobb could be assessed in respect of the nursery grounds at a quarter only, but as regards the cottage occupied by him at the full value. This was opposed by Mr. Clutter, the collector, on the grounds that there was one assessment only. Mr. Montague Williams, after considering, said that there should be separate assessments for the land and cottage, and having reference to the Inhabited House Duty Act of 1881, adjourned the case to allow the parties to come to terms.

Easter decorations.—One of the most effective of the many decorations made in the beautiful church here has this year been of the fine deep scarlet *Geranium Henri Jacoby*. This has been grown largely in 6 inch and 7-inch pots for rooms and cut flowers, for which I find it most useful. Also for mixing in groups of plants in chancel of church or elsewhere, with Palms, Callas, *Cytisus*, and *Spiraeas*, this beautiful *Geranium* has no equal. On Easter day, another subject used largely here for vases was branches in flower of the fragrant *Stantonia latifolia*. Long branches cut the night before and placed in pans of water will stand without flagging during the next day in tins of wet sand in the church. Wherever required, we have a plant of the *Stantonia* planted out and trained up the pillars of the conservatory in the centre of the glass range at this place, and at this time of the year its delicious scent pervades the place. The church here, lately redecorated by Mr. Harold Willoughby, was last Sunday unusually bright with flowers.—BAILEY WADDIS, *Birdsall Gardens, York*.

We regret to hear of the death of M. Jules Vallerand, a very amiable and excellent French gardener, who raised most of the pretty *Gloxinias* that have been added to our gardens during the last twenty years or so. He was the first we saw in possession of the beautiful delicately spotted kinds which he raised near Bourguival.

ANSWERS TO CORRESPONDENTS.

One Arctostaphylos to Know.—We can see nothing wrong with the Peach flowers. We have examined several and find that the fruit has set.

Names of plants.—*B. J., Guildford.* 1, *Lycaste Harrisoniae*; 2, a form very near the variety *eburnea*.—*A. S.*—*Arabis alba*.—*J. H. P.*—*Narcissus cyclamineus*.—*A. McD., Perth.*—*Auricula*, very large, but somewhat rough; paste much cracked.—*J. C., Colchester.*—1, *Diplopappus chrysophylla*; 2, *Cupressus Lawsoniana*; 3, apparently a variety of *Abies excelsa*, specimen insufficient without description of habit; 4, *Taxus baccata*, aff. *pendulous*, variety *Dovastonii*.—*H. J. N., Bishops Castle.*—Specimen bloom much dried up; appeared to be an ordinary coloured *Primrose* of little distinctness of character.—*M. Facello.*—Your *Adiantum* appears identical with *A. Ludemannianum*. The *Pteris* is certainly broader than the typical *P. tremula*, but from a single form we are unable to judge if the plant merits a varietal distinction.—*D. D., Sittingbourne.*—1, *Odontoglossum gloriosum*; 2, *Vanda tricolor formosa*; 3, *V. unguis*; 4, *V. tricolor insignis*; 5, *Cymbidium aloifolium*.

WOODS & FORESTS.

"YORKSHIREMAN."

PINUS PATULA.

HAVING a long time ago had some experience of this Mexican Pine, I can endorse all that Mr. Webster (p. 337) says of its beauty, but must confess that I am agreeably surprised to hear that it is hardy. Amongst other reputed tender varieties, in the year 1860 I found a very fine tree favourably planted at Eastnor, but that fatal winter killed it. At a gentleman's place, much warmer and better sheltered, a short distance away I saw a much finer tree than ours, but that also was destroyed, and I arrived at the conclusion that it was too tender for the west midlands. In Cornwall and Devon it may do well, but those two counties no more represent our English climate than the first Rose ushers in the summer; consequently, much as all lovers of Conifers may wish to plant a tree whose lovely leaves represent thousands of skeins of silk, I fear we must search far and wide through the average counties of England before we meet with a specimen equal to that at Penarrow. Mr. Webster, however, is a great authority, and his article should have weight with the trade who, for reasons well known to themselves and planters generally, have dropped *P. patula* out of their lists, and I sincerely hope they will soon be in a position to again offer it to the public. If found too tender for cold and exposed districts, the owners of large conservatories and winter gardens might grow it for years, as they now grow the Norfolk Island *Araucarias* in tubs for the decoration of their terraces through the summer. The habit of the tree, it is true, is rather against its being crowded in a cold house in winter, but a specimen nevertheless confined to the pyramidal form and 20 feet or more in height would form a charming novelty. The *Daerydiums*, the *Callitris*, the *Fitzroyas*, the *Cunninghamias*, and all the tender *Araucarias* do well in moderate-sized tubs, and this soft and lovely Pine would go well with any of them. Another graceful Pine with us—the hardiest of the Mexican race—is *P. Montezumae*. This, unfortunately, is seldom met with, but planters, I think, in all sheltered places might give it a trial, for certainly it is much hardier than *P. patula*. Tender Conifers generally with us are now beginning to show the effect of the past protracted winter. Some of our beautiful *Pinus insignis*, so terribly mutilated by the snow, are slightly browned, but not seriously. The parts suddenly exposed by the loss of large branches have suffered most, and the piercing north wind which has been blowing for some days is making its mark, as it follows nearly in the line of the snowstorm. *Pinus Ayacahuite*, or *Don Pedro*, another of Hartweg's introductions from the mountains in Northern Mexico, is slightly tinged, not on the north, as one might have expected, but on the south side. Next to *P. patula* this is one of the softest and most graceful Pines I am acquainted with, but being decidedly tender, I cannot recommend it to inland planters. Here it is planted on the south side of a limestone knoll 450 feet above sea level, upon which *Pinus insignis* and *Abies Pindrow* pass through the sharpest winters without losing an old leaf or a young spring growth.

W. C.

with descriptions of the various Planes, so as to settle the knotty points in their nomenclature. All the large Plane trees in and about London are supposed to be the *Platanus occidentalis* or American Plane, and the reason why it is considered tenderer than the Oriental Plane is because it not infrequently suffers severely from having its young leaves and fresh growth half killed by late frosts in May, particularly after mild winters and early springs. In all other respects it is as hardy as the Oriental Plane. The Maple-leaved or Spanish Plane (*P. acerifolia*) has the same spreading habit and fruit as the Oriental Plane, and never grows to so great a height as the American Plane. The Oriental Plane is unquestionably the best of all the Planes, both for shade and handsome foliage; but it is, not nearly so rapid a grower as the American Plane, particularly when young. It forms a round and rather dense-headed tree, seldom exceeding 60 feet in height, with a comparatively short, but massive stem, which soon divides into several robust arms, the lower ones of which are the largest, spreading horizontally to a very considerable distance. The greatest difficulty in the way of planting Oriental Planes—as trees for shade along a public thoroughfare—is in getting them with stems sufficiently tall to raise, when full grown, their lower and wider-spreading branches high enough so as not to interfere with vehicles passing under them.—A. L. S.

THE DROPMORE DOUGLAS FIR.

"W. G." tells us (p. 289) that the Douglas Fir at Dropmore "is probably the finest in Europe." It may, perhaps, be one of the tallest in Europe, but as regards size of stem it can bear no comparison with several of its kind even in our own little island, as the following measurements, taken to-day of a couple out of many specimens at Penrhyn, will clearly show:—

No. 1—Girth of stem at 3 feet up, 13 feet 5½ inches.
Do. 5 " 11 " 3 "
Do. 12 " 9 " 4 "

Twenty-four feet in length of the butt contains exactly 131 feet of wood.

No. 2—Girth of stem at 3 feet up, 11 feet 9 inches.
Do. 21 " 8 " 4 "

Forty-two feet in length of the stem contains 217 feet of excellent clean timber. Both specimens are feathered to the ground with bright, healthy foliage, the diameter of spread of branches being from 50 feet to 60 feet. That these fine trees are not what is termed "carrot-shaped," but of gradual taper throughout, will be easily seen from the stem-measurements at 12 feet and 21 feet respectively.

Now, as the Dropmore tree is only about 10 feet in girth at a yard from the ground (3 feet 8½ inches less than the Penrhyn tree), it would certainly look very small indeed if placed beside the colossal giants whose measurements are given above. Allowing the Dropmore tree to be 4 feet in girth at 50 feet from the ground, its total contents would only reach about 100 feet—not half that of the largest tree at Penrhyn. It may be well also to state that, unlike the Dropmore Douglas Fir, those of Penrhyn have had no coddling nor "loads of soil placed around their roots," and no kind hand to remove at the proper time rival leaders nor correct ungainly side branches. One of the branches of No. 1 is more than half as large as the Dropmore tree, being exactly 6 feet in girth.

I had an interview the other day with the old man who planted these trees, but, alas! age had brought its infirmities, and "the memory was not so good as it used to be." He remembered well, however, having, with another man, carried five plants in pots from the flower garden and placing them in their present position. (This, I believe, from careful investigation, was fifty-one years ago, but as I have no direct evidence, these figures must only be taken for what they are worth.)

The Hon. Mark Rolle, in a letter received this morning, likewise informs me that in his pinetum at Bicton, one of the Douglas Firs measures 10 feet 6 inches at 5 feet up. This is even a much larger stem than that of the Dropmore tree. If I remember rightly, the Dropmore Douglas Fir is not a perfect

specimen, for many of its branches were broken off during a snowstorm some years ago. How does it come that the Dropmore tree was planted in 1828 ("W. G.," p. 289), for the seeds "were only received by Mr. Frost from the late Lord Grenville early in December, 1827?" Was it planted in its present position as a nine-months-old seedling? "W. G." tells us further regarding the Douglas Fir that, "as a rule, it is not a good tree for sandy soils," but it may surprise him to know that this is the very class of soil which has produced the above unique specimens. On light alluvial deposit we have many very large trees, and on dampish loam likewise.

The above is written with the sole object of again correcting the oft-repeated mistake regarding the Dropmore Douglas Fir being the largest of its kind in this country. It may, as before stated, be one of the tallest (I am getting up a list of the tallest, and will, I hope, ere long be able to speak with certainty on this matter), but in point of size it can bear no comparison with many others; and height without thickness can hardly claim for its possessor the right of being recorded as perhaps the finest of its kind.

A. D. WEBSTER.

Penrhyn Castle, North Wales.

ROADS ACROSS PEAT BOGS.

FAGOTS are often used for forming the foundation of roads across bogs, but though an old plan, I do not think it is the best possible, as by the pressure of traffic the water of the bog is forced up through the fagots, and the stones forming the covering will sometimes fall through on to the ground below.

The first operation in making a road over a peat bog is to make large open drains at a considerable distance from, and parallel to, the intended site of the road on each side. When, by the operation of these drains, the surface has somewhat subsided from the escape of the water held by the peat soil, other drains should be made along each side of the intended road. The whole of the peat excavated from the drains should be thoroughly dried, as for fuel, and when the surface of the site of the road has become firm, any hollows should be filled up with the dried peat, and the unbroken surface covered to a depth of several inches with it—first with pieces the size of bricks, and then with small pieces the size of hens' eggs—until a convex form of cross-section is attained. Some will suppose that this use of peat is very much like restoring the surface to its original condition, but a remarkable property of peat is, that when it has been thoroughly dried, it will never again absorb water, and this renders this earth, on being completely deprived of water, an excellent material for forming the foundation of roads over bogs. When covered with dried peat the road may be spread with broken stones in the same manner as any other road.

Roads made upon peat bogs in the above manner are remarkably pleasant to travel upon, and, without sensible increase to the force of traction in the draught of loads, of all others the most durable, arising from a degree of elasticity possessed by no other description of soil. I may say that, whilst a road made upon a peat bog is the most durable, that made upon rock is the least so, and the deficiency of durability is in proportion to the hardness of the rock; the expense of maintenance will thus be much less for the former than for the latter.

When a road is carried over a morass that cannot be thoroughly drained, the soil should on no account be removed, but the surface should be kept entire, and any hollows in it should be filled up with material to be obtained elsewhere than from the site of the road. The surface should then be covered to a depth of several inches with concrete, composed of six parts, by measure, of gravel and one part of Portland cement, before the application of the broken-stone covering.

A. T. PATERSON.

A dry spring. The following account of the rainfall in North Leeds for the early months of the last four years, may be of interest to some of your readers. It will be seen that the total for the first three months this year is 1½ inches below the

Plane trees in London.—There seems to be a good deal of confusion, especially in nurseries, with regard to the names of the various Planes now grown in this country, and it would be of great service if some one of authority would give us a good account,

average of the corresponding periods in the preceding three years:—

	1884.	1885.	1886.	1887.
	Inches.	Inches.	Inches.	Inches.
January ..	3.18	1.49	3.54	2.42
February ..	2.12	2.11	.66	.61
March	1.68	1.81	1.40	1.30
Totals....	6.98	5.41	5.60	4.43

—T. E. F.

THINNING PLANTATIONS.

HAVING quite recently had some almost painful experiences of the difficulties of selling at a fair price some large hedgerow Oaks netting from 100 feet to 150 feet, owing to their coarseness, I have been specially interested in "Wilts" and "Yorkshireman's" remarks on thinning (see p. 291). The above experience has also sent me to the surveying and measurement of numbers of park trees more or less isolated. Were all their boughs timber, and their gross bulk saleable by weight as such, they would doubtless yield a good return. But as this cannot be, the waste in such trees can only be described as reckless. In many such trees not a third of the gross bulk or weight is saleable for useful timber, while it takes a good clean tree to yield a half of its gross weight as useful and saleable timber. It is not simply the sheer waste involved in the far-reaching boughs and the multitudes of ramifying branches, though this is enormous, for if some of them reach timber size they only command a half or a third the price of bole timber—but it is the serious deterioration as well as the reduction of the amount of the latter. Coarse timber is a drug in every market, while fine, clean, smooth timber of almost any sort sells freely. Reasoning with a large timber merchant on the enormous difference of his offers for the two sorts, he replied, "We can never tell what we may find beneath these knots or burrs from which branches have been removed. The timber may be fairly sound, but more likely it will prove worthless. To buy such timber is quite a lottery, and our prices must be regulated by the certainty of many blanks." Thick planting, natural pruning, group or plantation planting, are the sure and certain modes of growing fine, clean-stemmed, long-boled timber. Upon this nearly all practical writers are agreed. But no sooner do we leave those general principles and descend to particular instances, than we differ widely. With a view of inducing greater uniformity of practice, might I invite "Yorkshireman," "Wilts," and other experienced foresters to give the average distances from planting to felling, or, say, for a period of sixty years, for plantations of different timber trees, as Oak, Ash, Elm, and Spanish Chestnut, Sycamore, Walnut, Larch, Spruce, Scotch, &c.? Of course the distances would only be approximate, and would be considerably modified in practice by soil, site, shelter, exposure, &c. The leading ideas in determining the distances at different periods would be profit, and self-pruning of the trees, and the maximum benefit from that stem-protection and fostering ensured by the overhead canopy of leaves, so graphically described by "Yorkshireman" in THE GARDEN, page 291.

CALEDONICUS.

VARIETIES OF THE ASH.

THE common Ash (*Fraxinus excelsior*) and several of the North American kinds rank high as timber-producing trees, their wood, owing to its elasticity, being much sought after where strength and toughness are wanted. Apart, however, from their value in this respect, the different forms afford plenty of scope to the planter, some being large, noble-looking trees, others comparatively small, and a few singularly grotesque.

The recognised varieties of the common Ash are many, some of the more distinct being the weeping kind (*pendula*), so often employed for forming

arhous; of this there is also a golden form (*pendula aurea*), the bark of which is bright yellow, but in other respects, except being of somewhat weaker growth, it resembles the common Weeping Ash. Another kind (*heterophylla*) is remarkable on account of the absence of leaflets, and instead of one large, simple, deeply serrated leaf, it forms a tree nearly as vigorous as the common kind, and is often known by the name of one-leaved Ash (*monophylla*), certainly a better name than *heterophylla*, the leaves being seldom variable. Of this there is a form in which the leaf is deeply slashed instead of serrated. The Cockscomb Ash (*F. excelsior cristata*) has often a large proportion of the shoots curiously fasciated, especially at the points, where they spread out in a Cockscomb-like manner. This is but a slow-growing tree, and frequently some of the branches die off without any apparent reason. A dwarf, bushy kind (*F. excelsior globosa*) assumes the shape of a small round bush, and when grafted standard high has a mop-like appearance.

Other varieties, in addition to those just mentioned, are *crispa*, a dwarf form with very deep green and much-curved leaves, often encircling the stem; the gold and silver variegated, neither of which are very effective when exposed to wind and sun; *aurea* and *jaspea*, with bark yellow and striped; *angustifolia*, a kind in which the ordinary leaflets are reduced to mere filaments; and *verrucosa*, a variety with rough and verrucose bark.

A.

COMMON USES OF WOODS.

MORE conversant with the living trees, their characters and habits, than with their uses, tree-planters may perhaps have little interest in any detail of a subject somewhat outside their vocation; but apart from the picturesque or garden uses of trees, there is some importance to be attached to the uses to which trees can be applied after they have been cut down and manufactured for use. The Oak is the grandest and most historical of all our forest trees. It has long been associated with our national defence as the chief element in shipbuilding, but harder and sterner iron has robbed the Oak of this sentimental element, and the glory of our "wooden walls" of Old England has for ever departed. Now the Oak furnishes the builder with the best material for door posts; wheelwrights find in it the best wood for the bottoms of carts and wagons, and it makes the best of all wood fencing. Pollarded Oak is a valuable element in the making of furniture, the knotted and intricately designed surface making the most elegant of veneering for what is known as Oak suites.

To the Elm is attached a melancholy and weird interest, inasmuch as it forms the small but solid enclosure in which dead humanity is placed. For commoner uses it is valuable for the making of wheel-stocks, as it is not so liable to split and enables the spokes to be fixed with any amount of force. It also enters into the construction of wide felloes, such as are employed in wheels for farm carts and heavy wagons. It forms a prominent element in the construction of that useful vehicle, the wheelbarrow, and the bodies of carts. It also enters into the construction of heavy bellows as boards, and in the form of seats to Windsor chairs it furnishes frequent means of rest to exhausted humanity.

Ash is a very valuable timber, and is fast getting scarce. It is not one of the favoured ornamental timbers, and therefore is now much less planted than formerly. A dearth of Ash timber would be productive of great inconvenience to many trades. Wheelwrights employ Ash largely in the construction of carts and carriages; it forms the best material for shafts, and is widely employed in the making of all kinds of tool handles, especially those used in gardening, such as spades, forks, shovels, hoes, &c. In a less interesting way it is used for butchers' blocks, and many other common purposes.

The Beech is a noble tree in life, perhaps the most beautiful and decorative of all forest trees, but its uses in domestic life are not so varied as are those of some other woods. Beech is the chief constituent in the making of the elegant cane-bottomed chairs found in the parlours of the poorer classes; it is useful for gun stocks, saddle trees in heavy harness,

wheel felloes, and many of the lesser tool handles. Hornbeam is closely allied to the Beech in life, but its uses are even less varied. Owing to its peculiar toughness it is often employed as cogs in mill-gearing, and in the construction of bearings, as its wear is regular and even. In another direction it administers to the employment of a section of the community—it makes the best of skittle-pins.

The Sycamore furnishes a peculiarly white, smooth wood, free from grain, and is used for the formation of curtain rings, butter churns, and prints; for this latter purpose it is valuable, as it enables a finer design to be cut than does any other wood of home growth.

The Lime in life is for a time the means of diffusing sweet odours and sweet sounds when the myriads of bees are seeking for its honey treasures. After death it enters into the production of other harmonies, as it is largely employed in pianofortes, where its value is seen in a comparative immunity from those fluctuations of contraction and expansion peculiar to most woods. Shoemakers find it also the most suitable material for their cutting boards, as it does not blunt the fine edges of their knives. The Spanish Chestnut, also, is largely employed in the formation of sides for pianos, and at times is elevated as signboards. Formerly the Chestnut was largely employed in the construction of principals and rafters for open-roof churches, and is occasionally degraded to the common uses of posts and rails for fencing. The grand-looking Horse Chestnut does not furnish a specially valuable timber, its wood being occasionally employed in the making of brushes. The Birch, also, is employed in brush manufacture, and in the formation of bat blocks for hatters; also in the production of toys. In this way the tree becomes a source of pleasure to infantile life and a terror to breeched boyhood.

The Fir tribes are productive of noble trees, but the timber is not of a specially useful kind. It is too soft, as indeed is the case with all wood that is the product of quick growth. Both the Spruce and Scotch Firs are of kindred quality, and are commonly employed in the construction of outhouses and sheds, or rafters to barns, and for temporary posts and rails, but, except where kept very dry, having only slight powers of endurance. If the Pine tribes are to furnish the trees of the future, our prosperity will find that in the matter of useful woods we have left them but an indifferent legacy. Larch is superior in enduring quality to the evergreen Firs, and is therefore largely used as railway fencing and for ordinary estate and farm purposes. Yew wood is valuable when employed for veneering. It also makes most enduring gateposts. The Maple is employed in the turning of bowls, and the Bird's eye Maple for the manufacture of furniture. Acacia is very hard and durable, and makes good ladder rounds and bottoms to carts. The Poplars cut out good weather boarding, and are also employed in the formation of railway brakes, as the wood is woolly and tenacious. Walnut is valuable for the manufacture of furniture and gun-stocks; Apple is used for wheel-cogs, and the hard stems of the Crab for beetle heads. Pear will dye black, and resemble ebony, and makes good walking-sticks. The Willow is famous for the production of cricket bats. The Plum produces shuttles for weaving, and the Cherry is used in the making of chairs. These are but a few of the many uses to which home-raised woods are put, but for all our chief constructive purposes we give the preference to foreign timber.

A. D.

The sweet-scented Laburnum.—This fine form of the common Laburnum should be more frequently grown. Probably many are not aware that there is a variety of Laburnum (*Cytisus Laburnum fragrans*) with very sweet-scented flowers. Good varieties of ever popular trees like the Laburnum are doubly valuable, as we know they are sure to thrive with us.—J. O.

Ilex heterophylla magna.—This is one of the finest of all the green-leaved Hollies—strong in growth, and with foliage reminding one of that of a well-grown Bay tree. This and *Ilex balearica nigrescens* are perhaps the finest green-leaved kinds. The last-named is a remarkably vigorous and ornamental Holly.—A. L.

No. 805. SATURDAY, April 23, 1887. Vol. XXXI.

"This is an Art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—*Shakespeare.*

FRUIT GARDEN.

W. COLEMAN.

AN INVALUABLE LATE WHITE GRAPE.
MRS. PEARSON.—More than once I have expressed an opinion that Mrs. Pearson would prove one of our best late hanging Grapes, but until this season I have not tested it to its utmost. Now, however, I am in a position to say it has not only exceeded my expectations, but under generous treatment it will keep fresh and plump in the Grape room certainly up to the middle of April. When sending off a quantity of Grapes the third week in December I decided upon leaving a bunch to thoroughly prove its keeping properties, and now, this 15th day of April, it hangs apparently unchanged and the flavour is excellent. Until recently the majority of Grape growers have been impressed by the idea that white Grapes should be worked on varieties of kindred race and colour; but this is a fallacy, as the Vine in question was grafted on a side shoot of a Gros Colmar, and although Mrs. Pearson comes first into flower the two run well side by side, and the flavour of Mrs. Pearson is in no way depreciated by the stock. Where the Muscat of Alexandria is grown in quantity and well, consumers do not wish for anything better; but few, I believe, since Mr. Tilyard some years ago brought out his magnificent examples late in March, have succeeded in keeping the king of Grapes beyond, if up to that period. Therefore a white Grape that will overlap the Muscat, if only by a month, is worthy of general cultivation.

On reference to our best of all standard works, "Vines and Vine Culture," by Barron, we find it faithfully described as a round white Muscat; late in ripening, hanging late, and keeping well; quality first-class.

Vine.—Very strong and vigorous in growth, the wood ripening freely; fruitful. Leaves.—Medium-sized, thick and leathery, deeply lobed and toothed, with reddish petioles and venation. Fruit.—Bunches above medium size, with large shoulders, tapering, on very strong footstalks, freely set. Berries nearly round. Skin.—Thick or leathery, deep green, assuming an amber tinge when quite ripe. Flesh thick or firm, juicy, sweet, and with a strong, very pleasant Muscat flavour. History.—Raised by Mr. Pearson from Black Alicante crossed with Ferdinand de Lesseps. First-class certificate 1874. Cultural notes.—Requires fully more heat and longer time to ripen its fruit than Muscat of Alexandria.

Surely this is a good all-round character, but why it has not come into very general cultivation it is difficult to say, and, assuming that it does take as much heat as the Muscat, why, let it be grown with the Muscat, and I venture to say no one will be disappointed. It is not, however, such a difficult Grape to manage, as it will set freely with Hamburgs, and for this reason a Vine or Vines may be planted or worked in second early houses that are started not later than the middle of February. A great noise is made periodically about certain stocks being unsuitable for certain varieties, but, as Mr. Castle and others have lately shown, there is nothing in it; and when we consider that many of our popular modern black and white sorts have been produced by parents of opposite colour, habit and season, we quickly arrive at the conclusion that a sound, healthy stock well planted in a sound, healthy border may safely be selected for any variety. Here

we have Mrs. Pearson doing well on Gros Colmar, to which naturally we give the whole of the summer. In a second early viney the finest cane of Gros Maroc I ever grew was grafted on a healthy young Grizzly Frontignan. I do not, as a matter of course, recommend these extremes, but merely report them, if to answer no other purpose, certainly to show that the Vine is less fastidious than many people imagine. Indeed, I question if any other fruit is so thoroughly accommodating, for if we take the Apple or the Pear we find some varieties doing well, whilst others positively refuse to grow on dwarfing stocks. Peaches and Nectarines, again, have their foibles, and so have Apricots, as we find the majority succeeding best on the Mussel Plum, whilst a few prefer the Brompton.

FRUIT TREES AS ORNAMENTAL SUBJECTS.

Why should not fruit trees be grown more for their beauty alone? Take the Peach, for instance; everyone is charmed with it when in full bloom, but some might say we cultivate the Peach and other fruit trees for the fruit alone, and not the flowers. True, but are they not worthy of it, for when we consider the flowering charms of a greater portion of our fruit trees, is it not surprising that they are not more grown for their beauty alone?

In early spring we may reap a harvest of beauty from nearly all hardy fruit trees, such as Apricots, Peaches, Plums, Cherries, Almonds, Apples, and Pears, as they are all more or less ornamental—the double-flowering Peach, Cherry, and Almond being particularly so, and all of these trees should be planted more abundantly than they are, for in the spring no shrubs are more attractive. They may be grown in any form, bush, pyramid, or standard, and to various sizes; and when flowering as standards in the open borders they form conspicuous objects. A little attention, however, is required as regards keeping them well supplied with young wood, as upon this the flowers are produced. They should also be planted in good soil to induce them to make plenty of growth. The double-flowering varieties of the Peach, Cherry, and Almond also force well, and a good show of their beautiful bloom may be obtained from Christmas up to the present time. They are of easy cultivation, and well deserve a place in the conservatory amongst other flowering plants. When grown for this purpose they should have the same care in cultivation as when grown for fruit. Young maiden plants may be obtained from the nursery; these should be potted in the autumn and placed in a cool house until required for forcing, when they should be removed to a warm house where they will soon flower, after which they should be placed in the cooler quarters, where they will continue in bloom for a long time. After flowering the plants should not be placed outside all at once, as is the usual practice with subjects that have been forced. They should be kept under glass and well attended to in the way of watering and keeping free from red spider, aphids, &c., until the summer, when they may be gradually hardened off and finally placed out of doors in a position where they can have the full rays of the sun so as to thoroughly ripen their wood. There is a scarlet variety of the double-flowering Peach, likewise many other deep coloured varieties, which make a lovely contrast with the white flowers of the Almond and Cherry.

As is well known, the common wild Cherry is very attractive when in flower. I have seen enormous trees of it one mass of beautiful white

bloom. The wild Crab is also very attractive. Many trees of this sort would be found well worth the trouble if planted in any open space in pleasure grounds or by the side of woodland walks, instead of the worthless subjects which now too often occupy such places.

C. COLLINS.

HARDINESS OF STRAWBERRY PLANTS.

UNLESS all the varieties grown in any particular district are planted out together on an open piece of ground, and uniform preparation and treatment are accorded to all, it is neither fair to the plants nor to their raisers to say one is harder than another. These remarks apply specially to new varieties, to which gardeners generally devote a little extra care both as regards fresh soil and shelter, and for this reason Pauline should neither be praised nor condemned until it has withstood the vicissitudes of drought as well as frost by the side of our well-tried standard varieties. Here Pauline has stood remarkably well, but under what conditions? My first set of plants was planted out on a south border, and, being anxious to make all the stock possible, fresh soils of turf, 2 inches thick and 1 foot in width, were laid alongside the rows last August. Upon these the first set of runners were firmly pegged, but instead of pinching out the points, these were allowed to extend, and in due time a second set was secured, and so on until the end of the season. These plants, it is hardly necessary to say, never felt the want of water, and their condition throughout the winter has been quite satisfactory. They do not, however, look better than Paxton, President, La Grosse, and others planted out in August in the open quarters. Like Mr. Douglas and the majority of private growers, I have tried many varieties, and make large plantations annually upon the open quarters. All are treated alike, and some succeed better than others, but once fairly started they stand or fall without the aid of coddling or nursing. We grow a goodly breadth of late sorts on north borders; the walls are not more than 10 feet in height, consequently they receive plenty of light, a fair amount of sun, and although they sometimes suffer from an excess of wet, this spring they are looking quite as well as kindred kinds on open quarters. I do not object to old plantations losing most of their leaves, as this is a fair sign that the crowns are well ripened. Moreover, such plants soon throw up fresh leaves and produce flowers in great profusion. Frogmore Late Pine and Loxford Hall Seedling winter very well with me; but I am obliged to raise the strongest young plants I can secure every year, otherwise they go off during the summer. The old favourite Sir Charles Napier is least satisfactory, and for some years I have given it up; but if any distant reader has a few good plants to spare, I shall most thankfully accept them. W. COLEMAN.

I have been anxious for some time to know how Strawberries outdoors have fared, and after reading Mr. Gilbert's letter, I have to-day particularly noticed the several varieties growing here. Elton Pines are without a green leaf; British Queen, though not so bad, looks very sickly; Vicountesse Hélicart de Thury is the best of all; Loxford Hall Seedling is very much cut up, as is also Paxton's King of the Earlies; Pauline, planted in a very exposed position, looks promising. I never remember seeing, not only the Strawberries, but vegetation generally so cut up. Wind north and north-east, with up to 16° of frost on Good Friday, is enough to startle the most able man.—STEPHEN CASTLE.

Notes on the Pepino (*Cucumis sativus*).—The taste of the fruit varies with the locality, and I must here reiterate that the hotter the place the poorer the taste of the Pepino. Those which I raised under glass never came up in flavour and acid to the fruit raised in the open ground. In fact, both were decidedly wanting. Without the acid the fruit is comparatively valueless, as it is this remarkable acid—remarkable by its property of allaying the thirst—which gives the fruit its great value. In eating the fruit it is necessary first to peel it, as the skin contains a very bitter principle, or perhaps a

rather pungent one. As the Pepino ripens in the Central American highlands, where the average temperature during the ripening season is about 72° Fahr., it certainly ranks as one of the most valuable fruits of the country, and is so considered by both natives and foreigners. It is, however, not to be expected that the Pepino will prove equally good everywhere, but it will find its choice location just as nearly every other fruit known. A plant and fruit somewhat analogous to the Pepino as regards climate and other conditions is the "Curuba," from the highlands of Ecuador and Bogota. It is a Passion Vine, bearing a fruit there considered the finest of all fruits, and is generally commented upon by all travellers. The seed of this was first introduced by me to Central America, and from there brought to California. The Vine is tolerably hardy, having here in Fresno stood uninjured, except as regards the very tender tips, a temperature of 26° Fahr., northern exposure. I have great hopes in this fruit for California and the south, and perhaps also as a greenhouse Vine. It is entirely distinct from *P. granadilla* and *edulis*. The scientific name I do not know.—GUSTAV EISEN, in *Gardeners' Monthly*.

GRAFTING AND INARCHING VINES.

MR. CASTLE evidently firmly believes in the possibility of improving the quality of an inferior sort by grafting or inarching it on to a variety of superior excellence, this being altogether at variance with my experience as given on pages 208 and 209. The favourite stock—the Muscat of Alexandria—I have not had much experience with for grafting purposes, for the simple reason that I have never practised in a garden where any of the latter could well be spared. For home consumption the Muscat of Alexandria has no equal, and, as far as my experience goes, no other Grape realises such high prices in the market, say to the end of February, and always supposing the samples are good. Being one of the most vigorous growers without approaching grossness, it is undoubtedly well suited as a stock for any other variety, and as Mr. Castle finds Gros Colmar a more profitable variety, he acts wisely in utilising it as a stock for the latter. As he is careful to point out, his Grapes are grown for the markets, which is a very different matter to growing for employers who insist upon having Grapes of high quality. Thanks to the courtesy of Mr. Castle, I have recently had an opportunity of tasting Gros Colmar cut from rods inarched on the Muscat of Alexandria stock, and readily admit they were much above the average quality of this variety, but I venture to assert that the improvement effected is owing to two causes, viz., superior culture and good preservation. Unfortunately, we used the last of ours early in March, and therefore could not compare them with Mr. Castle's, but others beside myself who both tasted the last of our Gros Colmar cut from Vines on their own roots and Mr. Castle's productions arrived at the conclusion that there was not much to be said in favour of the latter. The conclusion I have arrived at is, that Gros Colmar is not in season or at its best much before March, and both private and market growers will do well to keep them as much as possible to that time of the year. Mr. Castle also keeps the Alicante in good condition and the flavour is good, but as a marketable variety it compares most unfavourably with Gros Colmar. I hope to have good bunches of Gros Marce on rods inarched and otherwise in three different houses—early, mid-season, and late—and shall be agreeably surprised if it is really good to eat in either case. I would much like to taste berries of this variety at all approaching in quality those of Gros Colmar kindly sent me by Mr. Castle.

SHANKING CURED BY GRAFTING.—Grafting, or inarching, Mr. Castle considers a partial remedy for shanking, and to a certain extent he may be right in his surmise. In reality, the mere fact of adding a fresh variety to the stock has nothing to do with it, but a new rod, whether from a graft or laid in from the old Vine, may safely be credited with the improvement effected. If called upon at the present time to prevent shanking, more especially on old Vines, my first proceeding would be to lay in young rods from the base, and in some cases or

where the Vines were weakly, a second one from near the middle of the old rods. These being duly stopped when they have reached their prescribed distances, all laterals and sub-laterals being also stopped at the first joint, taking care to well expose both the foliage and wood to plenty of light and air, we should have good rods for fruiting next year, and an autumn renovation of the border would complete the cure. In very many instances, newly planted Vines grow much too strongly the first two or three years, too large or too rich borders being principally to blame for this. The consequences of this are rods much too pithy, and as the pith is certain to shrink eventually, a contraction of the wood and an interruption of the necessary free flow of sap follows. In this state, if heavily cropped, shanking is the natural result. Innumerable rods are much injured by the time-honoured, but most unwise, practice of skimming, scraping, and plastering over with some strong compound, this being done under the impression that it is impossible to keep them clean during the growing season without it. Vines thus treated never swell properly; on the contrary, they appear to get smaller, but unless they continue to enlarge in a healthy manner, shanking will be brought about. Let me advise all who have charge of such Vines to commence their renovation by at once laying in young rods, or if it is desirable to change the variety, to graft or inarch them with more valuable sorts. Young or inarched rods will communicate some of their vigour to the stock or old growth immediately below them, others besides Mr. Castle being well aware that the flow of sap may easily be reversed. We have cut Grapes below the union of the scion and stock, or on the lower portion of the former, and these were perfected entirely by sap that descended to them.

W. IGGULDEN.

Diseased Vine leaves.—I send you leaves of a Vine and I ask your opinion. The Vine is a Muscat of Alexandria with two rods. Last year it perfected eighteen or twenty fair-sized bunches. The temperature, 75°, with sun heat, and about 55° at night (slight variation according to weather)—not under. In the same house are two other Vines, Muscat Hamburg and Mrs. Pince. These also did and are doing well now. The house had neither mildew, spider, nor thrips. The wood ripened well, had little pith, and was very firm. There are inside and outside borders drained and apparently in a satisfactory condition.—IVYBRIDGE.

* * Muscat Vine leaves deficient in chlorophyll. This deficiency is sometimes the result of an improperly high temperature, sluggish root action, and a diminished supply of light and fresh air; but this is not your case, as you state the minimum temperature of your vinery is 55°, the maximum 75° from sun heat. Again, you say that Muscat Hamburg and Mrs. Pince Muscat, two comparatively hardy Vines in the same house, are looking well. It is fortunate that these facts have been mentioned, as the cause of failure is plainly due to want of heat and probably an insufficient supply of fresh air. If the temperature to which a growing plant is exposed is not lowered so much as to destroy it, but just reduced to that point within which it will continue to live, the plant is brought, by the absence of a sufficient exciting cause, into a condition similar to that produced by over-excitement. It absorbs food from the earth and air, but it cannot assimilate it: its tissue grows, but is not solidified by the incorporation of assimilated matter; aqueous particles accumulate in the interior, a general yellowness ensues, partly from the want of a sufficient power of decomposing carbonic acid, and partly from the inability to decompose the water collected in the interior. Muscats in full leaf exposed to a temperature of 55° through the night are brought to the condition which does not kill, but being unable to decompose carbonic acid and exhale oxygen, the foliage becomes thin, flabby, and destitute of healthy colour and substance. Gradually raise the temperature of your house to 65° at night and 80° by day, allow fresh laterals to grow freely, give a chink of air through the night, shut it off at the morning syringing, and reopen the ventilators when the temperature begins to rise.

Ran up to 80° with air on fine days, and 5° higher after closing with sun heat, but do not overdo your Vines with atmospheric moisture until the colour in the leaves begins to improve. It is just possible the roots of the Vines may have gone down into the drainage or the borders may have become inert—two predisposing evils which cannot be grappled with until the autumn, when, as you suggest, they may be lifted and relaid in fresh compost. Meanwhile, give the Vines proper Muscat treatment. Mrs. Pince and Muscat Hamburg will not resent it, and, provided the Muscat is well rooted, you will soon find a great improvement in the new foliage.—W. COLEMAN.

LATE-KEEPING APPLES.

I CAN fully corroborate all that "A. D." says (p. 348) as to the excellent promise of a good crop of Apples of all kinds, and I heartily second his proposal that should we get anything like the promises of spring fulfilled in the autumn, that some means be taken to make the most of them by our home growers, by forming a company or some other means, so that the fruit is not crowded into the markets at gathering time, and the prices brought so low as to benefit nobody, and by the time the American consignments arrive there is really no stock of home-grown ones to oppose them. It is a singular thing that although even early or mid-season Apples are exhibited in good condition very late in the season, as described by Mr. Iggulden (p. 347), yet, as far as the market supply is concerned, our home growers appear to get cleared out very soon after Christmas. It is by no means an uncommon thing when a good Apple crop is general for the price to rule so low in the markets during August, September, and October as to hardly pay the growers for sending them any distance. Now, anyone used to Apple culture must be aware that it is to the soft Apples of the Keswick Codlin type that crop so freely, and which it is useless to try to keep any length of time, that the glut is due. The only thing to be done is to utilise them to the best advantage, and to reserve every kind that will keep, if only for a month, as even in the most abundant Apple seasons the home-grown supply soon fails from the very inadequate provision made for storing the crop. As for want of proper storehouses, the small growers send their crops direct to market from the tree, and once there they get into the hands of retailers, who, having even worse accommodation for storing than the growers, sell them at any price, so that Apples that would keep three or four months and be worth 50 per cent. more money are got rid of, to the injury of the home grower and to the direct encouragement of the foreigner. What we want is not only to grow more really good Apples that will keep until the spring, but, above all, to take more care of what we do grow, and it is to the wretched insecurity of tenants not only as to their land, but to any compensation for improvements, that proper storehouses for fruit are not one of the things attended to by them. A fine lofty building is not needed, as one half sunk in the soil will keep Apples far more crisp and juicy than one of the airy lofts that are frequently the only places for storing fruit, even in large gardens. As to laying Apples out in single layers, it is all very well for show fruit, but quite useless for market supply. I have proved over and over again that if stored in good sized heaps that the less they are moved about the better; in fact, like Potatoes, if sound when put together and stored in a dry place where the temperature does not fluctuate much, the losses will be far less if left alone than if turned over every fortnight. As companies are formed now for almost everything that offers a reasonable chance of yielding profit, I feel sure that if one were formed for buying up Apples that would keep, and storing them until the spring they would clear a large profit. JAMES GROOM.

Glasport.

SHORT NOTES.—FRUIT.

Fruit buds of Peach trees dropping.—Can any of your readers state the cause of my Peach trees dropping their fruit buds? They have been planted twelve months

last autumn and grew very well last summer; they are in a border 18 inches broad and 1 foot deep at the back of a lean-to vinery. When the buds should have begun to swell they all turned brown at the base and fell off.—A. M.

VINES AND GAS-TAR DRESSING.

A FEW years ago a mixture of gas-tar, lime, &c., was strongly recommended for dressing Vines and ridding them of bug and thrips, but I venture to say that it never has, and never will, come into general use. Many gardeners have been afraid to use it, and others, like myself, have not been satisfied with the results obtained. I will give my reasons for not using it, as they may act as a warning to others who contemplate its use. It is ineffectual, for it does not rid the Vines of these pests, and, in my opinion, no single annual dressing of any insecticide which may be used with safety can ever do so. My great objection to it, however, is that it is positively injurious to the Vines, for it so hurts the growing shoots that when an attempt is made to draw them to the wires, they snap off at the base so easily, that it is impossible to get them down safely, no matter how carefully the operation may be performed. During the first year I used the mixture I lost great numbers of fruiting laterals, many of which were showing the finest bunches; and I found at last that I must leave them untied, or lose all my crop of fruit; and, fortunately, I was able to leave them alone until the weight of the bunches brought them down. Though feeling sure that this was brought about by the tar-dressing, as it only occurred in the house where that was used, I thought I would try it again the following year, so I dressed alternate Vines in another house with the mixture, and got precisely similar results.

My opinion is that no insecticide will ever penetrate the crevices in the bark of a Vine sufficiently to kill all insects which are there, and dressings of such wretched compounds as the gas-tar mixture are worse than useless. With regard to the shoots snapping so easily after its use, I think the tar binds the bark round the bud and prevents its natural expansion, and causes the wood to become brittle instead of pliant; for I have noticed that the shoots on the Vines were smaller at the base than were shoots of a similar size from other Vines; while immediately above the base there appeared a warty excrescence which showed that something had injured them. I may be told that I allowed the buds to get too forward before using the tar, but I invariably prune early, and dress or clean the Vines at once.

Having had enough of it, I returned to my usual method of treatment, which is to scrub the Vines thoroughly with a strong solution of Gishurst compound dissolved in hot water, going over them twice with an interval of a fortnight. Besides scrubbing the Vines, I have the houses scrubbed and then syringed with water almost boiling, and then scrape off half-an-inch of the top surface of the border. This must be supplemented by strict attention and constant watching during the growing season. If the pest is bug, keep a bottle of paraffin in the house, and dip a small brush in it and touch the insects wherever they are seen on the wood; one drop will spread and destroy a colony. If thrips are the enemy, or if the bug has spread to the leaves, a sponge and some nicotine soap mixture will destroy them. Almost any insecticide will do if used carefully and frequently; all are useless without it. Make a point of looking over the Vines once or twice a week from the time they start until the fruit begins to colour. I cleared my houses from bug in two years by the above means, and was well repaid for the labour. C. T.

Grosse Mignonne Peach.—My experience with the above-named Peach has led me to quite the opposite conclusion to that given by "S. W." to "X." at page 318. I cannot think that "S. W." has had the true variety, or so good a fruit-grower and such a close observer as "S. W." is would have not condemned the variety in question so strongly. During the over twenty years I have been a head gardener I have never failed in producing good crops of it, and have come to look upon it as one of

the best cropping, most handsome looking, and finest flavoured Peaches grown. It certainly has the drawback of being difficult to pack when fully ripe. We have an old tree in our second Peach house that has never failed in producing a good crop for the past fifteen years, and I learnt from my predecessor here, Mr. Denning, that it had done well under his care for several years previous to my coming. I have picked traysful of fruit frequently that have weighed 7 oz. each on an average. If the border in which the tree is growing gets at all dry in the winter I find a tendency to bud-dropping just as the sap begins to move in spring. This year we have pulled hundreds of fruit off already, so thickly were they set.—H. J. C. *Grimston.*

GOOD APPLES.

TO THE EDITOR OF THE GARDEN.

SIR, I read your interesting paper THE GARDEN with much satisfaction and pleasure, and at page 347 I see a short notice of good keeping Apples, but it is a very scanty list. Having an excellent garden in the south of Scotland, I have taken a special interest in the question of having really good kinds and varieties of this most useful fruit, and I may say the following is a very good collection of fine fruit and most valuable in the house, some of them keeping in a good state until July last year. The following is the list of kinds produced:—

Gravenstein	Duchess of oldenburg
Alfriston	L. rd. Suffolk
Warner's King or Nelson's	Blenheim Orange
Glory	Bibston Pippin
Yorkshire Beauty	Beauty of Kent
Hawthornden, old and new	Lord Burghley
Rehlinville	King of the Pippins
Nather's Damppling	White Russet
Stirling Castle	

I have also young trees and grafts of—

Lane's Prince Albert	Early Julien
Lady Henniker	Cox's Orange Pippin
Lane's Incomparable	Braintree's Seedling
Golden Noble	Westwood Park Nonsuch
Rymer	Peasgood's Nonsuch
Cox's Pomona	Pearmain (two kinds)

besides some ten other kinds, names not known.

M.
** The above is a very good selection of Apples. There is plenty of early and mid-season varieties. The varieties we want are those that will remain fresh and crisp up till April and May.—Ed.

PROSPECTS OF FRUIT AND KITCHEN GARDENING.

SOME years ago, when looking at a fine lot of St. Michael's Pine-apples in a fruiterer's window in Manchester and noting the price of them, I said to myself, "Pine-growing in England is doomed." I afterwards ventured to say as much in one of the horticultural papers, and was taken to task for making reckless statements by others interested in Pine culture at home, and who dwelt on the superior quality of English Pine-apples and the desire to have these by those who knew what good Pines were, and so forth; but from that time till now Pine-growing has so rapidly decreased in private places, that it may be said to be now practically given up, while in the trade it has been given up entirely, I believe.

I refer to this subject now because it is impossible to ignore the fact that the same changes are likely to take place very soon in the case of not a few fruits and vegetables that have hitherto been grown in the home garden, which is fast being pushed to one side just as home farms have been, and which once supplied almost everything wanted about a gentleman's place, from the corn that made the bread, and the beef and mutton to the clothes that the people of the place wore. It is not so long since these changes in gardening began, and there are plenty of gardeners living yet who remember the time when, if a supply of fruits and vegetables failed at home, they could not be supplied from elsewhere, because the transport was wanting and the supply did not exist. It is different now, however. Look at the Apple and Pear supply, for example. Critics of our home fruit culture may talk as they choose,

but the fact remains that the American Apple supply sprung up after English Apple culture had been established for generations, and it has all but killed the home trade in good useful Apples, proving that other causes than our want of skill and energy have been at work to produce such a result. The wealthy now mainly buy select dessert foreign Apples and Pears, and prefer them to home grown, and no doubt they can be bought cheaper than they can be grown at home, all things considered, one reason being that when people buy, only what store is actually required is bought. At all events, you now find the American Apples by the ton in every village shop of any consequence, and the finer French Pears can be had either consigned direct or from the nearest town in an hour or two's notice. And it is the same with many other things. Look at early Potatoes, which it was once such a feat to produce a few mouthfuls of in pots and frames at or before Easter, but which you can now buy for a few pence. Broccoli and Cauliflower are the same. While the gardener in the north is sowing in August for a spring crop and carefully forwarding and tending them under hand-lights for six or eight months for the sake of a few heads, Cornwall Broccoli and Cauliflowers are being hauled about the country villages in hucksters' barrows at prices and of a quality the gardener cannot match. With most other early crops it is the same, and one naturally asks, is it worth while carrying on old and expensive cultural practices in private gardens, the reasons for which now do not exist?

I have never been able to regard a fruit or kitchen garden from any but a utilitarian point. In all cases the income should bear some reasonable proportion to the outlay, but the rule has been the other way. Private kitchen gardens have not, as a rule, been conducted on paying principles, or even on any pretensions to paying, or there would not be so many reductions now. The outlay on fruit culture under glass never, in many cases, bore any reasonable proportion to the possible returns. It is all very well and pleasing to some people to talk about the successful Grape culture, Peach culture, Apple culture, &c., of so-and-so and so-and-so, all of which have been chronicled often enough, but when did you ever see the cost of the extravagantly made borders, houses, and culture, &c., put against the result? I tell you the records of some famous gardens in these respects in bygone times would be regarded as simply scandalous by any committee of inquiry. In the education of our young gardeners in past times a good deal of blame lies at the door of their teachers, in whose works it is plain no considerations of this kind have exercised any influence. Of course, where proprietors have taken an interest in their own affairs, these things have not happened, and there are plenty of gardeners now who are alive to their duties in that respect.

Reverting to the fruit and kitchen gardens of private establishments, our opinion is that we shall see considerable revolutions before long, now that the private garden is looked at from a commercial standpoint much more than it used to be. The forcing of those vegetables and fruits that can now be had in the market cheaper and earlier, and often better, than at home will have to be given up. It does seem to me, as I have before hinted, a ridiculous thing to see good and practical gardeners forwarding for their employers at so much labour and expense early crops like Broccoli, Potatoes, Lettuces, &c., that are being sold for a trifle to cottagers at their doors, and it is the culture of these I would have discontinued and something better substituted, just as Pine-apples have been given up and been replaced by Melons, Strawberries, and other crops. I doubt, also, if the future will see so many extensive walled gardens formed, seeing those that exist do not pay anything like a fair interest on the original outlay, as regards the walls at least and the fruits from them; and as for shelter, it can be provided in a more ornamental and as effectual a form by means of trees and bushes. A much less extent of glass houses would more than provide the means hitherto supplied by brick walls, and be far better—the aim always being to grow such crops as are most appreciated and can be better supplied at home.

W.

SEASONABLE WORK AMONG FRUITS.

PINES.

THE earliest fruiterers, now well advanced, will require and will repay special attention; otherwise, the hard forcing to which they are generally subjected will result in disproportionate crowns if not in premature ripening. As days increase in length and the dry parching winds give way to more genial growing weather, the elongation of the crowns may be prevented by an additional supply of air. The syringe may be more freely plied, if not overhead, certainly over the surface of the bed and about the axils of the lower leaves, in which the stem-roots are now sufficiently advanced to be of great service to the fruit, and warm diluted liquid, soot, or guano water may be given to the roots whenever they require feeding. If all the Pines have not been properly supported, they should be well staked, as nothing looks worse than a lop-sided crown. All gills, as I have previously advised, must be detached and the suckers on each plant reduced to one, or at most two, which in private gardens will be found quite sufficient for future stock. The night temperature in this compartment may now range from 70° at night with a little air to 80° or 85° by day, also with air, and 90° to 95° after closing, with full sun-heat and moisture. As sun-heat declines, the fires must still be started in time to catch the night temperature at 75°, otherwise the admission of the usual chink at banking time will reduce the house too much before daylight, when early syringing will be delayed. Where blinds can be let down, or some other kind of covering applied, the rapid changes which take place through the early spring months can often be counteracted, and, be the materials ever so thin, the loss of heat and moisture by radiation in a great measure will be prevented. Moreover, fierce fire-heat, often so prejudicial, will be avoided and the fuel item considerably lessened. In these days of depression, it behoves all to look well into trifling details, and this matter of covering, not only of Pine pits, but houses of every kind in which a high and steady temperature must be maintained through long, cold nights, especially when the moon is exercising her influence, is worthy of the most careful consideration. These remarks are equally applicable to

Succession houses, in which the plants, consisting of Cayennes and Rothschilds as well as Queens, are now throwing up their fruit. Here the same attention must be devoted to top-dressing with lumps of turf, suckering, and staking, but the first two being comparatively shy sorts they do not often throw more suckers than are wanted for keeping up the supply of young plants. A steady bottom heat of 80° to 85° suits these plants well after the Pines are up, but it sometimes happens that sharp spring firing exhausts the moisture and the heat suddenly declines; when this is observed the plunging material should be levelled and well packed about the pots as a preliminary to the application of warm water, not to the roots, but to the tan or leaves. If this produces the desired effect, a slight covering of fresh material generally carries the plants through, and the objectionable practice of disturbing a plant after it has started is avoided. As these plants, especially the Cayennes and Rothschilds, will require more water than would have been good for the early Queens, the usual stimulants may be more freely administered, not haphazard at stated periods, but with a liberal hand when the plants actually require water. In the same way may water be passed through the syringe, not in drenching overhead showers, but about the walls, the paths, and every dry corner that will respond by throwing up a volume of warm vapour. Plants intended for starting later in the season must be kept well up to the glass, where they will make firm, stocky growth, and having the full benefit of solar heat, supplemented by liberal supplies of warm liquid, they will soon fill their pots with roots and check themselves into a fruiting condition. The temperature in this compartment may range 5° lower than in the preceding house, and should it be found necessary to shade, the texture of the material used should be of the lightest nature, otherwise the foliage will become

soft and elongated, and this even should only be applied for a few hours through the hottest part of exceptionally bright days.

Suckers.—In many places the potting of these was delayed by the inclement state of the weather, but all will now be making good progress, and the activity of the roots will justify daily syringing or dousing over and the moderate application of water. As few now grow large batches of Pines for market purposes, and private consumption is small, a few plants in every stage following each other step by step will best answer the gardener's purpose, as he will never be without plants in fruit or in a condition for throwing into that state. To carry out this method the first thing to be guarded against is superfluous stock, as to many it seems so strange to leave off at the twentieth plant where years ago the potting of one hundred would barely suffice. But then, on the other hand, the great half-yearly pottings, equal to two spring cleanings intensified, have now been broken up into half a dozen little goes, followed by the natural result, that we have just as many plants as we want and all are well treated. The foundation of these satisfactory little batches of plants no doubt is laid in the sucker pit or frame, for once a sucker becomes drawn no power can transform it into a broad-leaved, sturdy-fruited plant. Here, then, the grower must be ever on the watch; the bottom heat, sharp and sweet, must be kept about 90° for forming roots, 80° to 85° afterwards. The plants must be plunged near the glass, and room for full development must be made by constantly potting and moving a few of the best forward.

FIGS.

Early houses in which the fruit is now ripening, or approaching that stage, must be brought gradually round to a drier condition, not so much by the withholding of moisture as by giving more air, not by withholding water from the roots, but by giving them a thorough soaking and covering up the balls or beds with some dry, non-conducting material to check absorption in the atmosphere. Many people, on seeing the first ripening Fig, reduce fire-heat, suspend the syringe, and give more air; but all gardeners know the Fig is fickle enough without being made to undergo these indignities. Moreover, it is a dear lover of heat, and having, under our artificial treatment, two crops of fruit in two distinct stages upon it at one and the same time, we are obliged to temper our treatment to secure the shadow whilst guarding the substance. The ripening stage reached, my own treatment is as follows: The night temperature is allowed to range about 65°, with a little air at the apex, but no difference is made through the day, as advancing fruit must have a high temperature and a moderate supply of moisture, provided it is not stagnant and direct syringing is avoided. When the most forward Figs have been gathered, copious syringing early in the day and liberal supplies of warm liquid keep the second crop of fruit advancing, and spider during these give-and-take periods does not make much, if any, progress. If the second crop is heavy we thin off the least promising fruit, as this is the only safeguard against dropping. All spray is cut out, and gross shoots that have filled their allotted space, or are drawing too much upon the trees, are nipped and tied down to the trellis. Weaker growths, which form their terminal buds at the fifth or sixth leaf, are never pinched, as they produce the earliest fruit in the coming year. If it happens that root-pruning has been neglected and any of the trees develop a tendency to grossness, a general pinching, which induces fresh breaks, is the only means of checking and keeping them in order.

Succession houses.—Although the weather is unseasonably cold, the present month has given us a fair average of bright sun-heat, and, as a natural consequence, the fruit in these is swelling fast. If close pinching is practised, a few of the strongest growths should be checked every day, and tying down regulated in a way that future crowding will be avoided. When the fructifying stage is reached, patience, steady forcing with plenty of root and atmospheric moisture, combined with liberal thinning, will render this as safe as any other crop of

fruit, whilst neglect of these details, not forgetting the last, may result in the trees performing this operation for themselves.

Later houses having the benefit of artificial heat need not be hurried by daily firing, as they can be shut up with brisk sun-heat and moisture, and having the pipes to fall back upon, 50° to 56° can always be secured through the night. With us these trees are pushing heavy crops now about the size of Hazel Nuts, but they are grown strictly on the extension principle, the superfluous shoots being cut clear away in the autumn or whenever we feel disposed to throw them out of bearing for ripening up the wood. So long as these trees are kept growing they are never without fruit, and for this reason the amateur will find this not only the most simple, but certainly the most profitable mode of growing late summer Figs for his own use.

CHERRIES.

These in early houses having passed the stoning and thinning stages, a little more heat, principally from solar influence, may now be given. A low night temperature of 50° to 56° with a little air must, however, still be maintained, and with a liberal supply when the sun is shining full upon the house it may rise to 70° or 75° through the middle of the day. The step from stoning to colouring, especially of early varieties, is short, but it is quite long enough to enable the active little grub to decimate the crop. This, then, must still continue an object of attention, and so long as a rolled-up leaf or a perforated fruit can be seen, the depredator must be searched for and destroyed. The next and perhaps the only enemy is aphid—black, green, or brown, and as these soon tarnish what the weevils leave, gentle fumigating, whether they are present or absent, should always precede the colouring process. Fruit that is ripe or approaching that stage should not be fumigated; neither, if these precautions are observed, will it require it, as tobacco-smoke hangs about and destroys the flavour of otherwise delicious Cherries. When Cherries are ripe they will hang for a long time on clean, healthy trees, always provided the house is kept dry, cool, and well aired in fine weather. The most subtle enemy within is damp, but this can be prevented by the occasional and most gentle circulation in the hot-water pipes. The last and most ferocious destroyer is the blackbird, and he must be circumvented by small-meshed fishing nets dropped over the ventilators and doors.

PLUMS

carrying full crops of fruit must be kept thoroughly well mulched and liberally fed with diluted liquid; the syringe, too, may be plied twice a day, great care henceforth being observed in the choice of water that is free from lime or other sediment. If not already thinned, the superfluous fruit should now be removed with a pair of Grape scissors, leaving those intended for the crop as evenly placed as possible over the extremities of pyramids and bushes. All laterals and strong shoots must be kept closely pinched at the third or fourth leaf, more or less, in accordance with the size, or intended size, of the trees, a thin and evenly balanced growth combined with symmetry being the guiding points. Trees trained on trellises must also have their side growths closely pinched, to secure flower-producing spurs; but terminals, wherever space admits, may be allowed to extend, if not throughout the season, certainly so long as they do not interfere with the proper balance of the trees.

Insects.—Like the Cherry, the Plum is subject to grub, aphid, and spider, but the latter should not gain a foothold, neither will it where the syringe is properly used. Greenfly is easily destroyed by fumigation; black and brown aphid are most effectually dealt with by dipping the parts affected overnight in tobacco-water and thoroughly syringing the following morning. Soot water not very strong is an excellent wash and stimulant for use amongst all stone fruits, and a good supply should always be kept on hand. The easiest method of manufacture is as follows: Put a peck of soot in a bag, and sink it in the water-tank or in a cask, which should be kept regularly filled up, to ensure having the water perfectly clear and not too strong. W. C.

HORSE CHESTNUTS AT BUSBRIDGE,
SURREY.

THE noble group of Horse Chestnuts shown in the engraving is one of the many beautiful pictures of tree life that may be seen in the grounds of Busbridge Hall, near Godalming, the residence of Mr. Ellis D. Gosling. The trees stand on a natural mound of slight elevation, and on three sides are entirely unencumbered with wide stretches of level lawn running far away right and left, so that nothing hinders either a distant view of the whole group or a nearer observation of grand trunk and massive limb and delicate branch.

The sheltered and well-watered valley which forms the home portion of this beautiful estate is favourable to tree growth, notwithstanding its very poor sandy soil. Planes, Beeches, Scotch and Silver Firs are conspicuous from

and greenhouse plants, and even Ferns, apparently with no evil results whatever.—C. COLLINS.

FLOWER GARDEN.

DELPHINIUMS.

CALLING upon a friend in Staffordshire last summer, I was much struck with the beauty of a number of large bushes of Delphiniums growing in a border among the hardy flowers, in a choice collection of which he took great pride. It was worthy of notice that in a number of villa gardens near which my friend lives Delphiniums were conspicuous, and he told me they represented the overflow from his own garden, so much had his own seedlings been admired. And the matter of raising seedlings is a very simple one, for all that is necessary is to prepare a seed-bed in the open air, making it up with a nice free soil, drawing drills in it, and sowing the seeds without delay. The seeds should be placed in the drills as thinly as possible, some fine

rains and assists them in spring. Slugs are sometimes found destructive to the crowns, and they are more dangerous in the case of young plants than in well-established ones.

Among the new varieties recently offered are *Diomedes*, a semi-double variety, the outer petals of a beautiful soft azure blue, the centre clear mauve; *Excelsior*, an extra fine fully double variety, colour rich sapphire blue, the centre petals marbled with rosy mauve; *Falka*, single, Mexican blue and rosy mauve intermingled, good dwarf habit, and very free blooming; *Mrs. Barlow*, single, light azure blue and rose, prominent black centre, a beautiful and novel variety; *Mrs. Roper*, single, most pleasing pure pale cobalt blue and mauve, white centre; and *Thomas Tillbrook*, rich French blue, the base of the petals rosy mauve, a large double flower of great merit. It may be remarked that a good many new varieties are raised annually in Scotland, where the Delphinium is a great favourite.

I would advise anyone desirous of forming a collection to purchase a select number of good varie-



Horse Chestnuts in the gardens at Busbridge, Surrey. Engraved for THE GARDEN from a photograph by Miss Jekyll.

their great size and free development, and there are some Larches that are truly giants of their kind.

Narcissus Little Nell.—The Daffodil committee at their last meeting passed as a recognised variety a new one of Mr. Hartland's, called Little Nell. I think the committee were rather unwise to encourage the naming of insignificant and useless varieties such as Little Nell. I have always understood that one of the objects of the Daffodil committee was to name varieties which were an improvement on some other variety. I cannot make out what Little Nell is an improvement on. It seems to me to be inferior to *pallidus præcox*; indeed, I should not be surprised to find it is a small form of that variety.—D. W.

Sea sand for plants.—On p. 353 "S. W." inquires whether the sea sand recommended is procured from places covered by the tide or from the banks. Here it is procured from the beach, which is covered with water at the incoming of every tide, and is very salt; I have frequently tasted it. We use it here not only for cuttings, but ordinary stove

soil being put over them, and when the seedling plants are large enough they should be transplanted to a bed, carefully watered if necessary, and there they can remain until they flower. It might be possible, by sowing the seed in a gentle heat in February, to get some of them to bloom the same season; but probably it is more satisfactory on the whole to sow in the open ground, and allow the plants to grow on into size according to their own natural robustness. As the flower-stalks of the Delphinium are liable to be snapped off by the wind, stakes should be placed against them; in the case of young plants, one will suffice, but when a plant puts up several shoots, three at least will be necessary. Unless seed is wanted, it is best to cut away the flowering stems directly they have gone out of bloom, as growth in the form of side shoots is encouraged, and later flowering stems arise. Strong plants will last for years in the open borders; they make an excellent back row with Dahlias, and they are greatly helped if some mulching be given to them in the autumn in the shape of manure, which is carried down to the roots by the autumn

ties and save some seed from them, and raise seedlings for themselves. A few really good and distinct sorts from which something fine could certainly be raised are *alopeuroides*, rich blue; *Belladonna*, pale blue; *Brilliant*, rich deep blue; *Eclipse*, brilliant blue, extra fine; *George Taylor*, rose, laced with pale silvery blue; *Madame H. Jacotot*, bright sky blue; *Pompon Brilliant*, bright indigo blue; *Madame E. Gant*, deep blue, shaded with purple; *Sultan*, almost white; and *William Pfitzer*, brilliant sky blue, large, and fully double. The foregoing is a select list, and I am certain none of them will disappoint. R. D.

Double Primroses.—I am much interested by Mr. Wm. Elliott's note in THE GARDEN, April 9 (p. 336) on double Primroses. Can Mr. Elliott give any further particulars of the origin and history of these flowers? Does he attribute the double *Polyanthus* to *P. altaica* also? I do not know this *Primula*, but I find the date of its introduction to our gardens is 1819, and if that be accurate, it brings double Primroses much more within the range of

modern history than tradition would lead us to suppose. The only double Primrose that flowers all through the winter with me is the double white; whereas I find single ones of various shades produce flowers from time to time from the beginning of December onwards. It would be interesting to know the history of the new double yellow Primrose also, and how it escaped any taint of the altaica in its ancestry.—*SCOLEPENDRIUM*.

New varieties of Primula Sieboldi.—Mons. Victor Lemoine, of Nancy, to whom English horticulturists are indebted for so many good things, this season announces three new forms of *Primula Sieboldi*, viz., *Alba Magna*, with large, pure white flowers, stout, bold, and of the finest quality; *Diane*, rosy plum, extra fine; and *La Ligne*, rosy purple or violet, with a distinct white eye. The former should be a good addition to our collections. Good whites are requisite in order to provide a proper balance to flowers of deep and striking colours.—R. D.

Eulalia japonica variegata.—As a "dot" plant this *Eulalia* is a capital subject in the flower garden during the summer. Small plants with at most three stems at planting time are best suited for this purpose. As a carpet, *Mesembryanthemum cordifolium variegatum*, *Herniaria glabra*, or any of the dark or bright-leaved varieties of *Alternanthera* answer well. Now is a good time to divide any plants which have been used last year for bedding or which have been grown in pots. These should be potted in sandy and not over-rich soil and placed in a cool temperature, and they will quickly grow into useful plants.—E. M.

Mule Pinks.—These are most useful plants in the flower garden, and of late years they have come to the fore, especially the rich-coloured varieties of which Napoleon the Third is such a conspicuous type. Some are single and some are double; they are, as a rule, free growers and bloomers, and appear to do well in a soil that will suit the garden Pink. They can be readily propagated by means of cuttings which are made from the young growths which spring from the base of the flower-stalks. Such varieties as can be had will be found in the following list: *Abbotsfordianus*, light rosy purple, large flowers, a strong grower; *Atkinsoni*, single, intense vivid crimson, very showy; *hybridus multiflorus*, deep rose, very free; *Marie Paré*, pure white, a free grower; *Lady Campbell*, pale pink, dwarf, good; *Little Gem*, white; *rosens floribundus*, bright rose, very free and pleasing; and *speciosus flore-pleno*, reddish purple.—R. D.

Claytonia virginica.—By planting this much-neglected subject, all sorts of out-of-the-way and unsightly places, bare patches under densely shading trees, exposed mounds in woods, &c., may be rendered beautiful during the spring months. With us it has grown equally well in shade and in full sun, and in damp as well as dry situations, requiring little or no attention when once fairly established. In some districts of England it is said to grow wild, and its scarcity is the less easily understood, seeing how greedily the birds feed upon the seeds. It is quite distinct from *C. perfoliata* by the separation of the upper leaves at their base, besides their being of a bright, shiny green colour and quite succulent. The seeds, when shed in the latter part of summer, germinate freely in the open air, and no fear need be entertained of the crop failing unless under exceptionally severe weather; the flowers are white, varying to pink and rose. It is common all over North-western America.—K.

Two good spring-flowering plants. Of all my recollections of the matchless spring gardens at Belvoir Castle, Grantham, nothing seems so impressed on my memory as the effectiveness of the large patches of *Myosotis dissitiflora* and *Omphalodes verna* which Mr. Ingram uses so largely and with such happy results. I never before, and I have never since, seen the beautiful creeping *Forget-me-not* (*Omphalodes verna*) so much at home as at Belvoir. On the slopes, just within the shade of trees, it grows into dense masses and flowers profusely, and with such a glorious hue of clear blue! Moisture and shade suit it. I once saw some very pretty patches in an old farmhouse garden in Kent

on a rather stiff, clayey loam, but doing finely on a north aspect, untouched from year to year, and apparently reveling in a freedom properly their due. I have a patch of it under an east wall, and just where the shade from a bush Pear tree falls upon it; it is now coming into flower nicely. Of *Myosotis dissitiflora* one cannot speak too highly, and in the rich soil on the slopes of Belvoir it grows and blooms with wonderful vigour and freedom. Unfortunately, it is not nearly so hardy as *Omphalodes verna*, and it suffers greatly in such a winter as that we have just passed through. I had a very fine plant of it growing in a large pot that in December last was a marvel of size and robustness, but, though placed in a cold frame, it was completely killed. Out of doors, large numbers of it have been killed, in common with Stocks, Wallflowers, Antirrhinums, &c. If it was only as hardy and persistent as the common blue *Forget-me-not*, its value would be increased tenfold. But it will always be a precarious subject to carry successfully through our English winters, unless occupying a favourable position in the open air.—R. D.

THE FROST AMONG THE SPRING FLOWERS.

THE winter of 1886-87 will long be remembered for its heavy snow-storms and long continuance of cold weather. No frosts of exceptional severity occurred. In no part of Great Britain, so far as I am aware, did the thermometer run down to zero, though on three different occasions it fell to within 4° to 6° of the same. But the length of the frost seems to have made up for its lack of extreme severity, and seldom have Wallflowers, Violets, *Forget-me-nots*, and even Primroses been more severely hit than this season. Hardy vegetables, such as Cabbages, Lettuces, Broccoli, and even Flanders Spinach and Parsley, have also well-nigh disappeared. We imagined that all these flowers and plants were simply resting safely under a foot or more of snow, but instead of that the majority of them were perishing. Hence, when the snow finally left us, borders of Violets and *Forget-me-nots* and other plants looked as if they had been parboiled. The leaves were as black as one's hat, or completely rotted off, and the slaughter of the innocent Violets in embryo of thousands and tens of thousands of the *Marie Louise*, *Comte de Brazza*, *Queen Victoria*, and *Czar* was enough to make all lovers of spring flowers weep. But the most complete wreck of all were our borders and blocks of the lovely *Myosotis dissitiflora*. Of late years we have mostly left it in its winter quarters till the spring, moving the plants into their blooming beds and borders in February, March, or April, according to the weather and other circumstances. This year we have scarcely a plant left alive for blooming. I have never seen such a slaughter before. It is not simply the loss of the earlier blooms—that is no uncommon experience—but the whole plant, root-stock and all are killed. All this destruction or most of it happened under the snow, which we have mostly found to be a coverlet of safety.

The cold-resisting power of Violets in the open I have found to run in this order, beginning at the least and rising with the increase of numbers into the greatest: No. 1, *Comte de Brazza*; 2, *Marie Louise*; 3, *Neapolitan*; 4, *Victoria Regina*; 5, *Czar*; 6, the old double and single Russian varieties. On the first two, most of the earlier flowers as well as the finer leaves are destroyed; on No. 3 the flowers have mostly escaped, though the leaves have been severely pinched; on the next two the big leaves are destroyed and the earliest blooms, but many of the smaller ones are intact; the two Russian varieties have suffered least of all.

A rather striking case of the effects of culture on tenderness occurred in the case of some *Neapolitan* Violets. These were planted on a poor border, and made but scant growth, and the small leaves and embryo flowers are intact and uninjured on the starvelings; while the well-fed plants, with fine heads of foliage and embryo bloom, are completely wrecked. One more lesson the frosts of this winter have taught, and that is, to hasten back to the good old rule of transplanting spring flowers late in the autumn. If not convenient to mass them in their

flowering quarters at that season, hitch them over where they stand, or on to fresh storing ground towards the end of October; and thus, by checking growth and reducing the percentage of watery sap, multiply their chances many times of passing safely through the most severe winters. This double transplanting causes extra labour, but old-fashioned experience and the comparative safety of many thousands of such a sensitive test plant as *Myosotis dissitiflora* for many years prove that double moving is far safer than once, and that autumnal planting is the best means of ensuring the safety of this superlatively beautiful spring plant. D. T. F.

Chionodoxa Luciliæ.—Mr. Brockbank does good service in calling attention to the *Chionodoxas*; they are charming spring flowers. Four years ago I planted some *C. Luciliæ*. The first year they flowered very weakly, and the blooms were small, few on a truss, and generally rather disappointing. But since then they have gone ahead, until now they are splendid. Some of the blooms are very large, the centres pure white, shading off at the tips to a brilliant nemophila-blue. The truss stands fairly well up and bears several blooms. I find also that seedlings have come up near to them and have flowered nicely for young bulbs. *Chionodoxas* are not nearly so much grown as they deserve to be.—ANTHUS.

The Daffodil committee and naming of Daffodils.—With reference to what has been said on this subject by Mr. Scrase-Dickins, had I known, as I do since I came to London, that the naming of Daffodils was to be so restricted in future, I do not think I should have at all sent up yellow varieties for consideration, and I believe from what fell from the chairman at our last meeting, there was a resolution to some such effect passed at the end of the session last year. But in the case of white Daffodils the best thing for me to do now is to lock them up for future observation, though I think I convinced our respected hon. sec. that he had a hidden treasure at Coolhurst, which was only known to him as common cernuus, and also at some of the local Daffodil grounds I saw this Austrian giant towering above the common type of ordinary cernuus, so that soil did not in the least change its nature at Coolhurst or Tottenham. I would suggest in future that all the workings and sayings at our Daffodil committee meetings be taken down by a shorthand writer, and kept in a sort of blue-book for the good of future generations. It is an old saying, "the word dies, but the letter remains," and at the end of the session the year's work could be published in pamphlet form and distributed to members for their guidance. For instance, if a new seedling of advanced proportions be raised and named, it may be ten years before such could be distributed, members then having their book of reference would easily be educated as to its value. I shall be most happy to subscribe towards the work of both the shorthand writer's assistance and the publication of reports.—W. B. HARTLAND.

P.S.—I am very sorry we have not the full report in pamphlet form from the start in 1884.

Doubling of hardy Primroses.—I expressed the other day a belief that *Primula auriculaeflora*, so-called, was the single progenitor of the old double crimson Primrose. That all doubles have originated from singles in that way there can be no doubt, and I am satisfied of the fact for two reasons: first, that very often doubles have thrown single flowers, and, second, that very often singles will show a tendency to produce superlative petals, the anthers becoming petaloid. I have, for instance, noted that tendency in a number of flowers this spring, and think it probable that were the indication specially followed up, that some really double forms might further be developed. I am not a great admirer of double Primroses. They produce no seed, and cannot thus easily be increased, and they have no eye, which seems to be the peculiar charm of all the singles. I have seen cases in which both the double white and lilac have reverted to singles, very pretty forms, but which, like so many more dependent upon division, soon died away. Then it is noteworthy that all doubles

in reverting show thrum-eyed forms. That seems conclusive proof that authors change into petals only when prominent, as in thrum-eyed flowers. All the forms which I have observed showing a doubling tendency are thrum-eyed. That we get so few new doubles in hardy Primroses is possibly due to the wonderful increase in new things in the way of flowering plants which has taken place during the past half century, and now florists have little time, and perhaps a little inclination, to turn to the doubling of hardy Primroses. I have not heard of any instance in which any member of the Primula family has, in a wild state, been found with even semi-double flowers, not even a wood Primrose; hence it would seem conclusive that doubling is a product solely of cultivation aided by selection. A. D.

GLADIOLI.

TREATMENT OF THE SPAWN.—The spawn, as it is familiarly called, means really the small bulbules, or bulblets, which cluster round the bulb in more or less profusion, and which afford a curious illustration of variety in the production of the same results, for these small bulbules are of various sizes, shapes, and position. The most ordinary sort is that shaped like an egg, but with a sharp point at either end; this consists of a hard outer shell, and of a soft inner body which is easily damaged; when planted this outer skin decays, and the inner portion starts the shoot at one extremity, and the roots at the other. These bulbules cluster round the base of the newly-formed crown, between it and the old decaying one of the previous year, but in some cases they are formed at the end of a leafy stem about half an inch long, and several of these are clustered together. When a bulb is taken up it will be found that many of the bulbules are not fully ripened, and that the outer skin is not formed. Then there is another form in which the spawn is found, viz., in a very hard boat-shaped case; this fits on its concave side to the corn, and is sometimes found outside its outer skin, but also frequently within it. When this case is opened it is found to contain a bulbule, and sometimes two, or even three. I have opened one this morning (April 16) containing three.

Then, again, it is remarkable how varieties differ as to the number of bulbules they produce. Adolphe Brongniart and Mme. Desportes rarely have any, while Horace Vernet and Baroness Burdett Coutts produce them abundantly, and this to some extent accounts for the fact that some varieties are ten times the price of others which were "let out" in the same year, so that amateurs must not imagine that of necessity they will be able to reproduce the varieties at will.

It is, I think, a question for an amateur who grows on a small scale whether it is worth his while to trouble about the spawn, unless of new and scarce varieties. In former days, when the corns were much dearer than they are at present, it was a different matter, but now they are so cheap, that when a good-sized bulb of many exhibition varieties can be had for 3d. or 4d., it is hardly needful to wait for three years, which is about the time that it takes to produce good flowering corns, and to have all the trouble for so little result. My advice would be not to attempt it unless in the case of such varieties as I have indicated, new or scarce ones.

But if an amateur is determined on growing Gladioli from spawn, in what way is he to proceed? There are two methods which have been adopted, one which I have seen at Fontainebleau, and with Mr. Dolere, of Wellington, and I believe with Mr. Kelway, of Langport, viz., culture in the open air. A piece of ground is chosen on an open and well-drained spot; drills are then drawn about 1 inch apart and about 2 inches deep; a little sand is placed on the bottom of each drill, and the small bulbules are then carefully planted about half an inch apart; the drills are covered in the ground levelled, and should the weather be dry the ground should be watered. When the bulbules appear, which they will do in about a month or six weeks' time, they appear like blades of Grass, and being

slender must be kept clear of weeds, which are apt to smother them. When the weeds appear in the drills amongst the young shoots great care is needed, lest in pulling up the weeds the small bulbules are dragged up with them. They should be watered if the weather be dry, and after each watering the hoe should be gently drawn across the ground between the drills so as to prevent it from cracking and becoming unkindly.

There is, however, I think, no doubt that time is gained by growing them on bottom-heat. Where the space can be devoted to them, a small frame will be the best place for them; a little gentle bottom-heat may be given to them, and they will come up of course more quickly than in the open; indeed, I think quite a year is gained by this process. Where, however, it is desirable only to propagate a few in this manner, it will be better to sow (if one may use such an expression where seed is not the subject treated of) them in pots, and then plunge the pots in a bed, or else place them on the surface in a Cucumber or Melon frame. When they have come up and grown about 6 inches in height they may be either plunged as they are in the open ground, having first been hardened off in a cold frame, or else turned out, keeping the ball of earth entire, and then taken up in the autumn before the crop of old bulbules is lifted. They should be kept in dry sand during winter, as the bulbules being small they are more apt to shrivel up.

I have mentioned that many of the bulbules have a very hard skin. Many years ago when my friend Mr. Banks, of Shelden Lodge, near Deal, used to grow Gladioli largely (and from whom I have received many a wrinkle in their culture) he used to tell me to adopt the plan of breaking the outer skin so as to give the infant corns a better chance of growing; there is no necessity for removing it altogether, but care must be taken not to injure the small bulb itself, as a bruise brings on decay and death. But when this outer skin is judiciously removed it gives them a much better chance of growing; indeed, I question whether those enclosed in the boat-like cases to which I have alluded would ever germinate if it were not done. DELTA.

Double Violet Victoria. The origin of this fine double purple Violet, which was shown by Mr. Chambers, of Isleworth, at the last meeting of the Royal Horticultural Society, and awarded a first-class certificate of merit, is decidedly interesting. Mr. Chambers states that it is a chance seedling, and came up in the open ground close by beds of the Czar and the Neapolitan, and the assumption is that it is the result of a cross between the two, effected in some way, probably by insects. Several seedlings came up, but this was the only one with double flowers, and an excellent find it has proved. It appears to possess a good deal of the habit of the Neapolitan; it is wonderfully free, and promises to make an excellent variety for pot culture.—R. D.

Honesty (Lunaria biennis).—The hardy biennial Lunaria is well worthy of culture, if only for its excellent effects as a green foliage plant in the winter and spring. Where grown, as a rule, it is too much the habit to treat it as the spotted Fox-glove is treated, that is, as a weed, tolerated but not cultivated. The seed is allowed to drop about and grow as it can. Thus, for lack of culture, the successive seasons' products become weaker, and eventually die out. Then these biennials are regarded as rubbish, and get no further attention. If we treated all our garden flowers in the same way, how many of them would come to grief. Now Honesty dislikes being transplanted, unless it can be lifted in the autumn with balls of soil. The roots are somewhat fleshy and strike deep. The best plan, therefore, is to sow seed in small patches here and there where the leafage will tell with good effect in winter, and the spikes or heads of flowers in the spring. Seed should be sown not later than April—indeed now is the time to do so—just marking the patches here and there with a piece of stick until the seed has grown, and that will soon be. Single plants will form big clusters of leafage, which, being green all the winter, are very helpful in

keeping spaces in shrubberies, or herbaceous plant borders somewhat cheerful. The dark purple and the pure white kinds are the best. An old form, somewhat taller, has pale purple flowers; not a few of the dark purple flowers will often come flaked and variegated, but self-hues are the most effective. The seed-pods and stems allowed to dry and carefully preserved are, when cleaned carefully of the seed, very pretty and most helpful in winter decorations with dried Grasses and flowers. Thus the Honesty serves several useful purposes. A. D.

Crowded bulbules.—Bulbules generally get too thick in the ground if they are left undisturbed for a few years, and as a consequence the flower-stems are weaker and the individual blossoms small. This is especially the case with Tulips, Grape Hyacinths, and strong-growing Daffodils. When the bulb borders are periodically gone over and such as are too thick taken up and divided, overcrowding does not occur. Now is a good time to go through the borders and mark such as require to be thinned out, and then they can be attended to in the autumn.—J. C. C.

Papaver nudicaule. Who can help admiring patches of these pretty Iceland Poppies when they are in flower. Natives of Siberia and the northern parts of America, they possess a hardihood that fits them for English gardens. There are several varieties, but the three most distinct and most worthy of attention are the ordinary type, with bright yellow flowers; *P. nudicaule album*, pure white; and a fine variety named *P. nudicaule miniatum*, with intense orange-scarlet blossoms. This last was awarded a first-class certificate of merit by the floral committee of the Royal Horticultural Society last year. These Poppies can be grown in beds or borders, or planted in the rockwork, for they appear to be lovers of moisture, or they may be planted in clumps with other hardy things, when they will prove very attractive, being of a neat and graceful habit, and having bright green Fern-like foliage, produced in tufts. These characteristics, combined with perfect hardiness and profusion of bloom, place them in the front rank of hardy flowers. It is not too late to sow seed, nor is it difficult to procure it. It can be sown in light sandy soil, and the seedlings raised in a cold frame.—R. D.

Trientalis europæa.—A charming little plant native of various parts of Britain as well as other alpine countries of Europe, and extending even to America, where the forms *arctica* and *latifolia* are found. There is an allied species called *americana* in cultivation in our gardens. When botanising on the bleak moors of Ross-shire last summer, I met with large tracts of land white with this pretty star-like flower, shown off to advantage against the whorl of five or six narrow, acute leaves. It was growing in bleak and exposed places, as well as in moist, shady woods. In the latter situations, however, it was most abundant, and owing to its increased robustness was able to raise itself above the surrounding herbage. Although not exclusively confined to Pine woods, it was more prevalent in such places, and seemed to thrive and increase much quicker than when fully exposed. As seen in its native wilds, I know of nothing to surpass the quiet beauty of this lovely little alpine, it harmonises so well with the surroundings. There is no reason why this little starry gem should not be a common inmate of our gardens, as it could be very well accommodated in the vicinity of Pine trees, where Grass grows but sparingly, and Ivy is a little too robust; shady nooks in the rockery where its roots can run at will, and where it would not be crowded, would suit it admirably. When taken up with a bit of turf there is no doubt of its growing, the piece we brought being now fully established and thriving nicely.—K.

Auriculas, &c.—It is worthy of remark that whilst the southern exhibition of the National Auricula Society will be held on Tuesday next, yet here of several hundreds of hardy Auriculas in the open ground not a plant shows a single flower, and it is improbable that there will be any considerable head of bloom under a month. In such a case the holding of a show of this hardy plant next week

seems rather out of season. Of course, only pot plants, and most of these probably pushed on in heat, will be staged. If such is the state of things here in the south, further north the plants must be much later. I have never found outdoor Auriculas to be so late as this year. Then gold-faced Polyanthus, always later than the fancy or coloured ones, are so behind outdoors also, that very few flowers are expanded; whilst the fancy section, though more forward, has been greatly hindered by drought and very cold nights. Thus it will seem very incongruous that an exhibition of certain hardy spring flowers should be taking place long before similar plants in the open air will be in bloom. It is rather odd that whilst even in unheated houses during the day the recent brilliant sunshine has proved to some growers rather troublesome, outdoors it seems only to have served to bake the soil and bring out into striking contrast the exceedingly low temperature, with sharp frosts at night. Even the hardiest of plants may well feel unsettled when the temperature ranges from 26° at 4 a.m. to 60° at midday; and of the contending forces of cold and heat, the demon frost seems so far to have got the best of it.—A. D.

Cactus forms of the Dahlia.—Whether they are grown for cut flowers or as decorative subjects in the garden, the Cactus forms and a few others are, in my opinion, of much more value than the great bulk of the single ones or those of the show class. In a cut state the Cactus forms are very beautiful, and they are no mean ornaments in beds or borders. The best white-flowered variety is Constance, which grows freely and produces a continuous supply of flowers until quite late in the autumn. Mrs. Tait is another white variety of considerable merit; there is a peculiar appearance in its serrated petals which makes it rather attractive. When better known I think it will be esteemed as much as the preceding. Mrs. Hawkins is also a very beautiful flower late in the autumn, as then the rich sulphur colour is very pleasing, while under a strong sun the colour is much lighter. Juarez is the well-known scarlet form, and taken altogether it is as useful as any. The informal build of the flower is as striking as its bright crimson colour; without this sort to associate with the others they would be comparatively unattractive. It is a vigorous growing kind, and the blossoms are produced freely. Cochineal is very similar in colour to the last named, but a useful variety nevertheless. Glare of the Garden is very effective either grown in a mass or as single plants; for an isolated bed on a large lawn (as I saw it at Powderham Castle) I have never seen another tender plant so effective, for the whole bed was one blaze of colour. The growth is dense; the flowers, rather small, are as brilliant as those of a zonal Pelargonium. No list of Dahlias grown for cut flowers would be of much value if it did not include the single variety named Paragon. *Picta formosissima* is an attractive flower when it can be secured in its right form. The bright red stripes on the yellow ground are very telling, but it cannot always be depended upon to produce blooms possessing this character.—J. C. C.

SHORT NOTES.—FLOWER.

Plants for bees.—Will any of your readers kindly give the names of say twelve or twenty four of the best varieties of plants suitable for bees, and of which seed may be obtained?—J. SMITH.

Campanula muralis alba—Anyone requiring a suitable plant to cover the stones which are used in some gardens as edgings instead of Box could not do better than plant this Campanula. It flowers very freely during the summer months, and is easily increased by division of the roots in the spring.—E. M.

Viola canina alba.—My son had the good fortune to discover, last week, a plant of this variety. The flowers are of the purest China white, stem leafy, leaves heart-shaped and acute, sepals acute. As far as I know, *V. canina alba* is not in commerce, and I am inclined to think that I may be the fortunate possessor of the only specimen of the species in existence. I shall be greatly obliged if readers of THE GARDEN will kindly enlighten me on this point.—H. A. W., *Boughton Malherbe*.

Primula ciliata purpurea—This variety is now in full flower with me. It is a gem among the hardy Primulas, and is remarkable for the freedom with which it blooms and the rich, dark magenta-purple flowers. A variety named

coccinea is an excellent companion to it; it is of a bright reddish-rose colour. I have several strong plants in pots of *P. marginata*, not one of which has flowered this season. They are in the highest degree vigorous, but they give me no bloom. Can anyone explain the cause of their not flowering? The plants have been all the autumn and winter in a cool house with Auriculas.—R. D.

THE WALLFLOWER.

PLANTATIONS of these put out in the open ground at the end of the summer have suffered greatly in some positions more than others. I think that the winters have been much more trying to hardy plants of late years than any we have had for some time, and losses are only just beginning to make themselves apparent. But that the Wallflower should be so much injured is a serious matter, for is it not one of the most popular of spring flowers? and bunches of their fragrant flowers scent the air when they are in season.

That the Wallflower is closely related to the Stock there can be no doubt. There is a section of Stocks, termed Wallflower-leaved, in which the foliage appears to very closely resemble that of the Wallflower. It is said that we owe the Wallflower to Spain, and that it came to us originally under the name of Wall Stock Gillflower, which afterwards became Wall Gillflower, and finally Wallflower.

Of the common Wallflower there are several varieties, and they are all so serviceable as to deserve a place in the garden. Wallflowers are grown very largely for bunching for market, and the favourite Covent Garden strain is one with a very free-branching, dwarf, compact habit, and producing fine trusses of dark chestnut-crimson flowers, which are stout and of fine shape. There are choice strains of dark Wallflowers with larger, but looser flowers, but they are scarcely so pleasing to the eye as a good strain of the Covent Garden type. The tendency of this Wallflower is to commence to bloom in October when the autumn is mild and fine; hence, there is a selection called Harbinger, but it is much more a question of weather than anything else. The finest strain of large-flowered yellow Wallflower is the Bedford Giant Yellow, an exceedingly fine garden variety, with large, stout, well formed, golden yellow flowers. This is a selection from Carter's Tom Thumb, which is somewhat of a misnomer, because it is of tall rather than dwarf growth, but yet a very useful variety. The true Tom Thumb Wallflower is that which we know as Belvoir Castle Dwarf, or Ware's Tom Thumb or Dwarf Pigmy, a very dwarf, free-branching, pure yellow-flowered type that is most useful in the spring flower garden. I think the credit of having fixed this strain belongs to Mr. W. Ingram, of Belvoir Castle, who has used it with great effect for many years in his unrivalled spring garden at Belvoir Castle. The seeds of the last-named are small and of a yellow colour; the seeds of Bedford Giant Yellow and Carter's Tom Thumb are quite dark.

Among the single German Wallflowers may be found pretty shades of violet and purple. Efforts have been made to fix these, but without much success. Seed saved from them will produce variously-coloured flowers. Last spring, when visiting Mr. Samuel Barlow at Llandudno, I found he had two or three very fine types of purple single Wallflowers, but he very wisely propagated them by means of cuttings so as to have a good stock of them. It is probably only in this way that anyone can be sure of perpetuating these colours. Many people sow their Wallflower seed too late in the summer to ensure getting good plants in flower in spring. It may be said that large, well-established plants suffer more from the weather than those in the seed beds, and doubtless this is true; but it is exceptional to have a large quantity of plants destroyed. The weaker plants may remain in the seed bed, and if they stand better than the old ones they will come in useful to supply gaps caused by the rigour of the winter. If they can be lifted with balls of soil attached to the roots they will not suffer by the removal, but soon establish themselves and do good service in their own time.

R. D.

Harrison's Musk for bedding.—Apart from its delightful fragrance, this Musk is a very useful plant for many purposes. When grown in pots it is as suitable for the window as for the greenhouse or conservatory, as in a fairly light position and with plenty of air and root moisture it will remain in bloom for some time. It is also very pretty when grown in a suspended basket, if care is taken to have the sides furnished with plants low down as well as at the top. This is not difficult if the basket is well lined with Moss, and the young plants have their roots bedded in the soil and the tops brought through so that as they grow they may hang down, but it is as a summer bedding plant that I value it most. Where there are a number of small beds to fill, this Musk is not only sufficiently attractive to be pleasing, but the odour given off by the flowers is very powerful. It is a plant that requires a good supply of water when in active growth, whether grown under glass or not, and to be successful with it as a bedding plant it requires to be regularly watered in dry weather. I may remark that it is a very suitable plant for the summer as an edging to beds of moderate size.—J. C. C.

PROPAGATING.

FICUS.—The species of Ficus in the propagation of which the greatest interest is centred is the India-rubber plant (*F. elastica*), for it is a general favourite, and many are the inquiries made as to the best means of propagating it. This Ficus is by no means a difficult subject to strike from cuttings—that is, if the cuttings are in a suitable condition—but it is useless to take them from a plant that is at all stunted or unhealthy, and at the same time a fair amount of heat is necessary. Where required in quantity a few large plants should be kept to supply the cuttings, and they may be stood thickly together in any out-of-the-way part of the stove. Such plants will be by now completely studded with young shoots, every one of which may be taken off and inserted as a cutting. The weaker shoots strike root far more readily than the strong ones, but shoots taken from old stock plants, even if stout and vigorous, root with more freedom than those from the young fed-up specimens such as are usually offered for sale. In all propagating matters it should be borne in mind that cuttings taken from plants that have been fed up with stimulating manures can seldom be relied upon to strike in a satisfactory manner. From 4 inches to 6 inches is a very good length for the cuttings, and, having been cut off cleanly just below a joint, they are then ready for insertion. One way to do this is simply to stick the cuttings in the Cocoa-nut refuse which usually forms the plunging material in the stove, and cover with a close propagating case. This method certainly economises space, and, given a gentle bottom-heat, the cuttings soon strike; but the roots produced in the Cocoa-nut refuse are very fragile, and great care must be taken in potting them. Perhaps the more satisfactory way is to put each cutting singly in a small pot, as so treated any particular one can be at once withdrawn and the others left undisturbed. The soil for the purpose should be moderately fine and of a light sandy nature; while a few broken crocks and pieces of charcoal mixed with it assist in the formation of roots. The cuttings should be put in firmly and fairly deep. A good plan is to put a crock or two in the bottom of a 24-inch pot, then in the case of a large cutting the base of it will rest upon the crocks, and a few broken small may be put in before the soil is added thereto. As this drainage material clusters around the base of the cutting it is a great advantage. When the cuttings are put in each should be tied securely to a small stick, as being so heavy they are liable to become loose, and thus retard the action of rooting. After a thorough watering the pots must be plunged in a bottom-heat of about 80° and kept in a close case. They will need less air than the cuttings of many other foliage plants, as this Ficus seldom decays, even if kept close for a long time. Besides cuttings of the entire shoots, this Ficus can be increased from single eyes,

each with a leaf attached, and the best time to do this is just as the bud at the base of the leaf is very prominent and ready to start into growth. To bring about this result when any long vigorous shoots are to be propagated from, the better way is to take off the top just far enough for the cutting, and allow the remainder of the shoot to remain on till the buds at the top part are almost bursting into growth, when they may be cut up into single eyes and each one of them put in as a cutting. The piece of naked wood below the leaf will serve to hold it secure, and as an additional precaution each leaf should be secured to a small stick. Besides these methods of increasing the stock of *Ficus-elasticus*, I have treated it with most satisfactory results in the following way, which seems very little known, viz., to graft the shoots on pieces of their own roots, which soon unite and grow away without check. Wherever there are large plants, roots of this character are by no means difficult to obtain, and the grafting operation is very simple. The root should, if possible, have a few attendant fibres, and the graft should be inserted in the upper part by simply splitting the stock, and having fashioned the base of the shoot in the form of a wedge, it must be inserted in its place and tied securely in position. The grafted plants must then be potted in such a way that the point of union is below the surface of the soil, and this being done, they should be placed in a close case and treated as cuttings till growth commences. With regard to the other species of this genus, some of them, such as *radicans*, *repens*, and others, will push forth roots from all parts of the stem when they are in a moist atmosphere or come in immediate contact with any damp substance. Again, others that include among their number *Parelli*, *excultus*, and *macrophylla* strike root if taken as ordinary cuttings, and inserted in the usual way. Should the least sign of thrips be visible on the cuttings, the leaves must be carefully sponged, as in a close case insect pests make rapid progress and soon disfigure the young plants.

IPOMÆA THOMSONIANA. This white-flowered *Ipomæa*, like its ally, the well-known *I. Horsfallii*, will not strike from cuttings, but can notwithstanding this be readily increased by grafting the shoots on pieces of the root of any allied kind, *I. Horsfallii* or *Batatas paniculata* for choice. The operation is very simple, being the same as that above recommended for the *Ficus*. After this the plant must be potted sufficiently low down to cover the point of union. Then the grafts should be placed in a close case till a union is complete.

SMALL SEEDS.—In the case of plants raised from small seeds they are often very tender and fragile, when it is necessary to prick them off, and consequently the operation is rather a delicate one. The mortality which often takes place soon after the young plants have been pricked off is frequently caused by want of attention to a few simple rules, one of the more important, and yet the one that is most frequently overlooked, being to press the soil around the roots, for by many a hole is made with a pointed piece of wood, then the roots are dropped into it, and the surface of the soil is just closed up around the collar of the plant, thus leaving the roots in the cavity made by the dibber only partially closed. The better way to prick off seedlings of a very minute character is to take the pots or pans, and having filled them with soil to within half an inch of the top finish off the surface with a little very fine compost. After the pots are prepared in this way, they should be watered and allowed to stand about an hour before using. Then the actual pricking off is performed by holding the dibber in a perpendicular manner and making a hole in the soil to the depth required, after which the plant must be placed in position and secured by putting in the dibber exactly as before, at about a quarter of an inch from the seedling, and slightly pressing the soil towards it. By these means there is no cavity left to cause the plant to perish, and it then grows away without check. Of course, considerable care is needed in other matters, such as watering, shading, &c. To facilitate the handling of very small seedlings a piece of wood about the size of a penholder, with a small cleft in one end, is

very useful for lifting up the minute plants without bruising them, and the dibber should be fashioned from a bit of Box or other hard wood, as it makes a much cleaner hole than if made of a soft wood.

WISTARIAS.—Unless seeds are obtainable, the only satisfactory way to increase the *Wistaria* is to graft it on portions of its own roots. The roots should be prepared as above recommended for grafting the *Ipomæa*, and the operation carried out in the same way. Roots of the common kind are available as stocks for the white and double-flowered variety, which last, by the way, I have never bloomed in a satisfactory manner. *W. multijuga* will also succeed on the same stock.

RHUS GLABRA LACINIATA. Last autumn having occasion to remove an established plant of this I took off a few roots the thickness of a pencil, and having cut them up into pieces about an inch long, dibbled them into a pan of soil just deep enough to cover the upper part of the root. The pan was then placed in a gentle heat, and now a quantity of young plants are already pushing up, thus showing how well this beautiful fine-foliaged subject can be increased by means of root cuttings. T.

REV. H. HARPUR CREWE.

The Rev. H. Harpur Crewe, twenty-three years rector of Drayton-Beauchamp, near Tring, was a most enthusiastic and successful gardener, his previous scientific training as an entomologist



REV. HARPUR CREWE. Engraved for THE GARDEN from a photograph.

having been of great advantage to him. His knowledge of hardy plants, especially bulbous ones, was extraordinary. Among his favourites were the *Narcissus* family. In 1882, in company with Mr. Maw, he visited Spain in search of bulbs, and spoke with delight of places where "there were almost as many leaves of bulbous plants as blades of Grass." The excursion was a success, but the very hard fare and exposure were perhaps bad for him, as he was previously not in strong health. He was for some time chairman of the floral committee of the Royal Horticultural Society, where his knowledge was most valuable. He frequently came up to the writer the day before the committee meetings and gave most useful hints when looking over the gardens. His gentle and kindly disposition endeared him alike to young and old. His death on the 7th of Sept., 1883, caused a blank in the gardening world which cannot be filled up. GEORGE F. WILSON.

Giving localities.—Can you not make your correspondents give some idea of their whereabouts, especially when speaking of hardy plants? The week before last one correspondent spoke of *Wachendorfia* as quite hardy "here," and another of the American Bramble "with us," but whether "here" or "with us" was in Madeira or Kant-

schatka they did not say. I know there are valid objections always to giving a name, but some indication of locality should be given.—W. G. M.

STOVE AND GREENHOUSE.

T. RAINES.

BOUGAINVILLEA GLABRA.

INSTEAD of this serviceable summer-flowering plant being catalogued and generally treated as a stove plant it ought to be classed as a greenhouse and conservatory plant, and grown as such. It certainly grows and flowers abundantly under stove treatment, but it is far more effective and beautiful in a greenhouse or conservatory, in which positions it is usually more richly coloured and remains much longer in an attractive condition. At one time we had two strong plants in our mixed plant stove, and by way of an experiment one was shifted about this time of the year into a greenhouse. So well did it grow and flower, that we decided to transfer the other plant to the conservatory, also with most satisfactory results. In both instances the plants were growing freely after being pruned and started afresh, but although only a small mass of soil could be preserved about the roots, they soon recovered from the severe check administered and flowered grandly the same season. I mention this in order that others may be induced to transfer their specimens to a cooler house, even if they are considerably advanced in growth. It may be necessary to keep trained exhibition plants in large pots, but for ordinary purposes they succeed much better out of pots. Even a tub is preferable to a pot, the roots being less liable to suffer for want of water in these, and a few hours' neglect in that respect usually ends in the loss of a great proportion of the leaves. We prefer to plant in narrow pits formed with loose bricks. A small pit 2 feet square and 2 feet deep, the single walls of bricks being neatly keyed together, is large enough and strong enough to hold sufficient soil to support a plant covering the end of a greenhouse. These walls of loose bricks are easily built and as easily taken down again, and very much simplify the necessary annual process of removing much of the exhausted soil from the roots and replacing with fresh. The proper time to renew the soil is when the plants are breaking afresh, this in a greenhouse being early in April. Good fibrous loam, a sprinkling of sand, and a slight addition of well-rotted manure or a little leaf soil is a suitable compost for *Bougainvillea*. This should be made firm with the idea of causing a floriferous rather than an over-luxuriant flowerless growth. When well established in a limited pot, pit, or box of soil, they, during the growing season, require abundance of water at the roots, and occasional supplies of weak liquid manure are also beneficial. We usually close our greenhouse early in the afternoon and syringe the occupants of the house freely, this, besides creating the desirable moist-growing atmosphere, also tending to keep down red spider. When the *Bougainvillea*, as well as tuberos *Begonias*, *Fuchsias*, and other plants are well into bloom, air is left on night and day, more or less according to the state of the weather. We have plenty of *Bougainvillea* bloom in July, and the last is usually cut in November. What I consider the

BEST POSITIONS for this plant are either the ends of a span-roofed greenhouse or against a back wall of a lean-to or three-quarter span-roofed house, the main branches being trained thinly and kept properly secured to the wires, from which will depend the long flowering shoots, the whole forming a gorgeous drapery not easily surpassed. Innumerable lovers of plants have seen and doubtless admired the formal, globularly-trained specimens at flower shows, but only a comparatively few have any conception of the great beauty of the *Bougainvillea* when growing and flowering in a free and but slightly restricted state. We have two specimens growing at the north end of a span-roofed house, and the wires being strained across at some distance from the glass, the plants, when at their best, are wonderfully effective, whether viewed from the inside or outside of the house. At Loughat they

have two very large plants growing in a narrow pit at the back of a three-quarter span-roofed house, these being spread over a trellis from the ground up to within a short distance of the roof. During the summer and autumn wagon-loads of long branches of bloom might easily be cut from them, and nowhere else have I seen it so fine. In the conservatory at Orchardleigh, near Frome, Somerset, there is another fine old plant, but this is trained thinly over the roof. Each winter, or after the growth is properly ripened, all the old flowering wood is cut hard back to the main branches; young shoots follow in abundance, gracefully hanging from the roof, and remain for a long time in bloom. The *Bougainvillea* is also well adapted for covering pillars, and we have had it very effective thus trained. In all and every case it must have plenty of light, but not fierce sunshine, anything overhanging it or smothering it in any way soon injuring and otherwise impairing its usefulness. It is not too late to order a plant or plants from a nurseryman, and if fairly strong plants are procured these will make good progress and give some flower this season. They require considerably less water in the late autumn months, and during November onward very little should be given them, the aim being to well ripen the growth without destroying the roots, and causing the wood to shrivel. In February all the weakly growths should be cut well back and the stronger ones shortened; while in the case of old plants that have well furnished the space allotted to them, all lateral growths should be cut hard back to the main branches. W. L.

Rhododendron multiflorum. This is noteworthy among the vast number of greenhouse Rhododendrons from the profusion with which it will bloom even in a small state, as neat little bushes in 5-inch pots are just now quite a mass of flower. It is a free-growing kind, forming a compact, much-branched bush, and the blooms, which are borne in good-sized clusters, are individually about a couple of inches across, and of a delicate mauve tint. The edges of the petals are also prettily crimped. Though this Rhododendron cannot be compared with many of the others for grandeur, it is still one of those kinds that when grown under favourable conditions can be relied upon to flower well. Its compact habit and free-flowering qualities have commended it to the hybridist, and between this and *R. Edgeworthi* several hybrid varieties have been raised, all characterised by a dwarf, free-flowering habit, but with blooms more nearly resembling *Edgeworthi* than *multiflorum*. The principal of these are Countess of Derby, Duchess of Sutherland, Countess of Sefton, Lady Skelmersdale, and Mrs. James Shawe. They are all pure white kinds with very beautiful sweet-scented blossoms.—H. P.

Phyllanthus nivosus.—This is a very pretty stove plant of a loose habit of growth, with dark coloured wiry branches and neat pinnate foliage. The flowers are insignificant, and its claim to recognition consists in the prettily variegated leaves, which are mottled with white and green in varying proportions, some being almost white, while others are nearly green. The young foliage on the upper parts of the shoots is, generally speaking, almost white, but at times suffused with a pinkish tinge. There is another kind (*roseo-pictus*) in which the variegated portion of the leaf is heavily suffused with pink, or when well exposed almost red. Like the last, a prominent feature of this is the irregular markings of the leaves. There is yet a third kind remarkable for the colouration of the foliage, viz., *atropurpurea*, the leaves of which are of a purple hue. However, when young and well exposed to the light, they are almost crimson in tint. These different kinds of *Phyllanthus* are of the easiest possible culture, for they strike without any difficulty from cuttings and grow away freely. If pinched back two or three times during their earlier stages they form neat little plants, which are very useful in many ways. At the same time their loose style of growth admits of their being employed for covering a screen, pillar, or similar place, but in any case the temperature of a stove is

necessary to their well-doing, and it must be in as light a spot as possible.—H. P.

Anthurium Andreamum flore albo. In the last number of the *Paris Revue Horticole* is a note descriptive of the above-named interesting and beautiful novelty, which, when propagated and distributed should be a great acquisition to all collections of stove plants, and a charming companion to the beautiful and almost perpetual blooming type form. This novelty has been raised from seed by a Viennese horticulturist, named Herr Mastner, and is said to possess a pure white spathe of the same texture and pitted appearance as in the type, with a brilliant red spadix, which should form a beautiful and striking contrast. This novelty should also prove useful as a parent, from which, by careful hybridisation, may be obtained still more beautiful forms.—W. E. GUMBLETON.

Aotus gracillima.—This very handsome greenhouse flowering shrub is now at its best, though, if retarded during its earlier stages, it may be had in bloom later on. It forms a much branched bush, with long, slender, wand-like shoots, bearing for a considerable portion of their length small Pea-shaped blossoms. The flowers are of a bright orange-yellow colour, suffused with crimson at the base. It is a delicate rooting subject, and requires a soil largely composed of sandy peat, and must never be allowed to become too dry; indeed, the treatment accorded to the so-called New Holland plants (once so popular) will suit it perfectly. It can be increased by cuttings of the young shoots that are produced when a plant has been cut back after flowering. The pots for their reception should be well drained, and filled firmly with sandy peat. After the cuttings are inserted they must be covered with a bell-glass till rooted.—T.

Mackaya bella.—As far as growing is concerned this is a plant of the easiest possible culture, but if kept in a green and flourishing condition it flowers at best but sparingly. To bloom it well a liberal treatment should be followed during the summer months, and towards autumn the supply of water may be lessened, and throughout the winter it must be kept almost dry. This mode of treatment causes the foliage to lose much of its freshness, yet, at the same time, it is the only course available to induce the plant to bloom. If the plants are placed in a genial temperature, such as that of an intermediate house, and watered they will quickly start into growth, and push forth their flowers. The blooms are borne in racemes, each consisting of a dozen or more flowers, the individual blossoms being somewhat bell-shaped, and nearly a couple of inches in diameter. Their colour is a kind of deep mauve, beautifully veined with purple. This *Mackaya* has been in cultivation for some years, but it is very rarely met with, and still more rarely flowered; though, given suitable treatment, it is not difficult to bloom. When in bloom it is so attractive and distinct from the generally cultivated stove or warm greenhouse plants, that it certainly merits more extended cultivation.—H. P.

Cinerarias. Visitors to Burnham Beeches or the grand old domain of Dropmore might just now do worse than call in at Woodside, Farnham Royal, where Mr. James has a truly wonderful show of *Cinerarias* in bloom. Woodside is just on the east side of the Beeches, and lies on the direct road from Slough to Dropmore. It is a very elevated, airy situation, where the air is pure and sweet, and the light is bright and plentiful. Here in some long span houses may be seen in full bloom some 2500 well-grown plants, grouped as far as well can be in colours, producing in this way a far more striking effect than is found when all sorts of colours are mixed up indiscriminately. The strain is marked by the robust medium height of the plants, the fine form, substance, and great size of the flowers, and the wondrous variety of coloration seen in them. A greater quantity of light colours has this year been introduced; whilst the fine average quality has been well maintained. It is to be deplored that Woodside is so difficult of access, as the show is one which might well tempt hundreds to visit it. As the plants are being grown to produce seed, of

course all bloom themselves thoroughly out; hence the blooming season is a prolonged one. The flowers, seen, in spite of their high breeding, to be full of pollen, and thousands of bees busily revel in it on sunny days. It seems evident that decadence in the *Cineraria* as a greenhouse flowering plant is very remote indeed.—A. D.

Alonsoa incisa. Where a supply of flowers has to be maintained throughout the winter months this old-fashioned plant is one of those that will be found useful for in a genial temperature it will keep flowering for months, and is by no means particular in its requirements. The blooms are borne freely on the points of all the shoots, and though individually they are only about half an inch in diameter, they are disposed in a many-flowered spike, so that when at their best they are very attractive. Cuttings taken in the spring strike readily enough and do well grown on under the same conditions as *Eupatoriums*, *Salvias*, and other winter-flowering plants, but being less vigorous than either of these two the *Alonsoa* does not require so much pot room.—T.

Thunbergias.—These, when treated as greenhouse annuals, are very interesting and showy; the varieties *alata* and *alata alba* are two of the best; the former, with petals of a rich orange colour and black centre, is very effective either when grown in such a manner that it hangs down over the fronts of the stages, or trained upon small balloon-shaped trellises. They flower during the months of July, August, and September. To have plants in flower in July, seeds should be sown during the early part of March; sow the seed in pans in sandy soil, and place them in a hotbed or vinery at work. When the roots reach the sides of the pots, transfer them into their blooming pots; those intended for draping the fronts of the greenhouse stages may be grown in 12-inch pots, and for larger specimens 6-inch or 8-inch pots will suffice, using a fairly rich compost. As soon as this shift takes place, the trellises should be fixed in the soil, so that the young growths may be secured to their permanent positions; do not stop the shoots; gradually immerse the plants to a lower temperature until they can be placed in an ordinary greenhouse. They must not be allowed to suffer for want of water, as red spider will quickly disfigure the foliage. Liquid manure may be applied with great advantage. E. M.

Rudgea macrophylla. This South American stove shrub is now in flower, and, considering the beauty of its blossoms, as well as their distinct character, one would expect to find it grown more than it is at present. It is a thick-stemmed sturdy-growing plant, sparsely branched and clothed with deep green leathery leaves. The individual blooms are not unlike those of an enlarged *Bouvardia*, but are of quite a fleshy substance and borne in large globular heads on the ends of the branches. Coming from the neighbourhood of Rio Janeiro, this *Rudgea* requires the temperature of a moist stove, as if grown in a cooler structure the foliage soon loses its deep green tint and becomes of a sickly hue. Its propagation is by no means easy, and to this circumstance is no doubt due the fact of its continuing to be such an uncommon plant in gardens. The most successful way to increase it is to cut back a plant after flowering, and as soon as the young shoots that are then produced have acquired a woody texture, they are available as cuttings. The cuttings should be inserted singly in small pots, and plunged in a gentle bottom heat in the stove. They must be kept close and shaded till rooted.—H. P.

Monstera deliciosa. The fruit described by "G." in THE GARDEN (p. 328) under this name with the synonym of *Torneelia fragrans* is, according to his account, very different from the *M. deliciosa*, which under that name and the synonyms *Philodendron*, *Scindapsus*, and *Pothos* (I cannot find *Torneelia* in Pritzels, Stendel, or any other book in my possession), I have cultivated for many years, ripening annually about a dozen of its truly delicious fruits, which, instead of being about the length and shape of a Pine-apple, and when ripe pinkish in colour, are with me cylindrical in form and about 10 inches in length by 2½ inches in diameter, externally green

throughout its growth, without the slightest tinge of pink; it ripens gradually from base to point; as it ripens the rind separates from it in hexagonal plates, exposing a semi-transparent, whitish cellular pulp, which when ripe swells above the level of the unripened part and separates easily from the solid core. Everyone who has tasted it without exception, according to my experience, describes it as one of the most delicious fruits; it is perfectly wholesome, but occasionally leaves for a short time a slight pricking sensation in the mouth. I grow it in loam without any admixture in a bed with two 4-inch pipes underneath in a very cool stove. In the growing season it should have plenty of water, and occasionally some liquid manure, or a top-dressing of chemical manure. The fruit ripens in exactly twelve months from the time of flowering. The Banana flourishes and ripens its fruit annually in the same bed under the same treatment.

EDMUND TONKS.

Bouvardia rosea multiflora.—Judging from the very limited number of flowers one sees of this grand Bouvardia, it is not as well known as it deserves to be. During a recent visit to the establishment of Messrs. Lonsdale & Barton, Chestnut Hill, Philadelphia—where several nice things are always to be found—I saw this Bouvardia in very fine bloom. It has the largest truss of any known variety and of a beautiful soft rose tint, and must certainly be valuable to the florist requiring mixed flowers. I also saw and examined some new seedling Carnations of the Grace Wilder class, among which are two very promising varieties. Their Roses, particularly the Teas, are in fine condition.—J. N. MAY, in *American Florist*.

DeGraw and Hinze's white Carnations.—These two Carnations are receiving considerable attention at present. When well grown they are both good, but they require different treatment. DeGraw succeeds best planted in not too highly enriched soil and fed with liquid manure as the flowering goes on. The best house of Carnations I have ever seen was one in which this variety was grown. It belonged to John Thorpe when he was in Cleveland. It was simply wonderful the number of perfect flowers he cut from this house, and the above was the treatment he gave it. We then often talked Carnation culture over, and he was fully convinced that stimulating with liquid manure at the time the greatest strain is on the plants, viz., when producing their blossoms, was the main point in his success. By following this method of culture since with this variety I have had good success. I would much rather prefer growing Hinze's white. Although not of the purest white, it produces large flowers of good shape and exquisite fragrance generally on long stems. In order to succeed with it, however, I find that it requires strong rich soil with abundance of water when freely growing, and perfect drainage to allow it to pass off freely. The same treatment is suitable for Buttercup; they succeed well together in the same house under the same treatment, but give Buttercup the treatment suitable for DeGraw and but little success will be had; suitable soil and conditions make it one of the most profitable varieties, while unsuitable soil and conditions make it the most worthless. M. MILTON, in *American Florist*.

SHORT NOTES.—STOVE AND GREENHOUSE.

Fumigating with tobacco.—Is there any way of using Tobacco besides smoking the whole house? I have a Marechal Niel Rose covered with greenly on the roof of a large greenhouse, and it is impossible to move all the plants for smoking it.—H. R. C.

Tacsonia exoniensis.—What a glorious conservatory climber this is! I met with it last summer in a spacious conservatory where it was doing grandly. There were three or four specimens planted out in a raised bed, and they had made a very free growth and were flowering with many yellow freedom. All the pruning given was simply to trim the leading shoots in about the commencement of the winter. For freed in of bloom and general effectiveness I place it before *T. Van Volxemii*.—R. D.

Boronia megastigma.—I send for your inspection a plant of *Boronia megastigma*. This, I think, is very much neglected, as there is nothing much more beautiful in the way of perfume. The plant sent was grown in quite a cold house with *Beatis* and *Leschenaultia*.—W. B.

—A densely flowered plant of this most useful class.

These plants deserve more attention at the hands of cultivators than they at present receive, as they are of so very easy management, and will well repay any trouble taken with them.—Ed.

CARNATIONS IN AMERICA.

SWEET and lovely flowers, thrifty and copious, but often capricious. E. G. Hill with me is splendid; the flower is larger than that of Portia, and like it does not burst. Glowing Coal, a seedling of Portia, and which Louis Siebreck grows in large quantity, is very like E. G. Hill. Portia is very bright and copious and the stems are long, but the blooms are somewhat small. Marquis of Lorne, a scarlet I had a few years ago from Andover, Massachusetts, is of stocky habit and free blooming; the flowers are a good deal larger than but not so long-stemmed or so bright as those of Portia. Marshall P. Wilder is a new one I got a year ago from Hallock & Thorpe. It has very large, highly fragrant, full double flowers, scarlet, with crimson stripes. During the last two winters Charles Henderson was the most prolific Carnation I had, vigorous in growth and with sheaves of flower-stems. This season it is not so good; and, curiously enough, *La Purité*, which for the past two years was only middling, is extremely luxuriant this winter and has blooms like little Paeonies. Two years ago Lydia was capital, last year poor, this season good. Hinze's White is the best of its class that I have tried; when well handled its blooms are large and perfect in shape. I cannot do anything with Peerless.

Three years ago, one of the finest lots of white Carnations I ever saw was a houseful of DeGraw, with C. L. Allen, of Garden City. But it is one of the most unsatisfactory sorts with me. Crimson King is always a mainstay. Black Knight is very good, and now is a popular market variety. It is bright, and keeps its colour well after being cut. Fred Johnson is one of the best of its class, copious, long-stemmed, and of pleasing colour. I never yet got Buttercup healthy enough to give me satisfaction; I presume when growers give it more rest it will become better favoured. Miss Joliffe is very pretty and much liked, but I should not care to depend upon it alone; I have sometimes found it uncertain. Among yellows, Sensation must get a prominent place on account of its large blossoms. Kaiser Wilhelm grows and blossoms freely enough, but many dislike the colour. Gibbons is the biggest and most fragrant dark crimson Carnation that I know of. It is of tall, vigorous habit, copious enough in its season, but I did not find it perpetual. It is grown in some private gardens around Boston, but so far as I am aware, not in the trade. I am out of it and wish to get it again, but do not find it advertised. One Boston grower writes me that "it would not pay us to grow it for less than 1s. a bloom." Petunia is a full, but ragged flower; still the ladies are very fond of it. Mrs. Harris has a vigorous constitution and large, perfect flowers; some like it, some do not. I do not think it will pay the cut-flower florist to grow an extensive variety of Carnations; better confine himself to two or three sorts that he finds are the best and most profitable with him.

So long as the Perpetual Carnations keep on blooming in ample quantity it does not pay me to also force the hardy Pinks. These last come in well from March till May. I find that the after-success of Carnations depends much upon the cuttings from which they are propagated. Stout, clean, healthy, stocky cuttings should always be selected.—W. FALCONER, in *American Florist*.

Cobæa seedlings.—All know how difficult it is to raise more than a very small per cent. of Cobæa seed, and as I have just tried an experiment which has proved remarkably successful, I will describe the method used. I placed some Sphagnum in the bottom of a 7-inch pot, covering with a little drainage; on this placed a 4-inch pot so as to bring the rims of equal height, and filled the space between the two with sand. I filled the inside pot one-third full of drainage, covered with rough soil, and filled even with the top with sand. Twelve seeds were sown very shallow, on edge, and after

moistening, covered with a flat glass and placed on an inverted saucer in a drum connected with a stove. Water was afterwards given only to the outer layer of sand, and from the twelve seeds I have eleven healthy plants in their second leaf. L., in *American Florist*.

SEASONABLE WORK IN PLANT HOUSES.

STOVE. TEMPERATURE AND SHADING.—In warm stoves, and also in houses containing plants that require an intermediate temperature, the heat should be increased to something like the maximum summer warmth, as there is now enough daylight to admit of this. As to shading where a general collection of stove plants is grown, there will be some that will not do with exposure to the sun, whilst others are benefited by all they can get. Provided the houses stand ends north and south, and the glass is free from burning lenses, such things as Allamandas, Bougainvilleas, Dipladenias, Exoras, Crotons, and some others do not require shade, except when in bloom. It is best to locate the plants that require shade at one end of the house where the necessary protection can be provided for them. But under this kind of treatment the atmosphere must be kept well charged with moisture by throwing water about the floors and side stages freely in the daytime, and also by giving less air than some growers suppose to be necessary. In well constructed houses where the plants are kept well up to the glass, much less air is requisite than often looked upon as needful.

BOUVARDIAS.—Young stock struck from cuttings at the beginning of the year and afterwards moved into little pots will now require more room. They may be put into 4-inch pots, giving them good loam to which add some leaf mould, rotten manure, and sand. The plants may again be stopped, pinching out the points of all the strongest shoots; if this is not attended to whilst they are small they will not be sufficiently furnished at the bottom. An intermediate temperature is still necessary; if the plants are not pushed along early in the season they do not attain sufficient size before the end of summer to admit of their giving the requisite amount of bloom. Plants that bloomed late, and were cut back after flowering, and have now broken into growth, should be shaken out and re-potted, regulating the size of the pots according to the size the plants are required. Bushy specimens from 3 feet to 3½ feet through may, with liberal feeding, be grown in 14-inch or 15-inch pots. In large conservatories these are more effective than the ordinary sized examples usually met with, but not so useful for general purposes. Bushy-headed standards, 2 feet or 3 feet high, are also serviceable for standing amongst lower growing things. Where these are required all that is necessary is to select plants of any of the stronger growing varieties that have got a strong shoot springing from the base, and cut away all the others so as to direct the strength into the single stem, rubbing off any growths that may appear on it until the requisite height is attained, after which pinch out the top, repeating this with the shoots that are subsequently made until the heads are sufficiently furnished. In the case of Bouvardias that are to be grown in beds in pits and frames, these may now be planted out, providing there is the means of giving them a little warmth. Where this cannot be done it is better to defer turning them out for a month or so.

GREENHOUSE POTTING HARD-WOODLED PLANTS.

—All young stock that requires more root room should be potted without delay. This operation is often deferred until later on, under the impression that it is better to wait until the roots are more fully in motion. But it is much safer to bring the work to a close before the weather gets very hot, as then the dry condition of the air is such that the plants are more likely to feel the effects than when the state of the weather makes it possible that the house or pit in which the newly potted stock is located can be kept all but closed for a week or two after the operation without the temperature rising higher than desirable. There is nothing tends so

much to help the roots to lay hold of the new soil as a close, moderately moist atmosphere; to allow large volumes of dry air to come in contact with the plants just after their roots have received the check that inevitably follows repotting is to court failure. One of the worst effects of potting in very hot weather is, that the plants require watering before the roots have had time to move, which it is well to avoid. This matter of early potting refers to all plants that have not more than attained quarter specimen size, for even if they are likely to produce a considerable amount of flower during the next month or six weeks, it is better to pot now than wait until the blooming is over. Care should always be taken in potting hard-wooded greenhouse plants to see that they are in right condition for moisture, as if the balls are in want of water at the time of shifting it becomes necessary to give it sooner afterwards than is desirable. The day before the plants are moved they should be closely examined to ascertain their state in this respect, watering such as require it, and allowing time for the moisture to pass off before potting. It is equally necessary to see that the soil used is in the proper condition; if it is too wet the roots do not take kindly to it, and if drier than it should be kept watering becomes necessary too soon. In the case of all hard-wooded plants that are potted in spring after the sun has got a good deal of power, the atmosphere should be kept moist for two or three weeks by throwing water about freely on the floors and spaces under the stages; this with shade overhead when the sun is bright helps the roots to at once lay hold of the new soil.

AFTER TREATMENT OF FORCED ROSES.—I made a few remarks some time back on the treatment of Tea Roses that had been forced early in the winter. Plants that have been subjected to forcing later on require equal attention, as much depends on how they are managed whether they will be of further use in this way or not. If the treatment they receive is such as is calculated to restore the strength and vigour that are taken out of them by being forced into flower at a time when they would naturally be at rest, there is ample evidence to show that not only will plants that are so used be able to hold their own for a number of years, but they will go on improving. This applies to both the Hybrid Perpetuals and the Tea varieties, especially the latter, though from the natural ability which they have to yield successional flowers the weakening effect of forcing is proportionately greater. Plants of the perpetual or of the summer-blooming sections should, as soon as they have done flowering, be moved to a spare pit or other structure where they will get plenty of light, and where a genial atmosphere that will encourage both root and top growth is maintained, giving manure water or top-dressings of concentrated manure, and taking means to keep the foliage free from insects and mildew. Give air in the daytime according to the state of the weather; for the Teas a little heat for a few weeks until the nights are warmer will be an advantage, shading slightly when the sun is powerful. Though there is now less difference between the temperature of the external air and that of the house or pit in which the plants are located than there was in winter, it is nevertheless still necessary to be careful when giving air not to subject the foliage to cold draughts, otherwise an attack of mildew is certain to follow. In private gardens want of room frequently necessitates the plants being turned out of doors later on; this will do no harm to the perpetual and other strong-growing sorts, but in the case of the Teas, if they can be kept under glass for a considerable time yet, or altogether, with a continuance of the attention in other matters advised, they will be found to have gained correspondingly more strength at the close of the summer. During autumn they should have abundance of air so as to hinder growth as far as possible. From the persistency with which Tea Roses keep moving if the temperature is not bordering on frost, they may be said to be perpetual growers.

VALLOTAS.—Coming into flower as these showy bulbs do in the latter part of summer and autumn, when blooming plants are not plentiful, it seems

strange that they are not more generally met with in greenhouses, especially when the fact of their rapid rate of increase is taken into account. Plants that have been at rest and kept somewhat dry at the roots through the winter will now be moving into growth. In the case of any that require more pot-room a shift may be given them; but as the roots will be already at work, it is better not to attempt separating the bulbs, merely getting away the smaller ones and the little bulblets that the plants when strong produce in quantity. The former may be placed three or four together in pots proportionate to their size, whilst the little ones may be put an inch apart in pots or pans, inserting them about half their depth in the soil, pressing it firmly about them. Whether the old plants require a shift or not, the little bulblets are better removed. When repotting, it is well to remove as much of the surface soil from the balls as can be done without disturbing the roots. Good rich loam answers for these plants, mixing as much sand with it as will ensure its retaining porosity. Pot firm, and see that the pots are well drained. The plants require plenty of light, especially whilst their growth is being made, and sufficient air to give solidity to the leaves. Old specimens that do not need moving will be much benefited by frequent applications of manure water, being careful not to use it too strong. T. B.

EDUCATION OF GARDENERS.

WITH considerable interest I read the paragraph in THE GARDEN (March 26, p. 271) relative to Mr. Penny's orphanage scheme. "An Orphan Boy" says:—

The better education of gardeners has been everybody's cry since he remembers; it is more needed now than ever, and would benefit both the parents and the children, and now is the opportunity.

I have volumes of garden periodicals which were issued twenty years ago, containing articles on the education of gardeners, and I would say for myself that I always felt as an under-gardener the need of some work dealing specially with subjects coming within the range of the garden. In my opinion there is a vacancy which the ordinary gardening periodicals fail to fill. It is not desirable they should do so, as they have their sphere and work, but there is much in them which might almost be termed useless reading for a young man. Mr. London issued a work intended as a self-help for young gardeners, but, of course, it is now out of date, and I daresay out of print, and I beg to suggest the necessity there is for a similar work, or what I think would be much better—a weekly or monthly periodical, which might be entitled "The Under-Gardener." I may be mistaken, but I feel confident that hundreds—not to say thousands—of young men would hail with delight the advent of such an organ, in which they could learn the elements of the various sciences connected with their life's pursuit. In our profession the young men are few and far between who have received a technical education; moreover, many of them occupy situations in country places, where they have no facilities for acquiring knowledge, while their means are too scanty to enable them to purchase many books, which, as a rule, are rather expensive. A magazine treating on arithmetic, botany, chemistry, dynamics, evolution, electricity, geography, geology, geometry, heating, hydraulics, hydrostatics, &c.; also biographies of eminent gardeners, recreative natural history, and the thousand-and-one other subjects which would naturally find places in its pages—which, of course, would be open to correspondence and the discussion of its various leading articles, is, I am sure, much needed.—H. J. H.

* * * We print this letter from "H. J. H.," but no good would come from such an enterprise as he sketches. A gardener should learn his own business well, and he has enough to do if he does that. Gardening is now an art of great and varied scope, and offers opportunities enough to exercise the most gifted mind. If gardeners want to learn "chemistry, dynamics, evolution, electricity, hydrostatics," by all means let them do so, but they had better learn them in the usual way; but we think they should not learn them. The best gardeners that we have ever

known were simple observers of Nature, and did not know even the meaning of these terms. The idea of a man mastering a science like chemistry, or even getting his head full of the technical expressions of some of the subjects mentioned by "H. J. H.," and afterwards having time and thought for the daily practice of gardening now is too much. And what on earth does a gardener want with electricity, hydrostatics, or chemistry?—Ed.

GARDEN FLORA.

PLATE 593.

MILTONIAS.

(WITH A PLATE OF *M. SPECTABILIS* AND *M. MORELIANA*.*)

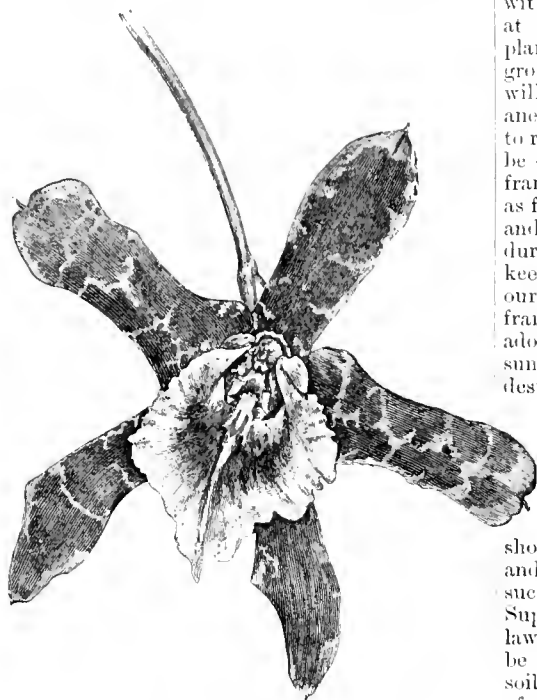
THE genus *Miltonia*, named by Lindley in honour of Viscount Milton, afterwards Earl Fitzwilliam, a zealous patron of horticulture, is by no means an extensive family. Some of the species contain the most beautiful of the whole Orchid family, whilst all the varieties are well worthy of cultivation. *M. spectabilis* and its variety *Moreliana*, which our artist has so admirably depicted on the accompanying coloured plate, are perhaps the best known of the species, and are amongst the oldest of the genus in cultivation. Upwards of forty years ago plants of *M. spectabilis*, some 2 feet or 3 feet in diameter, were to be found in the gardens at Bothwell Castle, in Scotland, and others equally large existed in the collection of the Rev. John Clowes, of Broughton Hall, near Manchester, and in various other places; but as these kinds are very subject to become of a sickly yellow hue both in the pseudo-bulbs and foliage when grown with full exposure to the sun, they for a time become unpopular. Now, however, since it has been proved that *Miltonias* can be grown successfully, the various species and varieties are eagerly inquired for. Nearly all the *Miltonias* are natives of Brazil, and to have them of good colour they should be kept at the warm end of the *Cattleya* house exposed to good light, but shaded from the sun. They enjoy an abundant supply of water, both to their roots and over their foliage during summer. The supply of water must be diminished during the winter months, but the plants must not be allowed to become dry at any time of the year. The drainage for *Miltonias* must be exceptionally good and open, whilst the soil best suited for them is about equal parts of fibrous peat and *Sphagnum* Moss, with some nodules of charcoal added. We have also found a little soot mixed with the water applied to the roots highly beneficial in giving a deep green colour to the pseudo-bulbs and leaves. *M. Moreliana* and *spectabilis* produce a single flower only on a stem, as also does *M. spectabilis* bicolor. The flowers of *M. spectabilis* bicolor are white, slightly blotched with violet at the base of the lip; whilst in the variety radians the flowers are white, with several radiating stripes of magenta-purple at the base of the lip. All the *spectabilis* type are autumn bloomers. Other kinds, with large, flat flowers, are *Miltonia Roezli* and *Roezli alba*, *M. Phalenopsis*, and *M. vexillaria*, more familiarly known by the name of *Odontoglossums*; and *O. Endresi*, which is a rare species, somewhat resembling *M. Roezli*. The flowers, which are produced in winter and early spring, are white, with a rosy pink blotch at the base of each segment. It is figured in the *Botanical Magazine* under the name of *Odontoglossum Warscewiczii*. *M. Regnelli* is of erect growth, with a large, flat, rosy lilac lip bearing numerous flowers, the

* Drawn for THE GARDEN by H. G. Moon in the Royal Gardens, Kew, Sept. 15, 1886, and printed by G. Severoyne.



MILTRIA SPERMATOPHYTES, AND VARIETY OF BEETLES

sepals and petals of which are rosy white. The petals in the variety *purpurea* are rich crimson, suffused with magenta. *M. cuneata* produces an erect spike, bearing a raceme of five to eight flowers, having the sepals and petals chocolate-purple, tipped with yellow; lip white, tinged with pink. *M. Clowesi* and its varieties *major* and *Lamarckiana* are handsome plants, having many-flowered racemes, which are sometimes branched; the sepals and petals are deep yellow, transversely banded with large blotches of chestnut-brown; lip white in front, stained at the base with deep purplish violet. *M. Warszewiczii* is a very distinct plant, better known in gardens perhaps by the names of *Oncidium fuscatum*, *O. Weltoni*, and *Odontoglossum Weltoni*. It comes from Peru, and flowers in early spring; whilst nearly all the other species bloom in the autumn. This plant thrives best under very cool treatment. The spikes are much branched and bear sometimes as many as fifty flowers, which vary much in colour, but are usually olive-brown or cinnamon, tipped with yellow or white; lip brownish purple, white in front,



Miltonia candida grandiflora.

with a curious varnished-like spot in the centre. *M. candida* and *candida grandiflora* differ in having a convolute lip. This distinction is admirably rendered in the annexed woodcut. The spike is erect, bearing from five to eight flowers; sepals and petals reddish chestnut, edged and tipped with yellow; lip white, stained with purplish violet in the throat. It is an autumn-bloomer. Other kinds of *Miltonias* deserving attention are *festiva*, *Blunii*, *anceps*, *Russelliana*, and *Warneri*.
W. H. G.

Podophyllum peltatum. The American May Apple is not only a very showy plant when in flower, but from the peculiar singularity of its primary mode of growth each spring is a very desirable botanical novelty. Suitable for growing in any damp situation out of doors, or in good rich soil, it produces very showy, large white flowers, which may not inaptly be likened to a single *Camellia* flower. These are followed by pale yellow berries about an inch in diameter. The leaves, singular in form are entire, circular, and fringed,

and held aloft singly upon 6-inch stalks, somewhat resembling a nymphaea when unfolded. It is a singular fact that each leaf comes up out of the ground folded up as compactly as an umbrella. The plant, as its generic name implies, is translated duck-foot-leaved, owing to a fancied resemblance the leaves bear to a duck's webbed foot at certain stages of growth. The roots furnish the medicine podophyllin of recent introduction.—WILLIAM EARLEY.

KITCHEN GARDEN.

W. WILDSMITH.

RIDGE CUCUMBERS.

THESE are not so generally grown—or, perhaps I should say, so well grown—as they should be, considering their acceptability for salads throughout the summer and early autumn months. Probably the reason for such neglect of cultivation in many instances arises from previous failure, the result of neglect of attention to the plants in the earlier stages of growth, owing to the mistaken notion that because a plant is said to be easy of cultivation, we expect it to do without any attention at all, and then wonder at our failures. Common and easily grown plants, alike with the rarest and difficult to grow, will not thrive of themselves, but they will repay a proportionate amount of painstaking their cultivation, and if this be afforded to ridge Cucumbers, the produce may reasonably be expected to bear comparison with the best frame-grown Cucumbers. I say this advisedly, as for many years past, owing to want of frames and house-room in which to grow Cucumbers during the summer, we have had recourse to keeping up supplies from open-air ridges, and ours are really grown on such, for having neither frames nor stable litter to spare for hotbeds, we adopt the next best plan, which is a sheltered sunny bank or border; a trench of any length desired, and 4 feet in width, and a foot in

depth is then dug out, and in this we put lawn mowings and as many leaves as can be spared, to generate a little warmth to start the plants into growth; the plants would start without such heat, but they take longer time, and with our short summers every day gained is of advantage, and the additional labour involved in forming such a foundation is scarcely worth considering. Supposing, however, that neither litter nor lawn mowings are at command, the bed should be made after the ridge fashion; that is, the soil be thrown in line something after the form of the old way of growing Asparagus. By this plan the sun has full play on the ridge of soil, and, provided it is kept moist and the surface mulched with droppings (except being a little longer time about fruiting), there is really little to choose between them and those started with bottom-heat. The soil we use is ordinary kitchen garden soil, enriched with leaf soil and horse droppings, but this we supplement by always keeping the surface mulched with leaf soil or manure. We make but one sowing, and that during the second week of April, and of course they are raised in heat, potted off into 3 inch pots as soon as they are in the rough leaf, and again put in heat till the pots are full of roots, which they generally are early in May. They are then planted singly on the ridges 2 feet apart, and each plant is afforded the protection of a bell-glass till established in their permanent quarters, when they are gradually inured to bear full exposure by placing sprays of evergreen branches on the windward side of the plants. As soon as the plants have fairly started into growth they are closely examined to remove surplus shoots that

invariably form at the base, three shoots and the lead being the maximum we allow to remain, and all laterals that form on these are kept closely pinched out till the shoots have attained a length of 2 feet. A good foundation is thus laid for the formation of other shoots, which may then be of any number so long as there is no risk of overcrowding, which must always be avoided, as this, next to an attack of black fly, is the worst of evils. It is necessary, therefore, that a strict rule of periodical thinning out and regulating of shoots be adhered to, and once a week is not too frequent. As to parasites, black fly is the most troublesome, next thrips, then mildew, and last, green fly. Though it may not be possible to prevent attacks of such parasites, their power to injure is much less when the plants are in vigorous health; obviously, therefore, this is one way of fighting them. Another way to destroy fly and thrips is to syringe with tobacco water, and if once they can be got under, a syringing with soapsuds once a week will generally keep them down. Mildew is generally the result of a check in growth caused by drought or the opposite conditions, and its progress is therefore not so readily stayed. The most successful way to battle with it is to remove as many of the affected leaves and shoots as the future well-doing of the plants will warrant, and then apply a heavy dusting of sulphur; water the plants twice or thrice with clear manure water, and repeat the same if there should be any appearance of waning vigour. Above all, cut the fruit the moment it is of usable size, that no unnecessary impoverishment of the plants may take place—a remark that is equally applicable to healthy plants, that they may continue in a good fruitful state all the season. It is by these little details of culture—apparently unimportant in themselves—that success is assured.

HARDY BROCCOLI.

I HAVE not the pleasure of Mr. Groom's acquaintance, still I know him to be a practical man on most matters relative to horticulture, but when he tells your readers that not one market grower in a hundred uses the crowbar in planting Broccoli he is labouring under a great mistake, for it was in a market garden, or rather field, of thirteen acres that I first saw it done, and, to be concise, the field was rented by a Mr. Flicker, at Lesness Heath, Kent, where the above grower was located. This gentleman was a large grower of Peas, Broccoli, Gooseberries, and Potatoes something like thirty years ago. I may also mention that a Mr. Ives, a grower in the same locality, always planted Broccoli with a crowbar. I may tell Mr. Groom that it is not impossible to grow stocky, short-legged plants in close walled-in gardens, because we do it here, at Burghley, yearly.

Mr. E. Gribble says that he has grown Veitch's Model, and has never known it to fail. I have grown the Broccoli in question, and have always found it satisfactory in many respects, but I must say the flavour is strong and objectionable. I am much obliged to Mr. Gribble for his closing remarks, and shall book him for a packet of Broccoli seeds for trial with Model.

"J. S. W." tells us there is not such a thing as a hardy Broccoli. Well, the question comes, what is a hardy Broccoli, measured by the standard of "J. S. W."? I have this day counted two flats of Victoria late white Broccoli. No. 1 is inside the garden walls, which contains 865 plants, 18 being blank, while outside the garden wall flat No. 2 contains 380 plants, 20 being blank, thus showing out of 1245 plants only 38 are dead. Now, I do not mean to say that even the frost has killed these, nor do I say it has not. Would this Broccoli be called hardy by "J. S. W."? "J. S. W." also tells us that he could produce cottagers by the score that grow Broccoli of the best

quality, and as long as it can be had. Permit me to say, I can go further than that, and can produce cottagers that can not only grow Broccoli, but all kinds of vegetables better than one-half the gardeners of this country. If "J. S. W." wants a demonstration of the fact, I shall be happy to tell him where to go. There is another little item respecting poor Chou de Burghley that is scarcely worth notice; nevertheless I may say that it is the best Cabbage extant. In conclusion, I may say that Mr. Wright is the man that first discovered the Broccoli; personally, I have never represented it as a Broccoli.

Your correspondent "Hortus" tells us a good crown of leaves is a capital protection for Broccoli stems, but the stems are often safe enough while the crowns are frost-bitten. My dictum is that the frost catches the stems between the soil and the leaves. If "Hortus" will favour me with his address, I will enclose him a packet of Broccoli seeds, which I feel sure will settle the question.

R. GILBERT.

SPRING TREATMENT OF ASPARAGUS.

THE time has now arrived when the formation and renovation of Asparagus plantations must receive attention. Few cottagers care to cultivate Asparagus, but amateurs delight in having a good bed of it, and no garden under the charge of a professional gardener can be without it; in fact, in many gardens it is regarded as the most valuable crop of all, and a liberal supply of first-rate produce never fails to give the utmost satisfaction to all concerned. Forced Asparagus is a delicious dish, and from the end of April until the middle of June the open-air produce cannot be equalled by any other vegetable in season. Peas and other good vegetables may be late, but so long as there is plenty of Asparagus this absence will not inconvenience anyone; and I would strongly advise all who value choice vegetables at this time to grow as much Asparagus as they possibly can. It is no uncommon thing to see the most ordinary crops, the half of which will never be consumed or prove remunerative, occupy large quarters in vegetable gardens, while choice Asparagus is only planted and grown to a very limited extent; and I feel absolutely certain that were the Asparagus planted extensively to supersede the common produce, the result would be beneficial to all. I have long considered it a waste of all material to attempt to renovate an old Asparagus bed when the whole of the roots that remain only consist of a few at great distances apart. If there is only a blank here and there in the plantation it may be made up, but success will never attend the planting of a great many young roots amongst a few old ones, as the latter hinder the proper preparation of the ground for the reception of the young roots, and this is a very important point. Many Asparagus plantations fail through the soil in which they are planted not being properly prepared, and not a few also fail in the soil being too much prepared. Some have an idea that Asparagus cannot be too well done, and all kinds of useful, useless, and superfluous manures are put into the soil with the object of securing uncommonly fine produce in an unusually short time; but the result is more often failure, and then the cultivator cannot understand it, as the bed was so complete in its composition. Any ordinary good soil will grow first-rate Asparagus, and after applying the necessary manures and cultivation the less it is meddled with the better. The "Asparagus bed" is such a familiar term, that many who purpose beginning its culture would never expect to succeed with it unless the roots were planted in the orthodox bed; but this is wrong, as the old-fashioned, high-sided, neatly-cut-out bed is rarely patronised by good modern growers, but a good piece of ground is planted row after row, through and through, and there is then no ground lost by wide pathways between the beds, while the results are remunerative in the highest degree. If I had 150 new Asparagus plantations to make I would never think of giving one of them the form of a bed. The only soil to avoid in Asparagus culture is a heavy, wet, retentive one. The roots are very fleshy, and in the summer they will push out a long

way, but when winter comes they will not grow in a wet soil, and the greater part of them will die back until the plant is left with so few that growth the following season will be most unsatisfactory, if not quite a failure. This may lead those who have nothing but a heavy soil to work with to infer that their chance of growing good Asparagus is hopeless. Nothing of the sort, as the whole may be easily remedied by drainage or the addition of light material. In dealing with a heavy, wet soil, it should be trenched to the depth of 2 feet 6 inches, and a large quantity of ashes and any old rough material should be placed at the bottom of every trench. This will act as excellent drainage and improve the soil as well, and a quantity of sand or road-scrappings should be added to the soil near the surface. The quantity must be determined by the texture of the soil, but do not stint it in any case. This trenching and adding to must all be done before manuring begins, but as soon as these operations have been completed place a heavy dressing of manure on the surface and fork it well through the soil, and the piece will then be ready for planting. I guarantee that a quarter treated in this way would produce excellent crops of Asparagus for many years, but it ought to be understood that the utmost importance must be attached to the indispensable system of thoroughly preparing the soil before any attempt is made at planting, as once the roots are planted and established the soil should not be disturbed again to any extent for many years. The not uncommon plan of planting in a hurry in any kind of soil and letting the roots take their chance will never do in the case of Asparagus, but with a properly prepared soil and roots rightly planted they will succeed permanently in spite of everything. There are many gardens, however, where the soil is naturally adapted for Asparagus growing, and in these instances culture is very easy. In preparing to plant it is only necessary to manure the surface well, and add a little sand or general refuse. Horse droppings make the best manure for Asparagus, and of artificial manures, soot, guano, and salt are the best. Seaweed is also excellent, and wherever it can be obtained it should be used in preference to everything else. It may be dug into the ground like manure, and where the soil is poor horse droppings may be added to it. I do not, however, approve of dressing the ground with these manures and adding a quantity of artificial manure as well. Well-prepared ground does not require artificial manure at first, and this should only be applied in after years as a stimulant. In selecting ground for Asparagus, odd corners must be avoided and the best part of the garden devoted to it. Sun and air are very essential to the perfect development of the stems and maturing of the crowns. In planting the roots, great care should be taken that they are not allowed to shrivel or dry up when out of the soil. They may be transplanted most successfully from one to three years of age. In buying roots from a nursery, I would insist on their being packed in a little damp Moss, and they should not be allowed to remain a minute longer on the road or at the station than is actually necessary. Laying them in temporarily until their quarters are ready is a bad plan, as it is impossible to shift and re-shift them without injury. Of this I have had ample proof. When the young roots are home-raised and have only to be taken from one part of the garden to another, planting may be done without losing a single root, as they should be transferred without being out of the soil more than a few minutes. The roots are all star-like in form, and they may be crammed into a very small hole, but this is not beneficial, and the best way of planting is to allow them plenty of room to go in freely. Each hole should be taken out with a spade to the depth of 4 inches or 5 inches, and about 4 foot square. The root is then placed in without a twist, and free growth is sure to follow. In the bed system it was a general rule to plant 1 foot or a little more apart, and in a short time the top-growths became a crowded mass, but this had a direct tendency to lessen the strength of the shoots, and the best of all results are obtained by planting each root about 2 feet or 2½ feet apart from the other, and allowing the top growth unrestricted space. There is nothing

lost in this, as there will be as many heads cut from a root 30 inches from its neighbour as there would be from two roots in that space, and the size of the former heads will be much in excess of the latter; in fact, first-rate produce can only be secured from roots grown widely apart, but at whatever distance they may be put in, if they can be planted in wet weather it will be greatly in their favour, but if the weather is dry throughout the whole of the planting season, as it promises to be this year, water freely as soon as planting is done. One-year-old roots often succeed better than older ones, and the older they become the more risky is their transplanting; but, although they may be transplanted at three and four years old, none of the produce should be cut from them the first year, as the aim should be to allow them to become fully established before beginning to cut. Although I object to patching up very deficient beds or plantations, it is an advantage to fill up a blank when it only occurs here and there, and in that case planting is done in the same way as is recommended for the new plantation. Asparagus is much benefited by being mulched in summer, and as soon as it is seen where the young growths are, a quantity of short manure should be placed round each plant. The roots being near the surface they are apt to suffer from drought, which this mulching will counteract and benefit them to a great extent. I do not know of anything that injures Asparagus more in summer than wind. Let anyone look over a plantation after the shoots have attained a fair height, and they will observe that many of the shoots have been broken short off at the root. This not only hinders the shoot from developing further, but it also injures the crown for the succeeding crop. This must be avoided, and the best way of doing it is to put a stake to each plant and tie the stems so firmly to it that they cannot be blown about, upset, or broken off. I may further remark that Asparagus is very late this spring. Some years we have cut quantities of it by the second week in April, but this season we will not have a dish until May, as the heads are not yet visible. In cutting, at first, a number of the later stems may be destroyed if care is not taken with the knife, as those who push down and cut it as low as possible can easily cut over some of the young stems that are not visible above ground. I have no doubt there are many of your readers who desire to raise their own Asparagus roots, and it may interest them to know that it can be easily accomplished; 1 oz. of seed will produce hundreds of plants, and it rarely fails to germinate. It should be sown in drills 3 inches deep and 15 inches apart. We sow a little annually to keep up a supply of roots for winter forcing. The seed is sown thinly, as then plants can be easily disentangled when they come to be transplanted at the age of two or three years. A rich light soil is the best for the seedlings, and, apart from keeping them free from weeds, their cultural requirements after sowing are nothing worth speaking of. J. MUIR.

Margaux.

SEEDS.

ALL kinds of early seeds sown in the open ground have been severely tested during the past few weeks. Market growers, whose breadths of the Brassica family, Lettuce, Radishes, Wallflowers, and similar things are extensive, have felt more than usual alarm at the evident inactivity of the seeds, sown under comparatively good auspices, early in March, the ordinary time for such sowing. In not a few cases, that alarm has led to renewed sowings, whilst others have still faith in the germinating powers of seeds which have so long been buried. It is a good deal in the favour of the latter view that seeds last year were very good, and good new seed will endure much cold and wet. Old seeds find it hard to struggle into life even under the most favourable conditions, whilst during such a season as that we have been passing through, they would soon decay. Even Peas, such as Supreme and Harrison's Glory, second early, but usually hardy kinds, have done badly, and many have already decayed, so that it is doubtful whether the remainder will be worth leaving. These results are found in soil that is open, but fairly dry. The heavy snowfall which took

place recently, and which in thawing so terribly saturated the soil with coldness, doubtless was the chief cause of the mischief, but to that we have had superadded such a long continuance of cold nights and bitter north-easterly winds, that no encouragement has been given to germination, even of the hardiest things. It is just possible that, in some cases, coverings of straw or of dry litter have helped to keep the soil protected; but even such coverings exclude sun-heat, and that is the one thing needful for the rapid germination of seeds. There is a strong belief held that slow germination of seed means not only slow growth in the plant, but weakened constitution later. That is most probable. The same thing is found in animal life, and it is very likely to exist in the vegetable kingdom. No doubt it will be urged that to ensure rapid germination, and therefore healthy growth, sowings of all seeds in the open should be deferred till a later period of the year—very excellent advice, which may be acted upon by all who can foresee what the spring-time is to be, or where the exigencies of business put no pressure upon garden operations. But when it has been the rule for generations to sow hardy seed in March, when favourable opportunities offer, and usually with good results, it needs strong argument to show that a month's delay will be better. Earliness in all things grown for sale is of such importance, that much must be risked to ensure it. No doubt it would in the end pay market growers over and over did they furnish themselves with an abundance of cheap frame-lights, which they could, for purely temporary purposes, lay on a frame-work over beds of seeds which it is important should be early. Those who sowed Brussels Sprouts, for instance, early in March, in the open ground, will still find the seed lying dormant or making weak efforts to grow. Similar sowings made under glass would show plants an inch high, robust, and in great plenty. The same might be said of Lettuce and similar things; indeed, such are now the inclemencies of our spring seasons, that frame-lights, to afford protection to seeds as well as to concentrate sun-heat, are more than ever becoming essential in market culture. In our climate frame-lights need be idle only for a month or two in the autumn when cleaning and painting are needful. In other respects autumn sowings, spring sowings, Cucumbers, &c., seem to give to lights very ample employment. It is very probable that even in private gardens we shall hear of failures in early sowings where the soil is naturally cold. It will be well to give warning in time, that blame will hardly attach to the seeds. So many sown just in time to have burst their germ, or, as the current phrase is, to be "milky" just when the snow came, were utterly destroyed, but where the coating remained intact, no doubt those, if weakened, will still prove lively. It would be very unfair to place upon the seedsman's shoulders responsibility for losses through early sowings in a cold, ungenial season. Early planted Potatoes seem to be equally restful with seeds, but then tubers still in the store have remained far more restful than any previous season could show—pretty plain proof that the soil could not have promoted germination. Of course, it is a gain in all large gardens to get certain sowing and planting done early, because each week brings its own urgent labour. Potatoes buried more deeply have probably not suffered from the snow water, and have simply remained dormant. Seeds nearer the surface are more exposed to fluctuations of temperature, and, being so much more excitable, are in greater danger. A bad seed plant in spring offers to market growers a bad start for the year, but they still hope for better things when the winter has finally departed. A. D.

Mushrooms.—I send for your inspection two Mushrooms. I have some extensive beds made with some spawn from a well-known nursery, and these are the first produce. My family say they disagree with them. They look strong and coarse. Do you consider them a sound variety, and is the fault one of growth? Have they been staked in too cold and dry a bed as they come up in clusters? I

should be glad of an opinion in THE GARDEN before I take any action.—HERBERT G. BAINBRIDGE.

* * * The Mushrooms are perfectly good ones. A strong lens, however, shows them to be infested with very small transparent mites. A good many minute larvae are also in the two examples sent. Possibly there is something not quite right with the beds. W. G. S.

KITCHEN GARDEN NOTES.

BROCCOLI.—Referring to recent notes by several correspondents, I may mention that the varieties that have stood well here are Veitch's Model, Sutton's Safeguard, and Late Queen; other kinds, except Purple Sprouting, are destroyed; obviously, therefore, these kinds are worth looking after. But then it would be a mistake to grow only such kinds; in the first place, because we are not likely to have a frequent repetition of such severity; and, secondly, we should have a very late season, indeed, as all are late (April and May) kinds. We have just made a sowing of mid-season kinds, but mean to defer sowing the late kinds for another fortnight. Late sowing we prefer for two reasons: first, because the ground on which to plant is not available till the early Potato crop is harvested; consequently the plants would be likely to get stunted before they could be planted out; and, secondly, by early sowing and planting the plants get so abnormally large that the growth does not get hardened or ripened; and hence frost is the more destructive. We raise the plants on a shaded east or north border, and sow thinly in drills a foot apart, a mode that renders pricking out of plants unnecessary; sometimes, to prevent overcrowding, we find it desirable to thin out the seedlings. I ought to add that we select a cool shaded border for the seed-bed, because in no other way have we been able to escape the ravages of the Turnip fly.

CABBAGE. Continued north-easterly winds notwithstanding, our autumn-planted plot will soon be ready; All Heart and Dwarf Incomparable are the earliest. The seed was sown in the second week in August, and there is no premature seedling. We have spring-raised plants in sheltered turf pits ready for planting out as soon as these cold winds subside. No other sowing will be made till August, as Cabbages are not in much request when there is plenty of Peas, Beans, and Cauliflowers to be had.

SAVOY, COTTAGERS' AND SCOTCH KALE. We have made the general sowing in drills, the same as Broccoli. Dwarf Uln Savoy is the favoured variety, and by planting from the same seed-bed at three several times, at intervals of from ten days to a fortnight, a long succession is secured. In regard to Cottagers' Kale, such procedure is not requisite, as from one planting a supply of sprouts can be had the whole season. Next to Brussels Sprouts this is the most profitable green vegetable that can be grown, and not the least of its good qualities is its hardiness, for not more than 3 per cent. of the plants have succumbed to the severity of the last two winters. Scotch Kale, or Curled Borecole, is very inferior to the former, as the quality is not so good. It is nearly as hardy, but is very deficient by comparison in productiveness. The tall Curled is the only kind we grow, as the dwarf varieties are too unproductive, and do not make up that want by superior quality.

TURNIPS. Possibly the earliest sowing, or a great part of it, may run to seed; therefore, another sowing has just been made: Early Munich and Six Weeks are the kinds sown. Our ground is light and too dry for Turnips in the height of summer, and we have, therefore, to select the most shady and dampest positions; and the most suitable manures we have proved to be salt and wood ashes. The ashes we intermix with the soil when digging, but the salt we scatter over the soil after the seed is sown and covered in, and to the presence of these two manures I attribute our immunity from attacks of fly—I wish I could say also from the delinquencies of birds, just as the seeds are bursting through the soil. Against these we have to have recourse to netting.

HOING.—Better weather were impossible for

this description of work, and, therefore, we have gone over every crop and bit of ground that we thought might be benefited by the operation. Rhubarb, Cabbage, Onions, Broccoli, Broad Beans, Spinach, Lettuces, and the first planted Cauliflowers have all had their turn, and as soon as the seed-rows of the various spring-sown crops are visible, we shall hoe these also; having a strong predilection to kill weeds before they are visible, every bit of unoccupied ground has to undergo the like process.

GENERAL WORK. To protect Potatoes on south borders by earthing up, also to earth up Peas, and to stake those not yet done. Another sowing to make, as also to sow dwarf French Beans and Scarlet Runners, Lettuce, Cauliflower, and Brussels Sprouts to plant out soon as we get rain. Fill in drills of earliest planted Cauliflowers, sprinkle Asparagus plots with salt, and plant out the remainder of Seakale cuttings made from the last forced plants. W. W.

MARKET BASKETS.

PROBABLY the sieve or bushel basket of the London market is one of the heaviest and most cumbersome to be found anywhere. It is, however, quite a basket of convenience, and not to be regarded as either light or elegant. Round in form, with depth about three-fourths of its width, it is yet found a very fair measure, though hundreds of thousands be tested. That there is a tendency on the part of such baskets to enlarge somewhat with use there can be little doubt, because wicker-work, however strongly made, will somewhat loosen in time. On the other hand, the baskets wear out chiefly at the rims first, and what is gained in expansion is as soon lost in top reduction. But then it is said that the average life of a basket is about one year only. That is short enough, and by no means merry, for these wicker receptacles work very hard, and especially during the Potato season. Except when fresh from the maker at this time of the year, and when cover is of course found for them for a few weeks, they know nothing of care or of shelter. Pitched about as though of iron rather than of osier, exposed to all the winds and rains of heaven, very often loaded on to hot reeking manure, and perhaps so left all night, when the return journey from market has been a late one, clogged with dirt, saturated with moisture, or baked literally in the wind and sun during hot weather; such is the rough treatment to which market baskets are exposed. In removing them from a van no one thinks of employing care. The poor baskets are pitched over the sides as roughly as possible, the first one perhaps making a mark at which to throw all the rest. A labourer is perhaps displaying the density of his skull and the massiveness of his neck by carrying a lofty pile upon his head. It seems to be an effort at equitation, the which might evoke a cheer at a circus. When the baskets have been carried to their destination, however, down they go pell-mell, dislocating every rib and stay. What matters! They are only baskets, and there is plenty more making. The rough usage given in the winter when employed in the Potato fields is enhanced by the wet and dirt which abound and cling to them. Still further, it is not possible for these baskets to be used for the rough transmission of some 50 lbs. of Potatoes many times without suffering appreciably. No wonder, when all is considered, that the average life of a bushel basket is put at one year only. The white or clean osier baskets are the most enduring, but also the dearest; whilst the brown osier, that is the non-stripped rods, are the cheapest. They are less seasoned, and, still further, the bark is but the more retentive of wet. Prices range from 11s. to 21s. per dozen, according to quality and season of making. Thus I see orders are now being executed because there is less pressure now than will be the case in the summer, although the baskets can hardly be needed before Peas and new Potatoes are plentiful. Made with a stout rim and bottom slightly hollowed inwards, bushel baskets, however heavily loaded, may be built up to a great height, and if Peas alone, which reach perhaps about 10 lbs. per bushel, as

many as 180, or even more, have been loaded on to an ordinary market van. Really though so cumbersome, the value of the round sieve bushel lies in the facility with which it can be so loaded; indeed, it is the rule to build market vans so that the bottoms shall contain three baskets, whilst a width of four is loaded when the rails are reached. Peas, Beans, and similar vegetables travel very well in baskets of this sort, but Potatoes, especially those having tender skins, are roughly served; and as for Apples or Pears, it would be difficult to provide them with coarser means of transit. No wonder so much otherwise good fruit is spoiled ere it gets into the market, because it has to endure so rough an ordeal. Half sieves are chiefly made of dressed or stripped rods, and, of course, mainly employed for the transit of fruit; hence their usage is lighter and they endure longer. Although all these baskets are made with considerable accuracy as measures, yet the bulk of fruit sold through them is weighed, as also are Potatoes. Handiness and experience on the part of the maker enables him to fashion his baskets evenly by merely measuring the breadth of the base of each first, and then the depth of the sides. The baskets have no handles, but for soft fruits are sometimes lined neatly with blue paper, and another piece is tied right over the top. The rims are broad; hence handling is comparatively easy. In many other districts market bushels and half bushels are oval in shape and have handles at each end. This is a very useful form, but lacks the solidity of the London basket. Still further, it is not possible to load one on the other, as is done in the metropolitan area. There can be no doubt but that market growers suffer a great deal in reference to baskets from market losses, but it is still more certain that the ordinary rough usage to which they are subjected is productive of the greatest loss. It is hardly conceivable that in any other country similar carelessness would be evidenced. Even in the commonest things of life there is ample room for greater gentleness and careful consideration.

A. D.

TREES AND SHRUBS.

W. GOLDRING.

COULTER'S PINE.

(PINUS MACROCARPA.)

As regards the merits of this Californian Pine as an ornamental tree for this country, there exists some diversity of opinion. Some look upon it as one of the finest of all Pines, handsome in growth, and very distinct from most



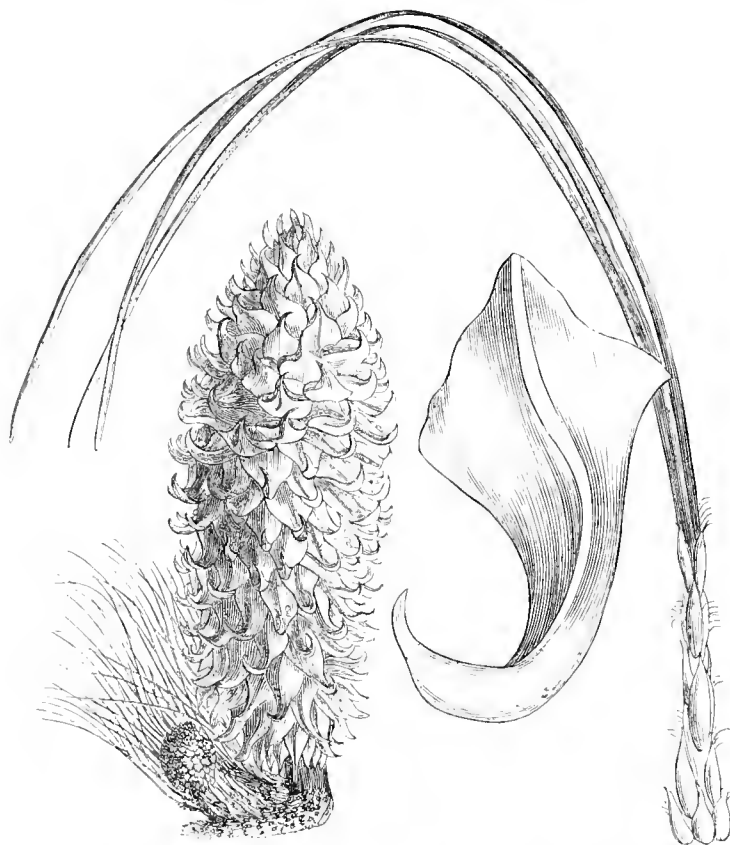
Branch of Coulter's Pine (Pinus macrocarpa)

others. In places where it flourishes it is undeniably an extremely fine tree, but on thin, poor soils or in exposed localities it is a failure, and where it does not thrive it is one of the most wretched-looking trees among all the

Conifere. The fact is, *P. macrocarpa* is fastidious in its requirements, and refuses to thrive if the conditions of soil and aspect are not to its liking. A moderate amount of shelter is essential for it, especially from south-westerly winds, and the soil in which it seems to delight in most is a deep sandy loam. Under such conditions it is a rapid grower, and soon develops into a handsome tree. The peculiar characteristics of Coulter's Pine are the long leaves, 9 inches or more in length, of a pale glaucous green, and which hang in dense tufts from the tips of the branchlets. The branches are always wide apart, and the branchlets comparatively few and devoid of foliage, except at the tips, so that it always has a thin appearance, and one might recognise a specimen of it a long way off. It is much less conical in growth than the generality of Pines; indeed, it often develops a

quite 60 feet. One of the largest I have seen of this Pine is in the Knap Hill Nursery, which is a very noble specimen, having a girth of trunk of over 10 feet at breast high. It was planted about the year 1839, and though I have not measured it, it must be nearly, or quite, 60 feet in height. Other specimens in the country are of large size, but it is only those that were among the earliest planted and placed under suitable conditions that have made noble trees. The nearest relative to *P. macrocarpa* is *P. Sabiniana*, but the two species differ in habit of growth as well as in leaves and cones, and not being so hardy as Coulter's Pine, is not therefore so valuable an ornamental tree.

The Laurel and its management.—Few shrubs, and my words will be endorsed by more than one forester, are capable of being neglected to



Coulter's Pine (Pinus macrocarpa); cone, cone scale, and leaves (natural size).

spreading head as broad as that of a Stone Pine. The cones are remarkable, being very large, a foot or more in length and half as broad, and each scale about the middle of the cone is furnished with a strong incurved hook, while those at the apex and base are simply prolonged into a point.

This tree is included among the many Conifers introduced to this country about fifty years ago by the traveller, David Douglas, who sent seeds of it to the Horticultural Society of London. The tree is said to have been originally discovered by Dr. Coulter, who found it in the mountains of Santa Lucia, in California, near the sea, and at an elevation ranging from 3000 feet to 4000 feet. It grows intermixed with the Sugar Pine (*P. Lambertiana*), the lofty heads of which tower above all the rest of the forest trees. *P. macrocarpa* grows to a height of from 80 feet to 100 feet, but no trees in this country have yet reached that height, though some must be

such an extent as the common Laurel; and it frequently grieves me to see it in such a state, for, perhaps, no other plant, in certain positions, is less adapted for taking care of itself. As a screen for buildings and unsightly objects, for shelter, for effect, and as a fence, the Laurel is commonly in use; yet how often do we find it neglected until it attains to that most degrading of all appearances in the plant line—a bare stem with a tuft of foliage at the top. When a patch of this shrub is planted, very great care is necessary to keep it by annual or bi-annual trimmings low and shrubby and well furnished from the ground upwards, and this is, fortunately, readily enough managed by simply studying the plant's mode of growth, and by removing or shortening, as may be considered most suitable, all the longer growths, and which will induce a more bushy habit and stronger bottom growth. What is here said of the Laurel is equally applicable to the common Rhododendron—another shrub that when growing luxuriantly needs some one to look after it. It may be worth remarking that both of these plants, contrary to the usually expressed opinion,

will shoot out freely enough if cut over during the summer months. Necessity compelled us last summer to cut over a considerable number of both these shrubs; they were from 6 feet to 30 feet high at ground level, and a couple of feet therefrom. The work was performed under the impression that the stumps would no more send out fresh shoots and leaves; but not so; they are as green now as if they had been cut over at the usually prescribed time in early spring. I must confess that I was no little astonished at how freely the young shoots were sent out, but this is only another instance of what efforts Nature makes to preserve life. A. D. W.

Spiræa opulifolia aurea. The first half of the season sees this golden-leaved shrub at its best, and perhaps at no time is it more effective than just as the young leaves are partially expanded, for the opening buds give to the branches the appearance of being thickly studded with golden blossoms. The attractiveness of the shrub is also heightened by the fact that at this time many of its associates are still wearing their winter garb. It is a form of the well-known *Spiræa opulifolia*, but differs from that kind, besides the colour of the foliage, in being much less vigorous than the type. Another of the same tint equally bright in spring is the golden Mock Orange (*Philadelphus coronarius aureus*), which given a sunny spot will retain its colour throughout the summer. The depth of colouring in all of these golden-leaved shrubs will depend to a great extent upon their position, for if shaded in any way the hue of the foliage is not so rich as if fully exposed to the sun.—T.

Magnolia Halleana. This choice dwarf variety is now in fine flower against a south wall, and the pure white, sweetly-scented blossoms are greatly admired. One plant some 4 feet 6 inches in height is allowed to grow loosely, and every twig is literally studded with blossom buds yet to open. Being perfectly hardy the trade should get up a great stock of this plant, as it is sure to become a general favourite for forcing, cutting, and decorative purposes. *Pyrus Maulei* is a worthy dwarf wall companion to the above. Hardy as an Oak, it may be planted anywhere either for flowering and fruiting against walls or forming low hedges or clumps in the grounds. Indeed for this purpose I think it is best adapted, as it does not submit so kindly as other members of the genus to close and formal training. I have tried it in different ways and find the leave-alone system, after it has covered its allotted space, the best and most agreeable mode of dealing with it. It throws up numerous ground shoots or suckers, which no doubt might be taken off and converted into stock, but I prefer allowing them to ramble.—W. C.

Deutzia crenata fl.-pl. Though this *Deutzia* cannot be forced into bloom so early in the season as the smaller-growing *D. gracilis*, yet it will flower well under glass at this time of the year, and in the shape of good-sized bushes is very useful for greenhouse or conservatory decoration. When in the open ground the exterior of the blooms is of a pinkish tinge, but under glass this is not so pronounced. At the same time there is a variety (*candilissima*) in which the blooms are pure white, and on this account it will by many be preferred to the ordinary form. Apart from their adaptability for forcing, they are beautiful flowering shrubs for the open ground, and though by no means particular in their requirements, they are seen to the greatest advantage in fairly good soil, and so situated that the wood is thoroughly ripened and the plants do not suffer from drought. The close mass of fibrous roots common to all the *Deutzias* is greatly in their favour when required for forcing, as they can be carefully lifted in such a way that scarcely any check is inflicted upon the plant.—T.

SHORT NOTES.—TREES AND SHRUBS.

Trees for churchyard.—Will any of your readers kindly give the names of the trees most suitable for planting a disused churchyard in the centre of a seaport town on the north-west coast of England? Soil sandy; no interments have taken place during the past twenty-five years.—T. F. I.

Pyrus Maulei.—This is the most profuse-flowering *Pyrus* I have any experience of. Its numerous long shoots

are completely covered with the pale strawberry coloured blossoms in March and April, and as the flowers are distinct in colour and so very plentiful it becomes a very conspicuous object in flower borders or shrubberies. When the late Mr. Maule, of Bristol, to whom we are indebted for this unique *Pyrus*, first introduced the subject here he had a pot of jelly made from the fruit with him. This is a great recommendation to the plant, as the fruit, which it bears freely, makes a superb preserve. J. Muir.

GAULTHERIA SHALLON.

ONE would suppose that such a beautiful old evergreen trailing shrub as this is would be so well known and so commonly planted, that there would be no need to direct attention to its value. There is, in fact, no more valuable trailing shrub for clothing shady banks or even



Gaultheria Shallon.

exposed banks in damp places than this is, provided the soil is light. No one has ever questioned its hardiness, even in Scotland, where indeed it seems to be better known than in the south, for it has been largely planted there as an undergrowth in plantations as covert for game. An instance of this is at Balmoral. It is one of the few shrubs that will thrive in the dense shade of Fir and Pine plantations, even if the soil is very sandy. It is most at home in a damp, peaty soil. I saw an example of this in the Knap Hill Nursery the other day. The whole nursery is traversed by ditches, along which water runs the whole year, and in some parts the banks of the ditches are covered entirely with *Gaultheria*, and I have never seen banks more beautifully clothed. It is a capital shrub for planting among ugly tree stumps, with which some people persist in studding banks, and consider them beautiful; a strong growth of *Gaultheria* helps to hide the ugliness of the stumps, and with Ivy and other things, a



Gaultheria procumbens.

pleasing mass of greenery can be obtained. *Gaultheria Shallon* was introduced to this country just fifty years ago, so that it is now an old plant. It is a native of North America, especially on the Falls of Columbia, and generally near rivulets and lakes, and upon barren soils. When in luxuriant maturity it is 3 feet high, and when about a foot high bears an abundant crop of black berries, which are eaten by game, especially by partridges and pheasants; hence the value of the plant for covert. W. G.

Amygdalus nana.—Nobody who knows the dwarf Almond (*Amygdalus nana*) will contest the fact that it is one of the most beautiful of early

flowering shrubs. It forms a bush, which in March and April is covered with flowers, varying in colour from a pale pink to a deep red. Sometimes, but rarely, there springs from seed a variety bearing white flowers. Of this we have sown the stones, but they have always produced a plant with red flowers. Others may, however, have had a different result. In *Amygdalus nana* the colour is deeper than in any of the other sorts; but its chief merit consists in the long time in which it continues in flower. It is a healthy, strong shrub, with medium-sized deep red flowers. It is increased by means of seeds or suckers. The former should be sown during the same autumn they are gathered, and the young plants will appear the following spring; in the autumn, such plants as are strong enough can be put in their places. If this cannot be done before winter, it should be done in spring, before the plant commences to shoot up. Varieties which it may be desirable to keep ought to be multiplied by dividing the roots, by separating the suckers, or by means of root buds.—R. H.

Privet hedges.—I am almost grieved Mr. Muir does not know of any more satisfactory plant for hedges generally than Privet. One would have thought that a man living in our country would have seen a Holly hedge now and then, and if not, he certainly could use no plant less satisfactory for a hedge, either as a fence, or from an ornamental point of view, than Privet. It may have the merits of cheapness and quick growth, but there are other hedge plants cheap enough with which Privet cannot be compared for effectiveness. In the matter of quick growth, too, it would be better to choose a plant that grew slower and formed a good hedge than to "rush up" a hedge of Privet, and when it was made to prove useless, for Privet offers but poor resistance to cattle. Perhaps the most effective of all hedges is the Holly, which combines beauty with impregnability. A mixture of Holly and Quick makes a good hedge, or Quick can be used by itself. Then we have the Yew, Cherry, Plum, and the Hemlock Spruce, all of which make better hedges than Privet. Writing on the subject recalls to mind a pretty combination from an ornamental point of view which I saw a few days ago. It was a mixture of Quick and Ivy.—A. HERINGSTON.

Ivy on trees and buildings.—Few plants bear hard trimming-in better than the Ivy, and considering what a marked difference well-managed Ivy coverings present to such as are allowed to grow at will, the only strange fact is why we do not more frequently see this prettiest of all evergreen draperies attended to? One of the reasons is this, farmers on the whole, and cottagers as a rule, do not care a fig for plants nor their appearance. Too great exertion, but often ill-advanced, is required to make their ordinary crops profitable, and so gardening, whether in the soil or on the house-side, is neglected. Another reason is that farmers and cottagers, the former in the ratio of seven to one of the latter, lack the knowledge, and, combined with this, they frequently tell us that they lack the appliances necessary for attending to garden plants—their pruning and general treatment; but they always forget to tell us that they lack the inclination, and consider gardening in any form troublesome and expensive. This is no made-up story, for travel where you like, and pay attention to the matter as I have done, and you will ere long, if you cannot at present, fall in with my statement. The farmer is, perhaps, the worst floriculturist we have; his wife is usually considerably in advance, for she must have her window plants and bit of garden ground for flowers, but little, little is the assistance she gets either in preparing or planting the ground. In mining or quarrying districts we have flower-culture of no mean kind, and rare and curious are some of the plants I have met with in the gardens of such—showing that considerable interest is evinced in the collecting and culture of these by the owners of gardens in which they are found. But this is departing rather from our text. Neglected Ivy may in due season be made both ornamental and useful by trimming it hard and close to the building on which it is planted in early spring, and by mid-summer it will again be fresh and green, close and

compact, even of surface, better adapted for keeping out damp, and ten times more ornamental.—A. D. WEBSTER.

ROSE GARDEN.

T. W. GIRDLESTONE.

NEW ROSES AT CHESHUNT.

THE batch of new seedling Roses sent over from France during the last autumn, and now in course of distribution in this country, promise, as far as can be seen at present, to prove considerably more interesting than those of the previous year or two. Many of them have been, and are being, well flowered at Messrs. Paul and Son's "Old" Nurseries, Cheshunt, and though, of course, of the three or four dozen novelties annually imported all are not expected to take first rank: still the number of attractive varieties of probable permanent value is much greater than was discoverable last year. Although a gap is made by the fact that M. Lacharme makes no contribution this season, Lévêque swells the total with six seedlings, including Comte de Paris (fourth of the name!), a very fine, erect, deep crimson Hybrid Perpetual, on all hands admitted to be one of the best of the year and a very likely acquisition. Another of this set is unfortunately afflicted with a terribly long name, viz., Madame Edouard de Bonnières de Wierre, but has a good, bright, crimson flower, shaded darker, large, and of distinct form, being imbricated with a very full centre; petals large, and the characteristic form maintained even in the small side-blossoms. One of the most attractive Hybrid Perpetuals is Lévêque's Madame Bois, a Rose of the Victor Verdier race, but seemingly freer in growth and more perpetual; its flower is large and of most beautiful shade of pure rose colour, almost exactly the tint of Marquise de Castellane, but a trifle more salmony—an addition in a very desirable line of colour.

Another acquisition in this section (although classed as a Hybrid Tea, and said to be raised from Baroness Rothschild's Madame Falcot) is Guillot's Madame Joseph Desbois, a full, well-formed, nearly white Rose with a flesh tint, more in the way of Lady Mary Fitzwilliam than any other variety, but, as seen under glass, paler in colour.

The Tea scented varieties, as has been generally the case in recent years, form a strong contingent, and include varieties from some of the best known raisers. Luciole (Guillot), though larger and fuller than appears in the plate given in the current number of the *Journal des Roses*, hardly looks likely to make an exhibition Rose; but it is a charming addition to the bud Teas, in hue a delicious combination of clear rose, pale cream, and yellow, not unlike Camoens, like which variety also it makes an admirable forcing and pot Rose.

Madame Scipion Cochet (Bernaix) is a promising flower, full and of good size, having large white outer petals and yellow and apricot centre, something in the way of Madame Angèle Jacquier; and another seedling, M^{me}. Etienne, from the same raiser, is also very pretty, and has a white flower with a pointed, twisted centre before fully expanding, the outer petals being shaded and washed with rose. It is, however, impossible to see these shaded Teas in true character under glass early in the year. Madame de Watteville when forced is so different in appearance from the exquisitely tinted flowers developed out of doors, as to be hardly recognisable, and therefore it is not worth while to note further than that Madame Etienne's

form and size are such as will make it worth while to try her colour out of doors. There is no doubt, however, about the colour of Duchesse de Bragance (Dubrenil), which is a clear yellow, seemingly between Monsieur Furtado and Etoile de Lyon. Both these well-known varieties are first-rate when at their best, but the former is delicate in habit, and the latter some growers find difficult to open out of doors; so that a variety that combined their good qualities would be welcome, and Duchesse de Bragance is said to open as freely out of doors as under glass.

An interesting break in the perpetual-flowering hybrids of *R. polyantha* comes in Josephine Burland (Bernaix), a variety approaching more to the type of the Teas in flower, while retaining much of the multiflora character in foliage, &c. The flowers are white, of moderate size, solitary, erect, as perfect in form as Madame Bravy, and likely to be a popular bouquet flower. This variety seems an indication that the hope expressed of obtaining a race of hardy light Roses by means of *R. polyantha* is well grounded.

Of last season's novelties, Her Majesty was well to the fore, the magnificent form and finish of the bloom indicating the prospect of a rich harvest to the exhibitor during the coming campaign who may possess cut-back plants, which, by the way, should not be hard pruned. Several plants which had been severely cut back had produced a splendid, but flowerless growth. Lacharme's Hybrid Perpetual Clara Cochet also seems likely to take a permanent position as a greatly improved Catherine Soupert; and the same raiser's polyantha hybrid Max Singer, in this case a climber and not perpetual, promises to be a real addition to climbing red Roses, of which there are at present so few. The seedling resulted from a cross between *R. polyantha* and General Jacqueminot, and produces an abundance of bright red, very well formed flowers.

Of the new Hungarian climbing Roses, which are the outcome of M. Geschwind's endeavours to raise a race of Roses that shall be proof against all frosts, Erinnerung an Brod has deep red flowers which are deliciously fragrant, and may be useful.

The Cheshunt collection of Rose species and variations is now very extensive and interesting, and among those charming forms that have been flowering freely under glass are the Gistulike *R. berberifolia* Hardy, with its single yellow flower and purple centre; *R. clinophylla* plena, bluish white; Veitch's pretty Rose Britton (*lucida* fl.-pl.), in its rosy clusters; Paul's Single Perpetual White, very pure and free, and many others. The success that has already attended the employment of *R. polyantha* as a seed parent in Rose-raising will, it may be hoped, induce hybridisers to persevere in experimenting with these valuable seed-bearing species, so many of which possess attractive and valuable qualities that might well be introduced among our highly-bred and, in many cases, weakly-constituted garden varieties.

Sweet Brier.—"Cambrian" (page 331) while praising the Sweet Brier says, "it is hardly an attractive plant." It would be difficult to name a plant which is more attractive, apart altogether from its scent. Few people treat it fairly, so as to allow of its development into the vigorous and graceful bush which it naturally is. When they do, they are rewarded by a free and handsome bloom in summer, and in autumn with a brilliant show of brightly coloured fruits. These good qualities will not be obtained if it is grown in the form of a hedge. Surely nothing in our gardens is more deserving of attention.—A. HERINGTON.

HYBRID ROSES IN POTS AFTER BLOOMING.

THESE may be stood in a cool house facing north, and it will be better if no heat at all is used. They must be watered when they require it, and fumigated when green fly shows itself, and in April, or as soon as very severe weather is over, they can be examined and, where necessary, re-potted; then place them out of doors for the summer. A 12-inch pot is a most unwieldy size to grow a hybrid in, and unless the plant is extraordinarily large there is no possible need of it; a 10-inch pot is as large as they need when four or five years old.

The treatment with which I have succeeded best for several years has been to place the plants as soon as the blooming is over—generally my first plants are ready at the new year—in a north house about 6 feet wide with a good bed of ashes on the floor; on this I stand the plants as thick as the foliage will allow, water as soon as put in, and continue watering when necessary. Here they stand without a particle of sun or fire-heat till about the end of March, when the sun will begin to warm the house a little during the middle of the day. During all this time, except during very severe weather (when I frequently got 12° to 15° of frost in the house, yet it does no harm), they will keep steadily growing, and by April 1 the new growth is generally 2 feet long. I now give plenty of air every day in mild weather, and by the end of the month or the first week in May I turn them all out-doors into their summer quarters and grow them on in the usual way till August.

Anyone having surplus plants of any good varieties that have been forced during early winter and treated in this way, by planting them out in the open ground during mild weather in April or early in May, can have a fine crop of flowers eight or ten days earlier than from the plants which have been out all winter. The cool-house treatment gives the plants a partial rest (though if treated right they never lose a leaf), which never fails with me to produce a fine crop of flowers, as above described. Of course, if the plants are grown on in pots for the next winter's work, it is best to pick this crop of buds off before they begin to open. The most important thing to guard against is allowing a severe snap to catch the plants dry; should such occur, the plants suffer severely.—J. N. M., in *American Florist*.

ROSES THE BENNETT AND AMERICAN BEAUTY.

MY experience with the Bennett has not been quite satisfactory. I admire its style of bud, its colour, and the manner in which it will retain its colour, even under circumstances injurious to the colour of some other varieties, such as Pierre Guillot, but I have found it so prone to black spot and red spider that I have lost much of my original esteem for it. Liberal applications of cold water will, of course, keep the spider in check, but I have yet to learn of an effective remedy for black spot. A European scientist recommends hand-picking and the immediate burning of the leaves, but this is a remedy I have not yet found time to test. A year or two ago, by way of experiment, I potted up a couple of Bennetts, using the usual compost for one, but adding a little sulphur and lime to the soil for the other; they remained side by side for about three months, the doctored plant showing little sign of spot, although the other was constantly frescoed; they were subsequently planted on the benches with other Bennetts. I tried the lime and sulphur in planting, and for months afterwards I applied it in various forms, also using every other remedy coming under my notice, but I signally failed to reduce my crop of spot.

As to the Beauty, well I am perfectly in love with her. I think she is "just too sweet," and remarkably free from the many ills to which Roses are heir. I am little troubled with mildew, spot, or spider, and the Beauty appears to carry less blind wood than any other variety I know of. Late last autumn I planted a few very small plants on the benches; they have not made any 8-foot or 10-foot canes in the meantime, few shoots now being over a foot long, yet I have cut some very fair buds, one

bloom which I cut lately being 1 inches in diameter; with me it seems to do best in a good, stiff soil, and fed very sparingly, if at all. I give a little liquid manure about the time the buds are developing, but with this exception I feed it less than any Rose I ever handled; I find also that it enjoys a comparatively cool atmosphere. I am raising a few young plants which I intend to force as Hybrid Perpetuals next season, but grown in the usual way; and with proper care and attention I can see no reason, judging from my own experience, why American Beauty should not prove a profitable Rose to the commercial grower. "There is nothing succeeds like success," and the grower who succeeds in taking out of American Beauty all that is in it will not need to bother much with the Bennett. — A. W. M., in *American Florist*.

Marechal Niel Roses In Mr. Muir's note in your columns (p. 356) I read him to say, Easter, 1886, he had dozens of Roses, but Easter, 1887, was a miss. My Marechal Niels have done well even in 1887. From Monday, 11th instant, to Monday, 18th, I have cut eighty-two dozen of very fine flowers. I have never seen them so beautifully coloured—a deep golden yellow, and what makes them, in my eye, doubly valuable, the foliage is perfectly clear of mildew. If a good colour and a green foliage is wished for, keep the pipes warm, and give air sparingly. Cold blasts bring mildew and a close atmosphere assists, but warm air is the thing to aim at. R. GILBERT.

GARDEN DESTROYERS.

CROP-DESTROYING INSECTS.

THE tenth annual report on "Injurious Insects" has just been published by Miss Ormerod. Like its predecessors, it contains the result of observations made the previous year by a number of persons in various parts of the country; consequently a large amount of very valuable information has been got together. The number of different insects reported on is not quite so great as last year, when observations on twenty-nine different species were recorded. In the present report nineteen different insects are dealt with, and of these eight have not previously found a place in these reports. Foremost among the eight stands the Hessian fly, about whose arrival at one time there was so much doubt. What was at one time considered only a scare, like that about the Colorado beetle, has unfortunately only proved to be too true, and, as Miss Ormerod truly says in her preface, "1886 will be always notable agriculturally as the year of the first appearance of the Hessian fly (*Cecidomyia destructor*) in Great Britain as a destructive corn pest." Where it has come from remains still to be made out; but we see from our own observations of the last few months that there are means of prevention of the multiplication of this pest easily available in this country by which we might reasonably expect to keep it in moderate bounds if these measures are used. If they are not, the example of its rapid spread over about two-thirds of European Russia—so that since its first observation in that country in 1879 it has become the most destructive crop-scourge of the land—shows what we have to fear.

It would appear that the Hessian fly was first known as a destructive insect in America about 100 years ago. It was given this name because it was supposed to have been introduced (according to Kollar) in straw with the Hessian troops during the American war. There was, however, no grounds for the supposition; but it now unfortunately exists, and causes an enormous amount of injury, in France, Austria, Hungary, and Southern Russia. Last year it appeared in this country in Hertfordshire, Bedfordshire, Essex, Inverness-shire, and Perthshire. As regards the appearance of an infested plant, Miss Ormerod says: "On examination in the fields near Hertford on the 30th of July I found the stems doubled sharply down a little above the joint (the second one from the root), and between this double and the joint below there lay, closely pressed to the stem and covered by the

sheathing leaf, the flax-seed-like chrysalis cases. The injury is caused by the fly maggots lying at the same spot sucking the juices from the stem, which is thus weakened; presently, although both the stem and ear above are more or less stunted, yet the weakened piece of stem cannot bear their weight, and it bends sharply down at the injured part; sometimes a gall or some amount of swelling of the stem occurs just above where the maggot fed, but in the specimens I examined this was rarely noticeable."

It does not appear how or from whence this pest has been introduced, but it seems possible for it to be transmitted unwittingly from one country to another in straw or corn that has not been thoroughly cleaned. When a root is attacked, there is no means known of relieving the plants from this insect; so that preventive measures are what farmers should rely on for protection against it. The chief of these appears to be not to sow Wheat until the autumn brood of flies is dead; this usually takes place in America in the middle of September. The United States Entomological Commission recommended that Wheat should not be sown before September 20.

The corn sawfly is an insect which injures corn crops much in the same way as the Hessian fly to an ordinary observer, but the straw is injured at the ground-level, and the maggot is within the stem; the stem does not bend, but breaks off short at the injured part. It is not in sufficient abundance to be a very destructive pest. Last season earwigs were a great nuisance in many places, and in some localities from this report they appear to have caused much injury to Cabbages, Turnips, Mangold, and Kohl-rabi. They also attacked the Tobacco crop, which was a new crop last year in this country. A very graphic account of the plague of earwigs is extracted from the *Field*, the writer of which gives an account of various articles of food into which they crept. Eggs, however, are not mentioned. A correspondent wrote to me during the summer recommending fowls as being great enemies to earwigs, and adducing as a proof that on opening his egg that morning at breakfast he had found two earwigs (dead) in it. I was sorry not to be able to accept this proof, and suggested that probably the eggs had been cracked and the earwigs had crawled in. Various methods are suggested for destroying these insects when they are very abundant. Clover weevils are reported on for the first time. These little beetles feed on the leaves of the Clover, and lay their eggs in the flower-heads; their little grubs make their way to the seeds, on which they feed. Though this insect has not been alluded to in these reports before, it is an old and well-known foe to Clover, and has been described, figured, &c., in Curtis's "Farm Insects," a book published many years ago. Another disease which has not hitherto been mentioned in these reports is Tulip root in Oats. When Oats are attacked by this disease, the base of the stem becomes swollen into a kind of bulb, round which grow a number of distorted roots. The authors of this disease are eel-worms, very small creatures, which are not insects, but are worms belonging to the Order Nematoda. These eel-worms are very long-lived, and will recover even after having been dried for some considerable time. Deep ploughing is recommended as one of the best remedies, so that the eel-worms may be buried as deep as possible. If this precaution is taken after an infested crop has been removed, and the next crop is one which this pest will not attack, the soil ought to be in due time quite free from them. The well-known disease, Wheat-ear cockles, is caused by a very similar worm. This disease is also reported on. It appears to be very easy to prevent Wheat being attacked by taking care not to sow infested seed. This can be ensured by putting the seed into water and stirring it about; the cockles will rise to the surface and float, and should be removed.

The Wheat bulb fly (*Hylemia coarctata*) is another insect which makes its *debut* in the report this year; as yet it does not seem a very troublesome pest. Under the heading of long-horned centipedes a figure is given of the long-horned centipede (*Geophilus longicornis*). This creature is probably partly

carnivorous and partly vegetarian in its diet. As a vegetable-eater it probably does more or less harm to corn crops. I say probably, as the case against it is by no means proved; but in the same figure the common centipede (*Lithobius forficatus*) is depicted. This creature is generally admitted to be entirely carnivorous, and should be protected in every way; it is therefore a mistake to figure it with the other without mentioning that it is a beneficial and not injurious creature.

Eighteen pages of this report are devoted to beetles which attack the Mustard crop. Of these there are four kinds, two of which attack the leaves and the others the flowers and seeds. The Mustard beetle (*Phadon betulae*) attacks Mustard much in the same way as the Turnip-leaf beetles injure Turnips, and they are joined in their ravages by the latter beetles, which appear to destroy Mustard as eagerly as they do Turnip crops. The various observers of these insects seem to agree in the advisability of sowing Mustard as early as possible, so that the plants may get a good start before the beetles attack them. Dusting the plants while the dew is on them with certain mixtures which are given is recommended. The beetles which attack the flowers of the Mustard are very small (not more than 1-12th of an inch in length), and of a dark metallic green. They lay their eggs within the buds, and the grubs hatched from these eggs feed at the base of the blossoms. There appears to be no remedy when a whole field has to be dealt with. The fourth kind of Mustard beetle is the Turnip-seed weevil, which does not seem to be a very injurious insect, but its grubs have been found feeding on the seeds. Growing Mustard as a preparation for wheat has been generally considered as a sure means of preventing the latter crop being attacked by wireworms, as these insects are supposed to have a great dislike to Mustard; but two of Miss Ormerod's correspondents write, saying they find Mustard is attacked by wireworms.

In reporting on the Turnip gall weevil, Miss Ormerod says: "Partridges are said to be very fond of the maggots, and to frequent Turnip fields for the purpose of pecking them with their beaks out of the galls, but as one great part of the damage of the attack consists in the escape of the maggot, causing holes by which wet and injurious insects make their way into the Turnip, the still larger openings down into the gall cavity caused by the birds' beaks are a doubtful benefit." Though the individual roots may not be improved by the partridges extracting the grubs, it should always be remembered that in killing the latter the partridges are of great service in reducing the number of the next season's beetles. Horse warbles are reported on for the first time this year. The attack does not seem to have been severe anywhere, but it has been noticed in about a dozen different localities in various parts of England. Horses are so much better cared for as a rule than cattle, that they are not likely to suffer so much from these pests. The scientific name of the fly does not seem to have been accurately determined by Miss Ormerod.

In these reports the insects are classed under the name of the crop they attack. This I consider a very unscientific and undesirable plan. However, on this point there is much difference of opinion, but under the heading of "Corn" surely those insects which are nearly allied to one another should be placed together. Miss Ormerod, however, gives them in the following sequence: a fly, a sawfly, a beetle, eel-worms (which are not insects at all), and then another fly. With a little careful editing the report might have been considerably condensed, which would have been an advantage if the price was also reduced; 1s. 6d. for 109 pages is a high price, and more than many farmers would care to give. G. S. S.

Grubs on lawn. A friend of ours sends us a sample of pests with which his garden is infested to such a degree that nothing will live. He says his lawn is filled with them, as also his borders, and as soon as anything is planted it is killed by them. They literally swarm about an inch under the surface of the soil. We should esteem it a great favour

if you could suggest any way of getting rid of them.—OAKLEY AND WATLING.

* * In reply to the above, the grubs you forwarded are the grubs of the common daddy-long-legs (*Tipula cloracea*), or some nearly allied species, but they were so dried up and shrivelled that I cannot say anything more definite. Follow the ground as much as possible, keeping the surface well stirred, so as to give the birds a chance of getting at the grubs, or give a good dressing of gas lime; watering the Grass with 1 oz. of corrosive sublimate dissolved in a little warm water, and then added to forty gallons of water, might do good.—G. S. S.

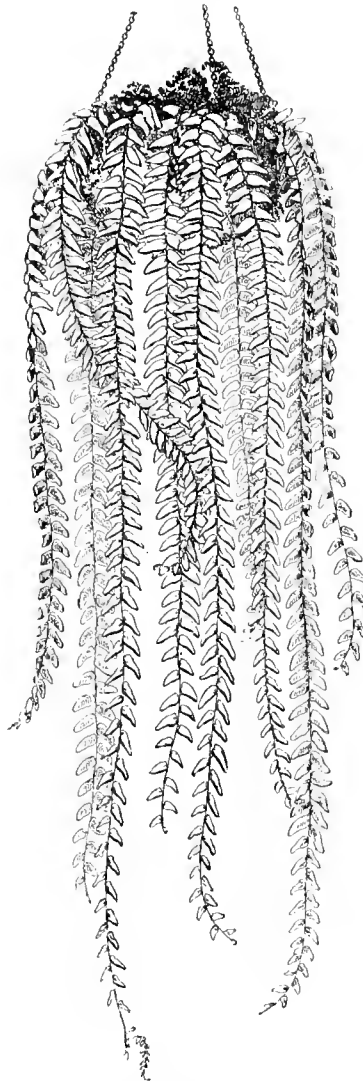
FERNS.

W. H. GOWER.

ASPENIUMS FOR BASKETS.

THIS genus contains many well-defined species and an equal number of intermediate forms. They are widely distributed over all parts of the globe, and vary in size, from dwarf kinds only an inch in height to large graceful species with fronds several feet in length. *Aspleniums*, for the most part, are plants of robust constitution. This, combined with their diversity in size, renders some of the kinds suitable for any position in a fernery in which it may be desirable to place them. The kinds enumerated below are specially adapted for cultivation in hanging baskets, and display their charms to the best advantage when grown in this manner. Whatever the basket may be manufactured of, elegance of outline is the only thing necessary to take into consideration, as all other details will be hidden when the plants become properly developed. The interstices, however, should not be over-large, otherwise the soil is apt to wash through. In preparing the baskets for the reception of the plants, a thick layer of Sphagnum Moss should be placed all round the sides, as this will prevent the escape of the soil. The mould may consist of rough peat, loam, leaf-mould, and sand in about equal proportions, to which some tolerable sized pieces of charcoal should be added, as they will serve for drainage without adding materially to the weight—a point always to be studied when they are suspended from the roof of plant houses. Ferns in baskets are very liable to suffer from neglect, and frequently lose many fronds through drought. To avoid this the baskets should be taken down every morning through the summer, and be either dipped in a tank of water or the soil should be well soaked through with water from a rose-can, when, after draining, they may be replaced in their several positions. *A. longissimum*, the subject of our illustration, has few equals for basket purposes, the long pendent fronds being vivid green on the upper side, copiously fertile beneath, and prolific at the points. It is found in the Mauritius, in Malacca, and in Java, and requires a warm house to develop its beauties. *A. flaccidum* is a plant of a somewhat more spreading habit, with stout, bright green, thrice-divided fronds, bearing numerous young plants upon the upper surface, which add materially to its effectiveness. It thrives best in a cool house, and is a native of New Zealand. *A. rhizophorum* is an elegant species from Brazil and the West Indies, and requires to be grown in the warm house; the fronds are some 2 feet in length and very finely divided, the segments being vivid green. It is prolific at the extreme points of the fronds; these ends should be pegged into the sides of the baskets until the young plants it develops become rooted, when the connection may be severed; this practice will produce a mass of great beauty. *A. bulbiferum* is a free, massive-fronded species,

deep green above, where young plants are freely produced from little bulbils, by which it may be readily increased. It comes from New Zealand, and is one of the most effective large-growing kinds for a cool house. *A. appendiculatum*, from the same country, is a near ally of *bulbiferum*. Its fronds, however, do not taper so much to a point, but are more uniform in width throughout their entire length, less finely divided, and not so prolific. On the under side, the fronds are densely covered with dark brown sori. *A. caudatum* produces fronds some 2 feet or 3 feet long, once-divided, the segments or pinne being deep green and taper to a long point. It is from the East Indies, and requires



Asplenium longissimum.

a warm house. *A. flabellifolium*, from New Holland, is a very slender, small-growing plant, which requires a very small basket; it may even be used for suspending in a Wardian case; when robust the slender fronds are from 12 inches to 18 inches long, prolific at the points; the small pinne are fan-shaped and bright green. *A. fureatum* is a variable plant, robust in habit and spreading, fronds some 2 feet to 3 feet long with scaly stems; they are much divided, with deep green erose segments, and are very effective. It is found in various parts of Tropical America, and also in Madeira; that from the former requires a warm house, while the Madeira form thrives well in a cool structure.

A. laserpitiifolium is a bold, handsome, warm-house form from the East Indies, with spreading fronds some 3 feet or more long, ovate-lanceolate in outline, and three-times divided, the segments being small, cuneate, and vivid green.

The Killarney Fern as a town plant.—I remember Mr. John Adair once saying that if he could have but one plant for city culture, and could select that one, it would be the Killarney Fern (*Trichomanes radicans*), and he went on to say that "but few years have passed since the culture of this beautiful Fern baffled the skill of experienced gardeners." Loddiges often tried to grow it, and always failed; and Baron Fischer, superintendent of the Czar's botanical establishments, seeing it with the late Dr. Ward, flourishing in one of his Wardian cases, took off his hat, and made to the plant a low bow, saying: "You have been my master all the days of my life." It was therefore in a Wardian case Mr. Adair would grow this plant in the city of Dublin. One reason why he would praise it as a city plant is that it will grow as well in the garret as in the drawing-room, in the stable loft or darkest corner of a yard in any part of the city. But Mr. Adair grew it in his parlour in Merriion Square, and he has set forth how he managed it—not allowing it to have the sun upon it for seven years.

If what the plant has to grow in has a wooden bottom, line it with zinc, and have a hole or holes for drainage. Place pieces of broken potsherds with the hollow side downwards over the holes, and over all the bottom of the vessel. On this spread lumps of charcoal of 2 inches or 3 inches or more in diameter, or a layer of sliced Cocoa-nut rind, and upon this a layer of pieces of turf of the same size as recommended for charcoal. Sprinkle fine, peaty soil over these, and having laid down your plant, and sprinkled a little more of the soil over the rhizomes, water well with a fine rose. The atmosphere should be always moist, but these plants like some air, which much contributes to their fruiting, as this does to their interest and beauty.

Have any of the readers of THE GARDEN similar experience? In all the experiments of this character which Mr. Adair undertook, he brought to bear upon them great enthusiasm and undeviating attention, and he succeeded with many subjects to a remarkable degree.—R. D.

Adiantum aneitense.—This is a plant of somewhat recent introduction, and whatever aspect it may wear in a dried state, it may, when seen growing, be readily recognised from any other kind. It is an evergreen species, and although of a rigid texture, it requires stove heat, as it comes from the lowlands of the island of Aneitum. It has a creeping rootstock, and produces fronds from 1 foot to 2 feet long, three or four times divided and deltoid in shape; the segments are deep green, smooth on the upper side, and slightly glaucous beneath. We recently saw handsome specimens of this species in the Fern collection at Beddington House, Surrey.—G.

Pteris serrulata Mayi.—This is a most elegant form of the well-known old Chinese Fern, which is such a general favourite for room decoration and for Wardian cases in the house, whilst the numerous crested and tasseled varieties into which it has sported under cultivation are extremely ornamental in the fernery and for hanging baskets. The present sport is more compact than the type, all the segments being variegated with silvery white, and their tips divided into a flat triangular crest. This plant is rapidly becoming popular, and is largely grown by its raiser, Mr. H. May, in his nursery at Echnontou.—G.

SHORT NOTE.—FERNS.

Large Ferns (*P. Mr Donald, Edinburgh*).—The large Ferns you mention as having seen last summer in the Colonial Exhibition were specimens of *Todea africana*. It is also known by the names of *T. Barbara*, *T. australasica*, and *T. rivularis*. The examples of this Fern sent from Victoria to Kensington were very fine specimens, varying from 1 ton to 2 tons in weight.—G.

Doryopteris ludens (*T. J.*)—The specimens you send are those of the above species. We are glad to hear you have spores germinating, as we are not aware that it is in cultivation. The fronds are of two forms, the infertile ones being triangular, sometimes approaching hastate, supported upon chony-black foot-stalks, whilst the fertile ones are pedate, much resembling those of *D. pedata*. We should think it

will thrive in a cool fernery, as it is found in India at upwards of 1000 feet elevation, but yours from the Philippine Islands may be from a lower altitude.—Ed.

ORCHIDS.

W. H. GOWER.

ORCHIDS IN FLOWER AT CAMBERWELL.

THE condition of the extensive collection of these plants at Cambridge Lodge, the residence of Mr. R. J. Measures, thoroughly proves the possibility of growing Orchids in London, and teaches a lesson in their management worth recording. At the above place the cool system is carried out, even with the East Indian distichous-leaved kinds, such as *Vandas*, *Aerides*, and *Saccobolabiums*, to a greater extent than we have hitherto seen. In the house devoted to these plants the thermometer has been allowed to fall as low as 50° during the past winter, and the plants are now in the rudest health, their rich deep green leaves clothing the stems to the base. There are about a hundred spikes of bloom now pushing up on the *Vandas* alone, principally on *V. suavis*, *V. tricolor*, and its varieties. The rare and little-known *Vanda Gowerae* (undulata) here also finds a congenial home. This species, which in habit somewhat resembles *Camarotis purpurea*, but is more robust, produces an erect-branching spike bearing numerous flowers, which may be likened to miniature blooms of *Ceologyne cristata*, with the sepals and petals beautifully undulated. It has been imported from Upper Assam in great quantities, but has rapidly succumbed to the hot treatment it has received. The rare *Aerides rubrum* is also here thriving under cool treatment, bearing two erect spikes of bloom. About twenty-five years ago quantities of this plant were imported, but rapidly dwindled away through being placed in too high a temperature. We have always strongly advocated cool treatment for Orchids, but we were not prepared to see a grand example of *Renanthera Lowii* thriving under quite so low a temperature, as is here demonstrated that it enjoys. Beside the kinds enumerated the collection includes fine specimens of the Fox-brush *Aerides* (*A. Fieldingii*), *A. Schroederi*, *A. Lawrencei*, *A. crassifolium*, *Vanda Cathcarti*, *V. Sanderiana*, and many others of this section, every one of which appears to be in robust health. The lovers of this class of Orchids, therefore, need no longer object to their cultivation upon the plea that they require so great a heat that they cannot be enjoyed.

Cymbidiums also show how much they enjoy cool treatment. Gigantic plants of *C. Lowianum* are now in great beauty, bearing numerous spikes, on which are twenty and twenty-seven blooms, whilst numerous plants of *C. eburneum*, with their large ivory-white flowers, are very conspicuous. *Masdevallias* are very numerous, and now, in the middle of April, fire-heat is entirely withheld, whilst during the winter just sufficient heat is given to keep the frost out and the houses comfortable. Had this treatment been recognised earlier, the splendid consignments of that enthusiastic collector, M. Warszewicz, would have been preserved to our gardens, and our knowledge of Orchids some few years in advance of what it is at the present time. The houses devoted to *Cattleyas* and *Lælias* are slightly warmer than those in which the mountain Orchids from South America are kept. The specimens are numerous, but as those of the Triane section are nearly over there is not much bloom. A fine example of *C. intermedia*, however, bearing some thirty flowers, and others promise to keep up the succession until *C. Lawrencei*, *C. Mendeli*, *Lælia purpurata*,

and others commence. Amongst this family there is a remarkable instance of cool treatment being successful in *Lælia harpophylla*. Numerous plants of these have been subjected to the coolest treatment, even to the extent of several degrees below the freezing point, with the result that the growths are finer than those made in heat, but the flowers are only now at this date pushing up. In a house with about the same temperature as the *Cattleyas* we noted several fine examples of the chaste *Trichopilia suavis*, some bearing upwards of a hundred flowers, and also finely-bloomed plants of the pure white form *alba*; these were associated with such as *Miltonias*. Particularly notable were numerous specimens of *M. vexillaria*. These plants are subjected to a sprinkling of water from the syringe morning and evening, their rude health and the numerous spikes of bloom just appearing amply proving that this system of overhead watering is thoroughly congenial. *Cypripediums* are grown warm for the most part, and in this collection nearly every recognised form is represented, including several unique kinds. At the time of our visit a splendid new unnamed kind was flowering, which had been introduced from Tropical Asia. The flowers are as large and as deeply coloured in the petals and pouch as those of the finest varieties of *C. Harrisianum*, whilst the dorsal sepal is large and much brighter coloured than those of *C. cernanum superbum*. It is certainly a great acquisition to this numerous and popular genus. *Phalenopsis* are also grown largely, and although there is some improvement in them since our previous visit, we opine they would be further improved if their roots were freely exposed to the air. The *Dendrobiums* appear to be kept the hottest, and the house is gay with many hundreds of blooms of such kinds as *D. Wardianum*, *D. crassinode*, *D. Fytchianum*, numerous forms of *D. nobile*—amongst them a variety with white sepals and petals, which affords a pleasing contrast to the blooms of the dark-coloured forms. A very notable variety of *D. Brymerianum* is also blooming, its dark orange-yellow flowers being adorned with a much deeper fringe than we have hitherto observed in this species. All the *Dendrobies* are in vigorous health, and although now growing in strong heat, they have been subjected to a long period of rest in a cool house. In the houses devoted to the mountain plants from South America, the fine examples are numerous, and in some instances unique. These we will refer to upon a future occasion. One plant, however, *Oncidium concolor*, is noteworthy—a native of the Organ Mountains in Brazil. Here under very cool treatment, and suspended close to the glass, it is flourishing most vigorously, making pseudo-bulbs twice as large as its imported growths, and flowering most profusely. All and any of these plants are used without the slightest hesitation for indoor decoration at all seasons, and with no evil results. We therefore urge upon the largely increasing numbers of Orchid growers the advisability of adopting cool treatment, as it reduces the bill for fuel, increases the vigour of the plants, and consequently adds materially to the enjoyment.

Calanthes at Holloway.—The glories of *C. Veitchii*, *rubro-oculata*, and *luteo-oculata* have now passed away, but there are several newly-introduced *Calanthes* which are just now in great beauty in Mr. Williams' nursery at Holloway. The best of all is *C. Williamsi*. The pseudo-bulbs somewhat resemble those of *Limatodes rosea*, and the flowers are both large and numerous; the sepals and petals are white tinged with pink, whilst the lip is rosy crimson, very intense towards the base. *C. Regnierii* is another desirable, late-flowering kind with white sepals and petals, and a lip which varies in colour

from rosy pink to rosy purple. *C. Stevensi* resembles the last-named kind, but has less colour in the lip. We believe they all come from Cochinchina, and their period of flowering makes them desirable acquisitions. G.

Cattleya intermedia Laingi.—Although this species has been cultivated in our gardens for many years, there has been very little variation from the typical form. A variety now flowering with Mr. Laing at Forest Hill bids fair to bring this somewhat despised plant into the front rank. It is exactly like the type in growth; the flowers, however, are much larger, whilst the broad, flat, middle lobe of the lip is of an intense deep crimson-purple. —G.

Dendrobiums at Forest Hill.—The collection of these plants in Mr. Laing's nurseries is now very extensive. So great is the demand for Orchids that considerable more space in the nursery is required for their accommodation. Particularly fine are the hundreds of *D. Wardianum*, *D. crassinode*, *D. Fytchianum*, *D. Ainsworthii*, and various others. In growing these plants we observed that Mr. Laing favours small pots, and uses fibrous peat from which all the fine particles have been shaken away. This is pressed down very firm, and thus the roots have something to cling to, and the moisture runs quickly through. By this system the roots do not become saturated and soddened with loose, stagnant material, a condition so thoroughly inimical to the well-being of Orchids. G.

NOTES OF THE WEEK.

Editor's Table.—After a lapse of several years we propose to open this column for the present season of flowers. Interesting hardy and beautiful flowers of all kinds will be welcomed.

Irish Anemones.—We have received a beautiful gathering of the "St. Brigid" strain of Anemones, both single and double forms. The flowers are of great size, and very varied in colour, and when grown in masses must have a grand effect.

The Frost Report.—We are asked to state that the authors of the reports furnished for the compilation of the "Frost Report" may have a copy of the work free of charge, as well as the Fellows, on application to the Secretary of the Society. The report may be purchased, price 5s., from Messrs. Macmillan & Co., 29, Bedford Street, Covent Garden.

The Tamarisk. All the way from Stomoway (Lews Castle) comes one of the most graceful and curious things we have ever seen. It is a branch of the Tamarisk wreathed with flowers, and drooping shoots 5 feet long, so beautiful and so finely cut in every way, that nothing we can think of cut or engraving would give the least notion of it. It is grown in the conservatory at Lews Castle, and the warmth no doubt has produced such good blooms. Even where the plants survive in Western Europe we find the temperature is not sufficient to develop the lovely flowering qualities that this shows.

Camellia Mathotiana. I send you one of a dozen blooms I have cut on a *Camellia* on an outside south wall here. I think it is very good, considering that we have had sharp frosts every night during the past week. I see correspondents have been writing lately respecting the hardness of *Ficus repens*. I put a plant of it on the south front wall of a lean-to house last autumn and it is all right, only waiting for warm weather to commence growing again.—GEORGE FELLOWS.

* * * A very fine, fully developed bloom of *Camellia Mathotiana*. *Camellias* are not so tender as is generally supposed. We know of several plants that have been planted for many years facing due north, and they are in rude health and bloom freely every season.—Ed.

An American engraver. There is an engraver named Blane living in Philadelphia, in the United States, who has copied without permission or acknowledgment a good many of our beautiful cuts. In the present state of the copyright law between England and the United States this gentleman is perhaps within his legal rights; but putting his own name on the blocks which he copies without leave or acknowledgment compels us to publish the fact. He copies them by some photographic or other mechanical process, and then puts his own name

on cuts with the design or engraving of which he has had nothing to do. A member of an English artistic fraternity, known as the "horse-coper," when he steals a horse, does not flaunt the thing in people's faces, but with becoming modesty sometimes *paints* the animal another colour! Mr. Blanc does not hide his doings, but takes a pretty little cut of the foliage of the Teale (Dipsacus), drawn by Alfred Parsons and engraved by Huyot; takes off Huyot's name and puts his own name instead. He offers a large selection of engravings to American nurserymen and employs one of our cuts as an advertisement of his collection, over which no doubt he claims a proprietor's right.

SOCIETIES AND EXHIBITIONS.

ROYAL BOTANIC SOCIETY.

APRIL 20.

THE second show of the present season was held on the above date, the weather being most genial, the exhibits varied, and the attendance numerous.

Messrs. Paul and Sons, the Old Nurseries, Cheshunt, sent a very fine group of Roses, consisting principally of standards. Amongst the most notable were Baron de Bonstetten, very dark crimson; Madame Lambert, bright rose; Anna Ollivier, large and full flesh colour; Rubens, white with a tinge of fawn colour and suffused with rose; Jean Ducher, salmon shaded with rose, fine form; Saturno, soft apricot; Madame Hippolyte Jaunin, white with a bronzy tint, beautiful in the bud; Her Majesty, large and full, rosy pink. Another excellent group of Roses was staged by Mr. Rumsey, Joynings's Nursery, Waltham Cross. These were both standards and dwarfs. Notable amongst them were Marie Van Houtte, a superb variety, white tinged with yellow, the petals tipped with rose; Maréchal Niel, deeply coloured (this was growing upon the Brier); Madame Gabriel Luizet, satiny pink, large, well formed; Duke of Edinburgh, fine shape, rich vermilion; Lady Mary Fitzwilliam, soft flesh colour; Souvenir d'un Ami, very large, bright rose; Charles Levebre, brilliant red, very fine (this variety was trained as a standard upon its own roots, in which way it is said to produce the finest flowers); and Camille Bernardin, bright crimson. A silver medal was awarded in each case.

Groups of cut Narcissi came from Mr. T. S. Ware, of Hale Farm Nursery, Tottenham, and from Messrs. Barr and Sons, of King Street, Covent Garden, each being awarded a bronze medal. Messrs. Collins and Gabriel, 39, Waterloo Road, London, also exhibited a similar group, combined with a collection of very fine single Anemones, to which a bronze medal was given. Messrs. Veitch and Sons, King's Road, Chelsea, exhibited a collection, not for competition, in which the flowers were all very fine and fresh. Horsfield and Sir Watkin being specially remarkable. We cannot but think the flowers in all these groups were too much crowded, and the absence of their own foliage considerably detracted from their beauty. The most conspicuous flowers in these groups were Sir Watkin, Horsfield, Emperor, Golden Spar, maximus, Leedsi, Mary Anderson, cernuus, cernuus plenus, princeps, moschatas, Empress, capax, Stella, ornatus, cyclamineus, and corbularia conspicua.

A very fine collection of hardy Primroses came from Mr. A. Waterer, Knap Hill Nursery, Woking, and deservedly obtained the silver medal awarded them, forming as they did one of the chief attractions of the show. The group occupied a stage some 50 feet in length. The numerous plants are robust in habit and most floriferous, whilst the colours are so varied that description is impossible. Those lovers of outdoor gardens will find unlimited scope for their tastes in the varied and beautiful colours of these lovely Primroses.

Mr. B. S. Williams sent a large and varied group, a admirably arranged, which was deservedly awarded a small silver medal. Amongst the plants, Palms, Dracenas, Orchids and Ferns were conspicuous; these were interspersed with Liantophyllum minutum, Ochma multiflora, various fine Amaryllids, Au-

thurium Rothschildianum, vigorous finely bloomed Erica Cavendishi, the curious Ataccia cristata, &c.

Mr. Laing, The Nurseries, Forest Hill, sent a large group of miscellaneous plants, not for competition. Amongst them were numerous Orchids, noteworthy being Dendrobium Wardianum, crassinode, Devonianum, Jamesianum, and timbratum oculatum, Odontoglossum, Cattleyas, and the curious and rare Calanthe discolor.

Messrs. Low and Co., of the Clapton Nurseries, staged a fine group of Odontoglossum Roezli and Roezli alba, with very large flowers, a similar batch of O. Alexandre, beautiful varieties, Dendrobium lituiflorum, Cypripedium Lawrenceanum, C. ciliolare, and a very large form of Dendrobium Wardianum called Lowi. Messrs. Lane & Sons, Berkhamstead, exhibited a beautiful group of Azalea mollis, large and varied in colour, also a fine group of Rhododendrons and Azaleas. Anthurium Scherzerianum, Clark's variety, shown by Mr. James, of Norwood, is a fine seedling form with large, flat, cordate-shaped brilliantly coloured spathes.

Ferns came from Mr. H. B. May, of Edmonton, amongst which were good examples of Gymnogrammas, Cheilanthes, Cincinalis, Lencostegias, Davallias, Adiantums, Doryopteris, Aspleniums, Pteris Mayi and P. tremula floecida (both of which received certificates). A large bronze medal was awarded for the group.

Messrs. Paul and Sons, Cheshunt, sent a group of Amaryllids, amongst which were Thackeray, a large, well-formed, bright scarlet flower, with white star; Walter Besant, white, streaked with deep red; George Elliott, a very large, deep red flower; and Eldorado, which would appear to be the precursor of a yellow flower, pale lemon colour, with a few streaks of red; and also A. R. D. Blackmore, a somewhat small flower, white, centre of petals flaked with fiery red, which received a certificate; Charles Kingsley, deep blood-red, white star, &c.

Amaryllids also came from Messrs. Veitch. They were Edith Wymie, which received a certificate; King of Crimson, Guy Manning, fine form, brilliant red, with pale green star; Ovid, a white flower, flaked with red, having two spikes from one bulb, each bearing six blooms. Mr. Douglas's group contained Hilda, bright scarlet, with white star, very fine, which was deservedly certificated; Hero, a large, good-shaped flower, deep crimson-scarlet, with greenish white star. Groups of Indian Azaleas in the amateurs' class came from Mr. Wheeler, gardener to Lady Goldsmid, St. John's Lodge, Regent's Park; Mr. Eason, gardener to Mr. B. Nonkes, Hope Cottage, Highgate; and Mr. Wesker, gardener to Mr. Heaver, Tooting. Amongst the most notable forms were Charmer, Stella, Duc and Duchesse de Nassau, Roi de Hollande, and Ferdinand Keglejan. The exhibitors in the nurserymen's class were Mr. Turner, of Slough, Mr. James, of Norwood, and Mr. Wells, of Sydenham. Notable in their collections were the following varieties: Apollo, a fine single white; Jean Yeryaene, with plain scarlet flowers and others variegated; J. G. Veitch, and E. H. Braudi, a fine large semi-double white.

Cyclamens came from Mr. J. Odell—Queen of Crimson, a large, bold, deep crimson flower, and majesticum, a gigantic flower, white with a rosy magenta throat; the latter received a certificate.

Mr. James sent Cinerarias, of which the following were certificated, viz., Eclipse, crimson self; Ariel, rosy mauve; Royalty, a grand deep blue self; and Jubilee, white flaked with magenta. Cinerarias also came from Mr. Salter, Selborne, Streatham.

Groups of alpine and hardy herbaceous plants came from Messrs. Paul and Sons, the Old Nurseries, and from Mr. Ware, of Tottenham. In the former the most notable were various Primulas, Houstonia erulea, hardy Cyclamens, Scillas, Adonis vernalis, Epigaea repens, Saxifraga aretioides precox, Fritillaria, &c.; the latter group was remarkable for its rich variety of Indian and other Primroses, such as the lovely forms rosea and nivalis, cashmeriana, denticulata, spectabilis, marginata, and others; Fritillaria Moggridgei, Orchis, Sambucina lutea, and various Saxifrages and Anemones.

Auriculas came from Mr. Chas. Turner, of Slough, Mr. Douglas, of Hford, and Paul and Sons, both show and alpine forms. The following new kinds received certificates. Mr. Douglas, for A. Montrose, Rev. Chas. Kingsley, and Tiresias.

Messrs. W. Paul and Sons, Waltham Cross, sent two new Roses, viz., American Beauty, a very large rosy pink flower; and the Puritan—the latter received a certificate.

Mr. Chambers sent a large quantity of his Violet Victoria, which appears to be an abundant bloomer with large deep purple flowers, which are very fragrant. A certificate was awarded.

Pelargoniums came from Mr. Phillips, Langley Broom, Slough; amongst which we noted as very fine, Martial, Mme. Thibaut, Grand Lilas, Rosetta, Duchess of Edinburgh, and Duchess of Bedford.

Tree Carnations were staged by Mr. Chas. Turner, Slough.

A detailed prize list will be found in our advertising columns.

LAW.

OVERSEERS OF LEWISHAM F. H. J. COBB.

AT the Greenwich Police Court on Wednesday, before Mr. Montagu Williams, this case, mentioned in our columns last week, was resumed. On behalf of Mr. Cobb, it was contended that by section 211 of the Public Health Act he could only be rated at one-fourth for his nursery. This was objected to on the grounds that the Public Health Act did not apply to the metropolitan district, except where a special provision was made, and that an objection which was raised to the mode of assessment would be outside his Worship's jurisdiction. Mr. Montagu Williams made an order for the payment of the rates, remarking that the case at Werthing was somewhat different to this, inasmuch as he understood that there was no dwelling-house in that case.

Death of Mr. Richard Carr. It is with great regret that we have to announce the death of Mr. Carr, the excellent gardener on the Duke of Portland's (Wellbeck) estate, from an accident at Redford Station on Wednesday, the 12th inst. He was on his way from London to Worsop, and, having to change at the above station, attempted to get out of the carriage, but in doing so he alighted on one of the steps of the continuous footboard below, and, in consequence, was dragged along and crushed against the platform. When extricated, it was found that he had received severe internal injuries, to which he succumbed. Mr. Carr was highly respected by his employer and by all with whom he came in contact. He leaves a widow with seven sons and a daughter to mourn his loss.

Mr. Thomas Bailey.—We have also to record the death, at the ripe age of eighty-one, of Mr. Bailey, who for nearly fifty years has had charge of the gardens at Shardeloes. He was one of the best gardeners in England, and won for many years the highest fruit prizes at the Botanic Society's exhibitions when the fruit shows there were the best of the kind about London. He will also be remembered for the fine specimens of Pelargoniums which he used to cultivate so well.

BOOKS RECEIVED.

"The Culture of Vegetables and Flowers from Seeds and Roots," 3rd Edition. Sutton & Sons.
"Playing at Botany." By Phebe Allen. Hatchards, Piccadilly, London.
"Luck or Cunning, as the Min Means of Organic Modification?" Trubner & Co., Ludgate Hill.

Names of plants.—J. Smee, *Notttingham.*—Your Narcissus is very similar to Sir Watkin. — J. S., *Hull.*—A very handsome form of Odontoglossum Chestertonii — T. E. H.—Cassia tomentosa. — A. H.—Anemone hortensis pavonina, Primula officinalis vulgaris hybrid; Mackaya bella. — D., *Gloucester.*—1, Solanum jasminoides, should be hardy with you; 2, Calceolaria violacea. — H. E. G.—Climber next week; Dendrobium htiflorum. — J. P., *Worcester.*—1, Dendrobium aretaceum; 2, P. primulinum — A. L., *Sussex.*—Quite a common occurrence in the variety of Fuchsia you send. — E. P., *Oxford.*—The lilac flower is Dicentra formosa; Saxifraga oppositifolia, Pulmonaria officinalis.

WOODS & FORESTS.

"YORKSHIREMAN."

FORESTRY NOTES.

RING-SHAKEN TREES.—Have any of your correspondents noticed that dead Oak trees are seldom ring-shaken, the evil being mostly found in living trees? This ring-shake prevails to such an extent in some woods and in certain localities, as to demand more attention from foresters than it has yet received. No timber merchant will buy ring shaken timber, and when woods get the name of being affected that way it hurts the sales greatly. We have one of the largest Oak woods in England here, and it is remarkable to what extent the shaken timber varies in quantity in different parts of the wood, and the fact is just as well known to all the timber merchants of the district as to ourselves. The altitude of different parts of the wood varies to the extent of 500 feet, but the shaken trees are found in the highest and lowest parts alike, and among large and small trees. The only fact seemingly bearing on the cause is that there are most shaken trees on the wettest ground. In some cases large trees that would be worth a good few pounds if sound are found to be almost worthless, and when sawn up just falling to pieces. Whether severe frosts or drought or both are the cause of the rotting of the rings one cannot be sure, and little or no explanation of the matter has ever been attempted, so far as I know. I am inclined to think, however, that on well drained ground the evil is likely to be least; hence, whether the trees be young or old, it is wise to provide drainage, at least to carry off the surface-water.

THINNING PLANTATIONS.—“Caledonius’s” complaints on the subject of hedgerow timber I can well understand, and I hope he will do his best to dispel some of the darkness that exists on the subject of timber-production in Scotland, from which the most determined advocates of severe thinning on the hedgerow principle mostly hail. If, as the rubbishy sermon on forestry at the Edinburgh exhibition inculcates, the light must permeate all parts of the wood in order to produce good timber, why, then, hedgerow trees ought to surpass all others as timber, but “Caledonius,” I can see, has found, by the test of all tests, the timber market, how useless it is. It is the same everywhere. I cannot give “Caledonius” offhand the proper distances at which good trees can be grown, but I promise to do so as soon as I have time, for although examples of mature plantations judiciously planted and grown are all but impossible to find, still any practical man may tell from isolated examples on any estate how much room any kind of tree requires to produce a certain bulk of straight and clean timber. I would just at present point out to such earnest and inquiring patrons of arboriculture as Sir John Lubbeck, whose purpose is good, that even at the present unprecedentedly low values, almost any quantity of good, straight, and tall Oak, Ash, Sycamore, Beech, Birch, Alder, Larch, and Firs can be grown and sold at prices sufficiently remunerative to make timber growing a profitable investment. The one hindrance to that hitherto has been the utterly stupid and extravagant system of planting and thinning in vogue. The quantity of saleable timber that can be grown to mature size per acre when the trees are of the same sort or habit is not realised, but when it can be proved that even cheap Spruce poles can be grown to pay well, there can be no question about the more valuable woods. My own conviction at present is that from 300

to 500 good useful Ash, Sycamore, Larch, or Fir poles can be grown to the acre in from fifty to sixty years at from 5s. to 15s. apiece, but certainly not on the principle of permitting light and air to every part of the wood, which would have the effect of reducing the quality of the timber and its value immensely. Such quantities or more to the acre are, I am told, common in the natural forests in Europe and America, and from these the fine planks and logs come that crush English timber out of the market.

Reverting to hedgerow timber, landlords cannot realise too clearly that it is nothing but an encumbrance to the land, alike profitless to them and to their tenants. Isolated trees in hedgerows are also almost worthless for purposes of shelter. Where such is needed it should take the form of a solid belt or plantation that would serve as a shelter and produce timber at the same time.

THE TIMBER TRADE.—Purchasers say that although the turn over is greater than ever, profits to middlemen are low. The extent of the consumption in such times as these of rough home-grown timber is great. In this district on a few estates adjoining, probably half a million cubic feet has been felled and sent to market during the past year, and it seems as if quite as much will leave the woods this season. One of the puzzles of sales is the difference of prices realised even when lots are sold by auction. We fear that timber growers are rather too much at the mercy of timber dealers in this matter. We notice that the same men as a rule attend the same sales year after year and buy the same lots, other buyers abstaining from bidding for fear of creating competition on their own ground. It is significant the tacit understanding that exists among members of the trade on these matters, and its effects on prices I fear unfavourable.

TREES FOR SHELTER BELTS.

In a district in an adjoining county which I have recently visited I have come across some examples of this class of planting. Trees of all sorts have been used, but perhaps the Scotch Fir is the most abundant. In any case it is the tree which first arrests attention. Whether on financial grounds the very extensive use of this Pine is advisable is open to question, but it cannot be denied that its effect in masses and belts is very good. Very much, however, depends upon how and where it is used. For use in single lines the Scotch Fir does not generally appear to advantage. Amongst the plantations which at the present season show to the best advantage are those where both evergreen and deciduous trees have been adopted. I do not mean by this where they have been mixed pell-mell, but where judgment has been used in the arrangement. In one case I noticed a broad belt which had been planted upon a gentle ascent. The bulk of this consisted of Scotch and Spruce, but the foreground was planted with Larch, the extreme outskirts being Birch. This belt, well to the west or north-west of the house, breaks the cold winds, and at the same time catches the morning sun. At the time I was on the spot the morning was especially brilliant, and the dark foliage of the Scotch and Spruce in the background, with the bare brown branches of the Larch and the silvery white of the Birch in front, had a very pretty effect. If the order of planting had been reversed, and the Larch and Birch placed to the windward, this effect would have been lost, and as a shelter or a timber investment the belt would not have been any better. It is obvious from this that very much depends on arrangement, not merely in the groups in the ornamental grounds proper, but in plantations or belts which are distinctly seen from them. In the arrangement I have spoken of, the views of those who object to mixed planting are directly met, as by giving dis-

inct lines to each tree there is no overcrowding or smothering of one species by another. On the highest ground at the back we have two-thirds of the space covered with Scotch and Spruce in regular order—the lowest ground in front with a third the width of the belt in Larch and Birch. In this class of plantation there is little or no underwood, and in the interior the stems are generally bare to the top. Quite another style of wind-break or shelter belt is that composed of Birch, Alder, and other similar species in the form of underwood or poles. These, however, require judgment in making the periodical cuttings, otherwise if a complete clearance is made, a year must elapse before shelter is again obtained. This could be obviated by taking a longitudinal cutting of half the width of the belt. This done alternately would always leave a sufficient screen. In these belt plantations Beech is often considerably used, not infrequently in conjunction with Ash. In some instances species are very much mixed indeed. As a rule, for timber production I am not much in favour of these mixed plantations, but it must be admitted that occasionally a long price is realised for such. In some cases lately where the Ash has been sold from these mixed plantations it has shown a respectable total.

Where one kind of tree is rigidly adhered to in planting, it either pays well or is worth nothing. Where the species are mixed, it generally happens that one or more at the time of felling are worth a good figure, such as is at present the case with the Ash. There is one thing of which I am firmly convinced in connection with this plantation question, and that is, the evils of excessive thinning and lopping. What is done in this direction must be done when the plantations are very young or not at all, and when the young trees are cut out with mathematical precision the chances are greatly in favour of the trees being sacrificed, which, if left, would have ultimately been the best timber-producers. That young trees should be cared for until they are sufficiently established to overcome weeds and other rubbish, which will generally be pretty abundant, all will agree, but after this my experience leads me to believe the less interference there is on the part of the forester the better. D. J. Y.

Leafing of the Oak.—For many springs I have noticed the varied tints in an Oak wood, and found on a closer inspection that one tree will be nearly in full leaf with the shoots 2 inches or 3 inches in length, whilst in another close beside it the buds will have hardly begun to swell. I am unable to account for it, and it has often puzzled me; neither soil nor situation has anything to do with this great difference, and we must inquire whether it is due to different varieties, and if the acorns from an early tree will produce earlier plants, and whether there is any difference in the timber, or in the hardness of the plants?—J. S. R.

The Silver Birch.—I have often felt surprised that this tree should not be more extensively planted in pleasure grounds, parks, and on large estates generally than it is. In manner of growth it is so graceful, so distinct from all other forest or hardy trees, as to render it eminently fitted for purposes of isolation. A large well-developed tree, so placed that its natural habit is fully displayed, forms a very pleasing feature in the garden landscape, not only when in full leaf, but also during the winter months, when, denuded of foliage, its characteristic features are more fully revealed. The graceful, spray-like pendulous growth and silvery bark show up charmingly against the fresh bright turf of a well-kept lawn, a tree dotted here and there about pleasure grounds doing much towards relieving them of their sameness, and where Evergreens are largely employed, the rather sombre aspect during the dull months of the year. There are, however, a variety of ways in which the Silver Birch might be employed. It has a very pretty appearance when so placed among coniferous trees and evergreen shrubs that they form a background to it, in such a manner that the head of the Birch stands out clear and well defined, whilst the white stem is as it were framed in verdure. In parks, good use might be made of this tree by grouping it here and

there in such a manner that the bright stems would be distinctly visible when the foliage was off. I may mention, however, that there is considerable variety amongst the Silver Birches—some having the bark much more silvery than others, and having consequently, from an ornamental point of view, a much higher value. It is a pity that seeds should be saved from inferior varieties. Were a rigorous selection made, choosing only those trees remarkable for their clean white bark, a great improvement would in the course of time be manifested, and the value of this tree from a decorative point of view would be sensibly increased.—J. C.

SNOWSTORMS AND OAK WOODS.

THE woods as well as the ornamental grounds have suffered from the snowstorms. The Oak especially seems to have come in for a considerable amount of damage. A large Oak wood with which I have to do presents rather a singular appearance. The trees average perhaps a foot in diameter, and are regularly distributed. In the portions where the underwood has been cut within the last few years the damage is most easily seen. The damage chiefly consists in the splintering of branches, though some are broken completely off. The degree of damage varies a good deal. In the worst cases large limbs have been torn away close to the stems, and also here and there portions of the main stem itself. In not a few instances the trees will have to be removed altogether. It is here that judgment is necessary. To fell a tree which is in a healthy, growing state, and leave a blank in a wood where it is wanted for the sake of the crop, means a considerable loss. To leave it for any length of time in such an injured condition, that the chances are greatly in favour of its decaying is worse. A little information from foresters and others who have been able to observe the effect in after years upon Oaks which have been badly torn under similar circumstances would be valuable.

There are few instances in the case under notice where more than one large branch forming a portion, perhaps a third, of the head has been broken. The splintering averages from a foot to a yard down the stem of the tree. The fractures, however, are mostly superficial, and do not go more than an inch or two into the wood of the stem. The temptations to simply trim off the rounded part as neatly as possible, and leave the tree to recover itself if it will, are great in the majority of cases. At any rate, there is no cause for precipitate action, as a season or two would not severely injure what remains of the tree, but would be long enough to form a fair estimate of the way in which the damage was likely to affect it ultimately.

Where trees so damaged are standing in underwood which will be ready for cutting in a year or two, the wisdom of biding the time is still more obvious. In such cases as little as possible should be done to the damaged trees in order to avoid interfering with the underwood. Where branches are partially suspended, and the splintering is very bad, it will be necessary to free the trees, but it will be better to allow what is removed in this way to lie where it falls than to attempt to clear it away. The minor cases of breakage will be more easy to deal with, as when they occur close to, or nearly close to, the stem or a main limb, the fractured portions should be cleanly trimmed close up to the part from which they grew. This is important, as by allowing ragged stumps to remain, they cannot fail to be highly detrimental to the ultimate worth of the tree. Where the branches have been torn completely in two several feet from their junction with a large branch on the main stem, it will be better to simply foreshorten them by means of a clean cut. The actual cost will not be very heavy, as where it is accessible the wood which has been broken off will go a good way towards paying for the labour. In the wood of which I have been speaking, as the trees themselves are not large, few of the broken branches will be of use for anything except firewood. In a few instances mound posts may be cut out, but generally with damaged wood of this sort trees must average, say, 20 feet cubic before much usable material will be found amongst the wreckage.

In connection with this it would be interesting to hear how woods and plantations on exposed hill-sides fared during these storms. This particular wood occupied a comparatively sheltered site. With regard to the telegraphs, I have been told that they suffered less on exposed downs than on the level, or in low situations. This, I presume, must have been owing to the snow having little opportunity to accumulate on the wires where the wind caused a continual movement. How far this would hold good in the case of plantations I cannot say, but there certainly is a difference between the character of the wreckage after a snowstorm and that after a gale of wind. D. J. Y.

MISMANAGED TREES.

IN suggesting the necessity for uprooting a tree, however much misplaced it may be or injurious to other trees of greater importance, we generally meet with as much repugnance as one would encounter in a proposition for removing a house, unless the individual happens to have some knowledge of arboriculture or is acquainted with the principles of landscape gardening. Hence, may be seen in nineteen-twentieths of such places as those under consideration innumerable instances amongst the trees and shrubs of a struggle for life that goes on until a portion, and generally those of the greatest importance, die, leaving those behind half killed and in a condition from which they never recover, through the effects of the fight for food and air in which root and branch have so long been engaged. The fatal effects of this overcrowding are most apparent after seasons such as the present, when the comparative absence of water in the soil through the spring is followed by a hot, dry, rainless summer.

Throughout the country, in extensive tracts of land, resting on a sand or gravelly stratum, the soil at the present time in which the roots of the trees are placed is as dry almost as the dust on the surface, and which the ordinary rainfall of any single season will never moisten. Where trees are too much crowded in dry seasons their roots extract the moisture from the subsoil to such an extent as almost to preclude the possibility of its afterwards becoming moistened deep down, where the principal feeding roots exist. Frequently in removing trees so placed even after very wet seasons, I have found that when the first 2 feet of the surface soil were removed the earth underneath was as dry as dust, the water evidently having found its way further out from an apparent inability to enter the dry, impervious mass which, in all probability, when once reduced to this state, never after gets sufficiently moistened to be in a condition fit for the support of healthy vegetable life. Again, on the boundary line of places such as those under consideration, how often do we see good intentions defeated through mismanagement? To secure the desired privacy, or hide something objectionable, trees are planted with little or imperfect preparation of the ground, which just receives a shallow digging, after that they are planted as closely as possible, the intention being to accomplish the object in the least possible time, forgetting that, however good the land may be, there is still a limit to its capabilities in supporting vegetable life.

In exposed situations sufficiently close planting is necessary, the harder trees acting as nurses to such as are more tender; but too often we see the nurses, instead of being removed when their services have ceased to be required, allowed to remain all intergrown, until the under branches of the whole are destroyed, leaving the weakly attenuated stems standing like a plantation of clothes-props, showing most objectionably their inability to fulfil the purpose for which they were planted. In all cases such as those in question, the preparation of the land should be of a nature to give a reasonable chance for the well-doing of the trees after they have been planted. This cannot possibly be done unless the ground is trenched 2 feet deep, if its character is such as to admit of this depth. The trees should be judiciously selected with a view to their adaptability to the nature of soil and locality, and not too closely planted; as they grow up, thin-

ning should be carried out with judgment, and a the proper time.

Where the treatment is in accordance with these simple rules, especially as to timely thinning, there need be little anxiety as to the result. I have frequently remarked that a great number of people in planting forget that the trees they plant will ever get any larger; and that others appear to think that everything planted should be allowed to remain for time indefinite. In the inner or more central parts of suburban places, in addition to the mistaken management of the existent trees, any after-planting that is carried out is often of the most objectionable character, not only as to the description of the trees selected, but the position in which they are placed and the preparation of the ground.

In the selection preference is frequently given to coniferous trees, the whole of our fine deciduous trees being excluded. A greater mistake than this cannot possibly be committed, if we think of the distant future; for the time will inevitably come when the existent deciduous trees will decay, leaving nothing to take their places except such of the Conifers as are ultimately found capable of withstanding the severest frosts experienced at long intervals. Then, as to position; instead of leaving the all-essential open vistas, so indispensable to give breadth, repose, and impart general effect, the dotting system is perpetrated, having much the appearance of an orchard on a large scale, with the trees at more than ordinary, though regular, distances apart. This is a glaring mistake, and one that is much on the increase.

If we come nearer the mansion how often do we see a Wellingtonia, or some other monarch of the forest, placed so near that by the time it has fairly begun to show its character it will become a matter of necessity to remove either the tree or the house. In the preparations for planting these trees the common mistake is often made of digging the ground over a considerable depth without anything in the shape of a drain to carry off the water that is certain to accumulate in the newly-loosened soil, which acts as a receptacle for the water that drains into it from the surrounding ground, thus precluding the possibility of the tree so placed thriving as it should do. B. T.

Picea concolor.—This fine Conifer is easily distinguished by the irregular arrangement of the leaves; they do not form a row on either side of the stem, as in most of the Piceas, but grow from the top and even the bottom of the branches; they are about 2 inches long, of a whitish blue changing to pale green as they grow old, the upper and lower surfaces being of the same colour. The cones are borne in an upright manner singly on the branches, and are from 3 inches to 4 inches long. As a tree its colour is very pleasing, and it deserves to be more extensively planted than it is, being very symmetrical and free as regards growth. It should be planted in elevated positions in preference to low lying lands, for although it grows very freely in the latter, it is somewhat liable to be cut by spring frosts. *P. Lowiana* and *Parsonsiana* are often confounded with *P. concolor*, but they differ in the leaves being somewhat longer and arranged in a regular row on each side of the stem; they then curve gracefully upward, and form, as it were, an inverted arch. *P. concolor* is freely distributed throughout California, where it attains the dimensions of a large-sized tree. A.

The Aronian Thorn.—This species (*Crataegus Aronia*), indigenous to Greece, as well as several other countries in the south-east of Europe, and introduced in 1810, is a distinct-looking handsome tree of about 25 feet in height. It has a very densely branched, rather erect habit of growth; the leaves are wedge-shaped at the base, deeply lobed, and toothed at the edges; the young shoots and under surface of the leaves are slightly pubescent. The flowers, which generally expand in June, are white, followed by large yellow fruit which ripen in September and are very ornamental. It is an interesting park or avenue tree. — G.

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"This is an Art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—*Shakespeare.*

ROSE GARDEN.

T. W. GIRDLESTONE.

NAMING ROSES.

With the arrival of the new Roses of the year comes a whole series of questions with regard to the naming of seedling varieties, a proceeding which certainly seems in many cases about as inconveniently managed as may be, owing either to the inordinate length of the names employed, or to the casual way in which the same name is applied to different varieties though sometimes, by translation of its title, one variety finds itself possessed of several names), or else to the great difficulty in pronouncing the name selected. That the nuisance of names "long enough to have a perspective" is not abated, the current list of novelties affords the usual evidence. Madame Edouard de Bonnières de Wierre, though an attractive Rose, has more name than any one variety ought fairly to be asked to carry, and Comtesse de Rosemont-Chabot de Lussay is hardly better off. It is said that the original full style and title of a once widely grown variety was Souvenir de la Voyage de sa Majesté la Reine d'Angleterre, but even if that were at all exaggerated, such names as *Sœur Bernède de Saint-Vincent de Paul*, *Nouveau deuil de l'Archevêque de Paris*, *Mademoiselle Eugénie Leprovost de Launay*, *Deuil de l'Amiral Dumont d'Urville*, *Impératrice Marie Féodorowna de Russie*, and so on, are, to say the least, exceedingly unpractical. Not long ago we were treated to *Fiançailles de la Princesse Stéphanie et de l'Archiduc Rodolphe*, with the result that this Rose is now known under four other appellations formed from the names of the happy couple either separately or together; and in the same year a good dark Rose was relegated to the limbo of obscurity almost untried owing to hardly anyone venturing to face such a name as *Comte Frédéric de Thun-Hohenstein*. A Hybrid Perpetual that is still esteemed as a pot Rose in some places has for several years dragged on its existence as *Mlle. Berthe du Mesnil de Montchauveau*. One almost wishes that such a Rose might enjoy the opportunity not always denied to a young lady of changing its name. The objections to these interminably long names are numerous. In the first place, the possession of such seriously prejudices a Rose's chance of getting widely into cultivation, for people will not be bothered with a variety whose name cannot be anything like included on an ordinary label and is as inconvenient to remember as to pronounce. Again, though foreigners have been said always to spell better than they pronounce, yet, however these long names may fare in their own country, the spelling of them here quickly becomes highly diversified. An instance in point is *Constantin Petriakoff*, the changes upon whose patronymic have been so persistently rung, that at the present time probably there is not a Rose catalogue or horticultural print in the country that does not call him *Petriakoff* or *Tretiakoff*, or by some other amended title. Then the practice above alluded to of employing parts only of a very long name is fraught with inconvenience, for no two growers will ever use the same abbreviation; and where the name is diffi-

cult of pronunciation everyone adopts that section of it which he is best able to utter without danger of loosening his front teeth. In the case referred to, between the two extremes of the pompous *Fiançailles de la Princesse Stéphanie et de l'Archiduc Rodolphe* and the too familiar *Stéphanie* we find the intermediate forms of *Princesse Stéphanie*, as well as of *Archiduc Rodolphe* and the two names combined, so that one never knows where in a catalogue to look for the variety.

It is also unfortunate that the south of France, whither all the world congregates at certain times of the year in search of sunshine, should be so well adapted to Rose-raising, as the seedlings get named after notable visitors, whatever their nationality, and we get such names as *Prince Chipetounzikoff*, *Prince Léon Kotschoubey*, *Prince Wasiltchikoff* (which, by the way, is synonymous with *Tea Duchess of Edinburgh*), *Baronne Peletan de Kinkeline*, *Natascha Metschersky*, *Souvenir de Katia Metschersky*, *Madame Olympe Terestchenko*, and *Madame Elise Stehegolett*. These Roses will never be popular in this country, because people who talk much about them get the reputation in their neighbourhood of habitually using such terrible bad language; but we can afford to leave varieties with this sort of names to cultivators in countries where the machinery is cheap for setting open one's mouth wide enough to allow such words to emerge whole.

Happily, there are no pedantic latinisms employed now-a-days in naming Roses, and Smith's, Jonesiana, and so on no longer tend to confound garden varieties with true species; but an element of confusion undoubtedly exists in the free translations of names in which some growers indulge. It is not true that all the French nurserymen are distributing *M. Geschwind's Erinnerung an Brodas Souvenir de Pain*; but when the *Erlikönig* of one catalogue appears as *Roi des Ames* in another, or when *Boule de Neige* turns up over the water as *Snowball*, catalogue-makers may well ask how they are to arrange their lists. This possibility of translation is a strong argument against the use of fancy names, as the names of persons are at any rate untranslatable, and even titles are sufficiently similar in French and English for it to be immaterial whether a Rose is called *Comtesse d'Oxford* or *Countess of Oxford*.

Another source of great inconvenience is the giving the same name to more than one variety. There are at the present time three Roses involving the name of *Victor Hugo*; a Hybrid Perpetual was called after the great poet, and immediately after his death two other Roses, one a Hybrid Perpetual and one a Tea-scented variety, were dedicated as "souvenirs;" the fourth *Comte de Paris* has just appeared, in addition to two *Comtesse de Paris*, both Hybrid Perpetuals; and the number of names that do double duty, once for a Hybrid Perpetual and the second time for a Tea, is legion. This is entirely inexcusable, as there can never be any lack of names, and the aggravation, when plants of some Tea-scented variety have been ordered, of receiving instead plants of some hybrid which is not in the least wanted, is considerable.

It seems likely that there may be instituted in France before long a French Rose Society more or less on the lines of the National Rose Society in this country, and perhaps such an organisation might be able to modify the most glaring of the abuses of Rose nomenclature, by keeping a register of names, and refusing to enter any names already in use or of extravagant length. But it is probably too much to

hope that any such action would be taken for fear of hurting the feelings of some too-sensitive members: in which case it will have to be left to the good sense of raisers to avoid using names like the procession—so long, that when one end came in view the other was still below the horizon; to have some consideration for the amiable Britannic weakness in negotiating sequences of more than four consecutive consonants; to eschew translations; and, above all, to avoid the employment of names which have been previously given to varieties still in cultivation, whether in the same class or not.

In quest of a Rose.—If you are looking out for Roses I wish you would find the old double yellow. I do not mean *lutea pleno*, which is common enough, but I mean the plant described by Clusius, Gerard, and Parkinson, and well figured in vol. i. of the *Botanical Register*. The plant sent out from Barchley as the old double yellow is quite different. Lindley also describes it.—H. N. ELLA-COMBE.

New Roses. Among the fine display of Roses at South Kensington on the 26th inst., several of the new varieties of 1886 were exhibited by Messrs. Paul, of Cheshunt, including *Her Majesty*, though the variety was not in such grand form as when seen at Cheshunt during the previous week, the flowers staged being rather past their best. The flowers of *Clara Cochet*, on the other hand, were rather young, but seemed in the way of *Catherine Soupert*, but deeper in colour, being a clear fresh pink, with paler edges to the petals. *Raoul Guillard* is a fine-looking globular red flower, of the *Maurice Bernardin* type, and appears good. *Madame Villy*, on the other hand, is a flat, short-petaled variety, of dreary purplish colour, that amateurs will be in no haste to add to their collections, though they cannot be too grateful to exhibitors, who will show them not only what novelties are good, but also what to avoid. T. W. G.

Roses Céline Forestier and Cheshunt Hybrid.—I forward you four flowering shoots of a yellow Rose as a sample of its floriferousness. The one carrying nineteen buds and one fully expanded flower is not at all a solitary example on the tree, as there are at present a great many shoots bearing about the same number of flowers. The tree is planted out in our greenhouse and trained on the roof, and is at present carrying many thousands of flowers fully opened, half opened, and in bud. Along with it in the same house are also the old and well-known *Lamarque* and a red one, of which I send you an example. I do not know the name of the red, unless it is *Duchess of Edinburgh*. They are both flowering very profusely, rendering the house at present very attractive indeed. ALFRED BARKER, *Adare Manor, Limerick*.
* * * The yellow Rose is *Céline Forestier*, one of the hardiest of the Tea-scented section. The red one is *Cheshunt Hybrid*. Both had very fine foliage, and from the samples sent seemed to be in the most robust health.—Ed.

Rose Lamarque.—Those in want of a good climbing Rose cannot do better than plant the variety here named. It grows freely, having a strong constitution, and blooms in profusion just at a time (about Easter) when the flowers, which are pure white in the bud, are in great demand. When the flower is half expanded, the centre of it shows a pale yellow hue, which deepens as expansion takes place. The perfume of this variety is very pleasing, and its free-flowering qualities are very remarkable, the blooms being borne in clusters of four and six together at the points of the current year's growth. It is a variety which also lasts a long time after being cut, which is best done in the bud state in the morning. It is not necessary to train the shoots of this variety so thinly under the roof as some other kinds. When the blooming season is over cut out some of the oldest branches, selecting those which are weakest and unlikely to produce young succulent growths the following season. Thoroughly syringe the foliage during the summer, thus procuring a

healthy free growth, which is indispensable to an ample supply of choice flowers. It grows well on its own roots. Cuttings taken off at this stage with a heel quickly form roots, and make nice plants in a short time if the pots are plunged in a gentle bottom-heat and shaded from hot sun.—E. M.

* * The blooms sent by our correspondent well bear out his remarks. This Rose ought to be grown much more than it is at the present time, as from its free vigorous growth, floriferous character, and good qualities when in the bud state, it will well repay all the attention that may be bestowed upon it.—Ed.

EDITOR'S TABLE.

"Went out at early morning when the air
Is delicate with some last starry touch,
To make sure
At worst that there were Roses in the world."
ELIZABETH B. BROWNING.

ROSE CLIMBING DEVONIENSIS.—A bunch of the large, soft, delicately-coloured blooms of this great Rose, from one of the fine old London suburban houses not yet absorbed in the "wen"—The Oaks, Epsom.

I here enclose you a small gathering of our favourite Rose here—Devoniensis (climbing). Although we grow other Roses, both Teas and Hybrid Perpetuals, the demand for them ceases immediately this comes in. We have two plants of it in the conservatory, each covering a superficial area of 200 feet, and from each we can cut hundreds of the most beautiful buds weekly. There are many more free-flowering Roses, but none, I think, more charming in the bud or half-open state. The deep carnation tint of some—and this puzzles me, as you find them only here and there on both plants, in shade and exposure—is truly exquisite, and sure to charm those seeing it for the first time; while the scent is, I think, the best of the Teas. It is almost pitiful to see a Belle Lyonnaise in the same house, crowded as it is with thousands of flowers, passed by the ladies without comment, to bestow all their praise on what I may well name here the "ladies' favourite."—J. KNIGHT, Epsom.

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MISS WHITAKER sends me from Bryn Calyn, near Pwllheli, some Freesias.

I am sending a few Freesias for your "table" as a proof how easily these pretty flowers can be grown in merely a cold frame through the winter, and, by exposure to sun and air on fine days, can be blossomed early in an open situation in South Carnarvonshire, North Wales. I also send a few Sanguinaria flowers, which are growing in a peat bed amongst Indian Azaleas (the latter having stood the late severe winter well in the open air). With Ivy leaves and the red-tinted leaves of the wild Pelargonium, the Sanguinaria flowers make a pretty combination.

The common Ivy leaves remind me, by their beautiful bronzy hues, that our best hardy evergreen is also, perhaps, our prettiest fine-leaved plant, especially to those who observe its lacework in our woods in winter around Oak and other stumps. The Bloodroot travelled very well, although it is so fragile that we do not expect it to do that. It is very pretty in the Grass.

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BLUE-EYED MARY.—This little flower comes to me from Munstead. I have never seen it made much of indoors, but I believe it is capable of great good in various ways. I have done all I could for it under the name of Creeping Forget-me-not, which I gave it (Blue-eyed Mary is its Yorkshire name). I have never seen a garden in which justice has been done to it, yet it has been in our gardens for several generations. It is generally found in some neglected corner. Finding a few tufts last year, I put them in a rather deep border, forming a large colony. They did well in the autumn, and had a fine carpet of leaves, but the hard frost and the blackbirds during the past spring seemed to destroy all the foliage. A few weeks ago, however—so vigorous is the little plant—up came a carpet of beautiful fresh leaves and running shoots, and for some weeks past it has been a mass of beautiful blue flowers. We are hunting the world for novelties. I do not know any plant so easily grown, so pretty, and so neglected as this. It is for everybody's garden.

THE ROSE PRIMROSE.—This Indian Primrose from the open air is very delicate and pretty in colour, and in habit much prettier than the specimens shown the same day in pots at Kensington—a most brilliant flower and not difficult to grow, but especially valuable for those who have rock-gardens made in any sensible way. The lilac and purple Indian Primroses are also very pretty just now, and appear to grow freely under almost any conditions, even after such terrible springs as the present. Handsomest of all, perhaps, most vigorous and delicate in colour, are the forms of our own native Primroses, so happily and well grown at Munstead. Sometimes they are called bunch Primroses, because, like the Oxlip, they push the root-stem up, whereas the common Primrose comes singly from the bottom. Of all flowers for the table, there is scarcely anything better than the common Primrose cut as a plant and put—leaves and all—into some simple basin. After all the hybridising and crossing and talking, there is perhaps nothing better than the common Primrose.

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GRAPE HYACINTHS.—These delicate Grape Hyacinths, how beautiful they are, old and new! None better than the old pale blue and white, but all interesting, and highly capable, where they are plentiful, of pretty use in the house. The botanical differences are, I fear, minute, but with these we have nothing to do. Beauty is our true goddess.

CHRISTMAS ROSES.—The last of the Christmas Roses, and the Algerian Iris, beautiful things that cheer us in the middle of winter. How delightful this Algerian Iris is, opening so prettily in the very winter, for all who have a bit of sandy, warm soil! Spring Hellebores, with their good leaves and their quaint spots, come in well, though they have scarcely the bright and pure colours of our spring flowers.

THE APENNINE ANEMONE.—Welcome in any shape, but probably not so good on the table as in the Grass. I have for several weeks past had, even from things planted in the autumn, some pretty effects, visible at some distance, with these starry blue flowers. If there were no other plant than this suitable for the wild garden, the thing would be worth taking up. I wish someone would tell me where it is growing plentifully in a wild or semi-wild state.

THE OLD JAPAN PYRUS, ever faithful and brilliant, generally made more of on cottage walls than in large gardens. The new colours and the pale and white forms are excellent additions that ought to be looked after.

THE LARGE PARTRIDGE BERRY (Gaultheria Shalton). Leaves very handsome for going with certain flowers, such as *Andromeda floribunda*.

THE ITALIAN DAFFODILS come in very prettily among the nobler forms that are now in our gardens, and which cannot become too common. The double yellow Narcissi are pretty, some very pale and delicate in colour.

PANSIES.—My favourite and almost everlasting Pansies have been hardly treated this spring, but at last they begin to come. Their refined odour and ever-varying and exquisite beauty of colour make them excellent for the house.

THE SCARLET WINDFLOWER.—The big Aldborough variety, a large and brilliant flower, seems to travel well if gathered in the bud state. Captain Thomas tells me that he sends them with the greatest regularity and safety from Ireland to London.

THE COMMON JONQUIL.—This old friend, a relief among the handsome trumpet and other Narcissi, with which the floral world is now so much engaged.

DOUBLE PRIMROSES.—Forms of our common Primrose, double, somehow never got very plentiful, and yet they are very pretty. The lilac one I saw in great quantity at Plawhatch, perfectly covered with its soft coloured flowers. It is very common in cottage-gardens, but it is rare to see it in large tufts. I wish some of our very pretty old double Primroses could be grown as easily.

"St. BRIGID" sends me some enormous double Poppy Anemones, really like great Poppies. They

are very fine, no doubt, these mixed seedling Anemones, but after trial of them, I think it would be a great advantage if we could separate some of the more brilliant forms, and get them pure. "St. Brigid" is also strong in the bunch Primroses before alluded to. They seem to like Howth very well, and they would be hard to please if they did not. Some of the high coloured Crown Anemones are more effective in colour than the scarlet Windflower in its finest forms.

THE MEXICAN ORANGE FLOWER.—Very fresh and star-like, and more like an Orange in bloom than it is often seen. It is of high value in the cut state from the greenhouse, apart from its valuable qualities as a wall shrub.

BUSH DAISY.—Mr. Hartland sends us one of those interesting Bush Daisies not yet very common in our gardens. It is grown out of doors, and therefore is a valuable addition to our early shrubs. He says:—

The difference between our warm climate and yours, as I saw near London last week, is most marked. The white would make a good photograph. We have had fine showers for the last few days—a great boon. Emperor Daffodil is nearly 3 feet in height and foliage 14 inches across. To talk of growing white Daffodils on the London clay soil is nonsense. It will not grow them.

THE GARDENERS' ORPHANAGE.

I THINK after our very satisfactory meeting of yesterday, and the progress the orphan fund has already made, and, I have no doubt, will make (in spite of the clumsy way it was put before the public), I beg to return my sincere thanks to the members of the press, committee, and our worthy chairman for the very able and willing help they have already given to this scheme. I hope no gardener in the kingdom will let the next three weeks pass without responding heartily to the call of charity.

I think the call from the Gardeners' Benevolent looks more like giving a treat to those already provided for than for giving needed aid. We unfortunately had a sad experience of the need of an orphan fund only a few days since, when our poor brother Carr met with such an untimely end. Whether his widow and children will need help, I know not, but if they do, out of our small beginnings I should suggest rendering them what we can. In starting this scheme, I could not possibly have thought of myself, or that it ever would be useful to me, and I am sure none who have already given me their support will draw back on account of my shortcomings in placing it before the public.—CHARLES PENNY, *The Gardens, Sandringham*.

—A meeting of the committee promoting the above object took place in the conservatory of the Royal Horticultural Society on the 26th inst. Mr. George Deal in the chair. The hon. secretaries reported that over 6000 circulars, setting forth the objects sought to be attained, had been circulated, and that the replies received were regarded as very hopeful for the success of the scheme. The committee decided to prolong the time for receiving replies to their circular until May 7, and as they have decided to introduce into this some modifications of an important character calculated to increase the interest taken in the scheme, a further issue of the amended circular is intended. That the scheme has proved a gratifying success there can be no doubt. It is intended that the children of departmental foremen in nurseries and seed warehouses shall participate in the benefits derived from the fund.

Growing Tea Roses under glass.—Will you kindly inform me in your next issue as to the best book on the cultivation of the Tea Rose under glass?—W. B.

Wedding flowers.—We are informed that all the flowers for the decorations at the Clock House, and part of those at St. Peter's Church, on the occasion of the marriage of Miss Wemyss with Lord H. Grosvenor, came from the Wemyss Castle and Torric House Gardens. Those used in the church were composed of white *Rhododendrons* grown in the open air, and in the Clock House, entirely of Daffodils of the following varieties, viz., *princeps*, *Tekmonius plenus*, *rotundus*, *Horsfieldii*, *incomparabilis*, *Leadis*, *capax*, *aurantius plenus*, *Burri conspicuus*, also a whole table of white Daffodils sent from Torric, from Miss H. M. White, of Charleville, from Miss Owen, of Knockmillen, and from the Rev. G. H. Engleheart. The Daffodil was the bride's favourite flower, and she has herself a large collection.

GIANT GOURDS.

THE largest of the Gourds so commonly grown on the Continent as an article of food, though not often so used in England, are well worth growing for their showy and picturesque qualities. They flourish well and look their best when trained over the roof of a shed or any low building; but it is well to give some kind of stout support or trellis to distribute the weight and avoid the danger of broken tiles or slates. The larger Gourds in the engraving weighed between 90 lbs. and 100 lbs., and were grown in one of the home counties from Messrs. Vilmorin's seed of *Potiron Rouge*. For kitchen use they are by no means to be despised, yielding for some winter months the material for an excellent *purée*. For this purpose they are left

teach him the use of farm and garden implements between his lessons of spelling and reading. Let there be technical schools by all means for those whose tendencies run in particular grooves, but to cram science (so-called) into the raw juvenile is a waste of effort. By far the greater part of mankind must continue to get their living by the sweat of their brows till the end of time, and the best education for the work is to cultivate the powers of observation as far as possible in direct contact with Nature. — E. HORDAY.

KITCHEN GARDEN.

W. WILDSMITH.

PITS AND FRAMES.

OWING to a variety of circumstances, the present season has thus far been the most difficult one



Giant Gourds (*Potiron Rouge*). Engraved for THE GARDEN from a photograph taken at Munstead.

to ripen till the middle of October, and are then stored in a dry fruit room, where they can be cut from as required.

Foolish "education" of gardeners.—It is comforting to an old stager to find a man who can put his foot down firmly on some of the excesses of our educational system (see page 374). Our village schools are in many instances neglecting the common things for the sake of cramming in a smattering of the so-called sciences, from which the pupils never derive any benefit, as superficial knowledge on any subject now-a-days is useless. I grant, of course, that the tendency of all knowledge is to expand the mind. But what expansive power can there be in a few set phrases composed of hard words, which the youngster soon forgets, because in the rush and hurry of his young life he never acquires the meaning of half the hard words temporarily crammed into his little noddle? Better give him practical lessons in the garden or the field, and

we have had to contend with in respect to pit and frame space, and economy being the order of the day, additions to our stock are out of the question, at least other than such as we can ourselves manufacture. To make frames, in the strict sense of that term, is beyond our mechanical ability, but we have devised sundry shelters and modes of protection for early vegetables and kitchen garden seedlings of various kinds that answer so well as to admit of our using the whole of our ordinary pits and frames for *Chrysanthemums*, bedding plants, &c. Early Potatoes, Carrots, Cauliflower, and Lettuce were all planted or sown in ordinary glazed frames, but as the season advanced the above-named plants required more space, with the result that makeshift appliances have been put up in the form of rails, fixed round the sides of the forcing beds, and to these rails have been

tied mats that form a protecting wall to the vegetables. The coverings for the top that are only put over on cold nights are made of tarred felting, tacked to a rough wooden framework. Pits built with soils that are eventually destined for potting soil make excellent shelters in which to prick out Celery, Cauliflower, and the like, as well as for growing the first crop of French Beans, and as hurdles of felting are too expensive, we have placed stout sticks over the turf walls, and use mats and tarred canvas as coverings in bad weather. We are fortunate in having good walls for fruit growing, and at the base of these walls the shelter is so good as to be very little inferior to that obtained from frames, and the movable wall coverings—for the protection of fruit trees—afford the fullest protection to any seeds or plants growing there. At present these spaces are filled with Brussels Sprouts, Cauliflowers, Stocks, Asters, Zinnias, Phloxes, Delphiniums, and Everlastings, and we have just sown there several varieties of herbs and perennial flowering plants. There are several other ways of providing such temporary shelters, and this record of what has been done may prove suggestive to the developing of other modes of protection. A correspondent recently wrote disparagingly of home-grown early vegetables—virtually, in fact, advocated a discontinuation of growing them, on the ground that they could be bought much cheaper than their cost of production in a private garden. I shall not attempt to dispute such an assertion, except to say that such may be the fact; indeed, in respect to the production of early Potatoes and Asparagus, I am quite ready to admit that the writer is right; but most employers, even those that can ill afford means for the production of forced vegetables, prefer to have supplies from their own gardens to having them second hand, notwithstanding that they may be a little cheaper. Taking this view of the matter, I contend that it is only right that home produce should be valued at a higher figure, say at from five to ten per cent. If this be granted, I have no doubt about the growing of early vegetables and salads in private establishments leaving a balance on the right side of the ledger. Personally, we have no choice in the matter: the produce is demanded and no buying in the market permitted, and this is the reason why we have to exercise any little ingenuity we possess to provide shelter and other suitable contrivances to get an early and continuous supply.

Mushrooms.—I was interested in the inquiry about Mushrooms at p. 375, because for some time I have been trying to find out whether Mushrooms grown from reputedly good spawn and grown in prepared beds are injurious or not to those that eat them. With a view to get information on this point I made several inquiries, but the question seems still undecided. True, I did not send a sample of the Mushrooms, but my inquiry stated the fact that Mushrooms grown in pasture fields or in well-made beds are injurious to some people when they eat them. Last autumn one of my family (an adult) was ill for several hours after partaking of Mushrooms collected in a pasture field, while others who partook of them felt no ill effects. Both the hands and legs of the person with whom they disagreed were swollen, and a pricking and itching sensation went on for more than an hour all over the body. My last perplexity in this matter occurred in February of the present year, when an old pupil of mine sent me a box of Mushrooms that I might see how well he was growing them, and a finer lot I never saw. These I divided between my own family and the young men in the garden. Two of my children ate from them two Mushrooms each: one (the elder of the two) was ill within an hour after taking them with pains in the chest and limbs

which symptoms lasted for about three hours, while the other felt no ill effects; neither did the men in the garden who ate them the same day. I have been minute in giving these particulars, because I hope it may lead to obtaining a satisfactory explanation. So far as I can understand the subject, the Mushrooms are not in themselves injurious, but the fact of many people not being able to partake of them proves the truth of the old adage, "that what is good for one is poison for another." J. C. C.

THE HARDIEST VEGETABLES.

AFTER the experience of the past winter it is most probable that more regard will be paid to the work of stocking the kitchen garden with vegetables that can be depended upon to withstand a series of severe frosts. I could point to numerous gardens that early in the winter were literally crowded with various green vegetables, but which now are nearly or quite bare. The old complaint, "gardener's greed," has much to answer for. One phase of this is to plant much more than is really wanted, under the impression that it is better to have too much than not enough of everything. So it is, but when this idea leads to undue crowding, a very different result may be, and oftentimes is, the consequence. What we have to guard against is the planting or sowing in quantity of kinds or sorts of doubtful hardiness, and to always avoid crowding—the latter evil being perhaps most prevalent.

BROCCOLI.—I hold this to be the most serviceable and the most valuable of all winter vegetables, yet, unfortunately, it is among the greatest sufferers during the past winter. As far as the generality of private places is concerned, Broccoli is very scarce indeed, but, if I am rightly informed, the markets will be well supplied from the open fields, as not only do they conduce to a sturdier, and therefore harder, growth, but they seem to improve the quality of either vegetables or fruit. What in a garden may prove of poor quality is altogether superior under intelligent field culture. At least, such is my experience, and I have had good opportunities for proving the truth of the assertion. Although market growers, as a rule, have the advantage of an open position, they do not often plant so thickly as private gardeners are in the habit of doing. In one severe winter I knew a case where a field of Broccoli was sold at the rate of £75 per acre. The variety was the old Cattell's Eclipse, and the plants were disposed 3 feet apart each way. They touched each other all round, but this was very different to what is frequently seen in private gardens, where, oftener than not, the stems of the plants are 2 feet or more high and naked. Early sowing, the plants being allowed to remain in the seed-beds too long, and finally planted on rich ground, perhaps not more than 2 feet apart each way, are sure methods of growing such tall, easily killed plants, and the sooner a more rational plan is adopted, the better it will be for all concerned. Early in May is quite soon enough to sow the bulk of the sorts, and harder, if smaller, plants will eventually result from seed sown towards the end of that month. A good, open seed-bed is to be preferred, and this, coupled with thin sowing, ensures sturdy plants to start with. These should be planted on firm, fairly rich ground, in rows 3 feet apart, and the plants not less than 30 inches asunder in the rows. If disposed among rows of early Potatoes (to plant among late or strong-growing sorts is simply a waste of time), the stems will become rather leggy, and will need to be heavily moulded up directly after the Potatoes are lifted. The latest raised plants seldom attain a great size, and on firm land we plant them 30 inches apart each way. These retain their leaves much better than the earlier raised and more strongly grown plants, and this has much to do with their superior hardiness. We are cutting abundance of fine heads from those planted in succession to Strawberries, these being preferred to much larger ones obtained from the earliest raised plants. What I believe to be the hardest of all Broccoli is Miller's Late Dwarf, but this, unfortunately, does not give close good heads. The old Cattell's Eclipse, of which Mr. Gilbert professes to hold a superior

stock, is both hardy and good in quality, but is not so late, unless specially treated, as Ledsham's Latest of All and Late Queen. Both of the latter produce large creamy white heads of excellent quality, and we have only lost about 10 per cent. by frosts. Veitch's Model is of sturdy habit, and during May invariably yields a good successional supply of close, conical-shaped heads, which, being exceptionally well protected by leaves, are very white and delicately flavoured. It is one of the most distinct and valuable sorts in cultivation. Leamington should also be grown in every garden. It is fairly hardy and very good in other respects. We are cutting it now, and it will be available for another fortnight. Veitch's Autumn Protecting is far from being hardy; but, all the same, we grow it extensively for lifting and storing, no other sort being so serviceable at mid-winter and thereabouts. Seed of this variety ought to be sown early in the spring and again early in May. Spring White, a good variety for March, has proved harder than anticipated, and we have just cleared a good breadth of it. Snow's Winter White is fairly hardy, but if sown before May is quite useless with us. Cooling's Matchless and Champion Late White are also hardy and good, the former being available in April and the latter late in May. The Purple Sprouting is very hardy, and yields abundance of succulent sprouts in the spring.

BORECOLE OR KALE. Cottager's Kale proves exceptionally hardy and profitable, and should be grown where an abundance of greens is needed daily. Scotch Curled, of which Read's Hearting is a desirable form, has withstood a long and severe winter, and gives plenty of good greens. There are none so hardy as the Asparagus or Buda Kale, and either the green or dark-leaved varieties are very profitable in May and June especially, the greens, properly cooked, being very succulent and palatable. The former sorts we raise with the Broccoli, while the Asparagus Kale is sown in drills, any time in June, where the plants are to grow, the rows being disposed 2 feet apart and the plants thinned to about 18 inches apart. It will thrive on a north or east border, and I have never seen it killed anywhere.

BRUSSELS SPROUTS.—From March 14 to the 21st we had a series of sharp frosts, the figures ranging from 15° to 29° of frost. In this neighbourhood, on the night of March 17, I am credibly informed the mercury went down to zero, this being 3° colder than it was here. Such an unusually severe frost naturally cut up things badly, and anything above the snow-line not perfectly hardy at the present time presents the appearance of being scorched. Brussels Sprouts were but little injured by previous severe frosts, but were nearly killed by the March frosts. This being so, they cannot be classed as perfectly hardy, but I have no doubt Mr. Gilbert is right about them. According to his experience, breadths of plants obtained by late sowing, or, say, during April, are the most hardy, and I have no doubt that such is really the case. It is the latest sown Broccoli that are the hardest, and the same remark may reasonably be applied to other members of the Brassica tribe. Younger plants are not only protected by the leaves, but they also possess a greater amount of vitality. Mr. Gilbert claims that his Jubilee Sprouts are quite hardy, but it may be that his method of cultivation has something to do with it. Those he kindly sent me were beautifully green and of excellent quality. These, *No Plus Ultra*, *Perfection*, and other good varieties being now available, there is less need to sow so early as was the case when we had to rely principally upon the imported. Those plants raised under glass and pricked out early eventually grow to a great size, frequently yielding a quantity of early sprouts when not needed, nor really good enough to eat. If a pinch of seed is sown at once and the plants obtained be duly put out on fairly rich ground, at about 30 inches apart each way, they will yield a good supply of late sprouts in all probability even if a very severe winter be experienced. The coarser sorts, of which the Aigbarth may be instanced, have had their day, the flavour of these being objectionably strong, and those that yield close, neat sprouts are rightly replacing them.

No Plus Ultra is now the favourite variety here, and I believe it will give satisfaction wherever tried. . .

CABBAGES.—We have been able to cut really good Cabbages at almost any time throughout the winter. The January and February frosts, although very severe, did not kill any of them, but whether they would have survived the March weather without the covering of snow is rather doubtful. The seed was sown the first week in July, and the plants put out in succession to the spring-sown Onions, a surface being all the preparation the ground received. Last autumn was favourable to a late growth, hence the earliness of the crop. Early sowing sometimes ends in the premature bolting or seeding of the crop, but the risk is worth running, especially if the precaution is taken of sowing again a fortnight later. Our second batch is now commencing to grow strongly. Planting on firm yet good ground—and Onions usually receive liberal treatment, frequently more than they need in fact—tends to check rank growth and induce quicker maturation. Moreover, undug ground does not become saturated, and is therefore warmer than that which is much broken up. Wheeler's Imperial, if obtained true to name, is yet one of the best Cabbages in cultivation, and we also find Ellam's Dwarf Spring and Veitch's Matchless hardy and good in every respect. London or Rosette Cole-wort, sown the first week in June and duly planted out about 1 foot apart each way, affords a capital supply of sweet heads during the early winter months, and Shilling's Queen, similarly treated, is also profitable and good. Chon de Burchley, sown in April and May and planted in rows 2 feet apart and rather closer in the rows, gave a supply of useful heads in succession to the Cole-worts, but as those left were not well covered by snow in March they were cut up badly. It is more serviceable than I at first thought it to be, but it certainly is not so hardy as Mr. Gilbert would have us believe.

SPINACH.—We find Spinach perfectly hardy, and it is almost indispensable. During a showery autumn, slugs usually spoil our beds, and that, too, in spite of almost daily dressings with soot and lime. Last season was an exception to the rule, and we are fortunately enabled to include Spinach in every hamper sent to the town house. The Round or Summer is quite as hardy as the Prickly or Winter, and it is always advisable to make two or more sowings, commencing about the middle of August and following at fortnightly intervals. The rows to be 1 foot apart, and the plants only lightly thinned out, as there are other enemies to the Spinach besides slugs. I hold Winter Spinach to be a most uncertain crop, but luckily we have a good substitute in the shape of Spinach Beet. If seed of the latter is sown at the same time as the ordinary Beet, or even as late as June, and similarly treated, strong plants will result, which will yield abundance of fleshy leaves throughout the winter. It is perfectly hardy, and there is no limit to the supply of leaves a few long rows will yield. The quality cannot be said to quite equal the ordinary Spinach, but in this, as in many other instances, very much depends upon the cooking.

LEEKS.—Generally speaking, Leeks may be said to be the most perfectly hardy green vegetable in cultivation. They are useful, too, good cooks frequently utilising both tops and bottoms, and I believe they are gaining in popularity. A pinch of seed sown in the open ground early in March or as soon as the nature of the soil permits, usually results in a plentiful supply of plants. These when about 9 inches high may be planted 6 inches deep into holes formed with a stout dibber, a little water poured into each hole being all that is necessary to fix the roots. Supposing the ground to have been well manured prior to digging, the Leeks will grow strongly, and eventually will fill the holes, thorough blanching being a sure consequence. We have two very cold north-east borders, and the rotation consists of Leeks one year and Asparagus Kale the next. Large Leeks not being required, we plant them about 1 foot apart each way, but if extra fine ones were in demand, a few would be grown in trenches and treated in every respect similarly to Celery. Ayton Castle is perhaps the most generally

useful sort in cultivation, and if show Leeks are required, both Prizetaker and The Lyon are suitable. W. I.

VEGETABLE PROSPECTS.

SELDOM have kitchen gardens been more bare of produce than this spring. The Broccoli are mostly swept off clean, giving much emphasis to the appeal for more hardy varieties.

Even the spring Cabbages, so called, have been so often frozen and so long under the snow, that it will be long past midsummer before they reach any stage beyond that of thully tufts of green leaves. Even these will be grateful this spring, for in not a few gardens Scotch Kale and even Turnip-tops are either severely enripped or wholly killed.

Brussels Sprouts, that mostly yield some good cuttings at this season of the year, are still almost as dominant as at mid-winter, and promise few pickings till the end of May, if they may cumber the ground so long.

Winter Spinach has also suffered severely, fully two-thirds of our plants being killed outright. A writer says somewhere that the summer Spinach is as hardy as the Flanders. I have never found it so, and have seldom seen such havoc made among the latter as this season. All the Parsley kept for winter use has also been killed down to the ground, a warning to those who neglect the safe old rule of cutting all, except what is needed for a current supply, close to the ground in August. The late leaves will be much smaller and shorter, but likewise very much harder than the longer and grosser ones made in the summer.

The seeds of Onions and other main crops have lain much longer in the ground than usual, but they are now coming up freely and look well. Peas, Broad Beans, &c., are also looking well; but this only applies to spring-sown ones, as I have seldom seen winter-sown Beans and Peas look more rusty and unhealthy. The former are the worst of the two, and in not a few gardens as well as on farms the winter Broad Beans have been turned in. We seldom sow either now, as the risks from severe frosts, slugs, mice, and rats are too numerous and great to make it worth while. But little time is lost by sowing in February or March or even in April in such seasons as these, while seed and time are economised, and better crops as a rule ensured by spring sowing.

HORTUS.

Market Carrots.—Writing upon this subject in a recent issue of THE GARDEN, "A. D." rightly surmises that the growers of the Long Surrey Carrots do not get much more than one penny per bunch. The highest price obtained in Covent Garden this winter has been 2s. 6d. per dozen bunches, and that was when the ground was covered with a deep snow, so that the labour of digging and hauling twenty miles to London was hardly compensated for all that relatively high price. For long, straight, well-coloured roots a common price has been 1s. 6d., and at the present time it has dropped to 1s. 3d. per dozen. For the last decade the prices have been steadily diminishing, so that the grower's profits have at length reached a vanishing point. When rent, expenses of culture, cartage, and salesmen's charges are taken out, there is no margin of profit for the grower at 1s. 6d. per dozen; indeed, I think that at that price he is growing at a loss, and that in the course of a short time the culture of Long Surrey Carrots will be an extinct industry. Only a few years ago the ordinary price for this kind of Carrot was from 3s. to 4s. per dozen bunches, and it generally happened that at some period of the winter the price ran up to 5s. and 6s. per dozen. In a time of hard frost, when green stuff was much cut up or came but sparingly into market, the Surrey Carrot growers had a good time. It is not so much that more Long Surrey Carrots are grown than formerly—for they will only do well on certain soils—as that the fancy of the consumer has changed. Most people now prefer the Intermediate, which, although not so attractive, is of better flavour, and can be produced at a cheaper rate. It will also grow on stiff lands where the Long Surrey

cannot get down, and is grown in enormous quantities in the eastern counties. Many greengrocers who at one time sold only the Long Surrey now merely obtain a few bunches for "dressing" their shops.—J. C. B.

Broccoli growing. It now turns out (p. 376) that it was not "men" Mr. Gilbert wanted to grow Broccoli, since he can now produce any number of "cottagers who can grow all kinds of vegetables better than one-half the gardeners in this country." I do not know what gardeners will think of Mr. Gilbert's compliments, but I rank his statements on that head with his assertions on "hardy" Broccoli and Peach houses, &c., and he has no doubt inferred from what I said on these subjects how much value I attach to them. It appears that when he wrote before he had not made up his mind as to what a hardy Broccoli is; but other people are under no misapprehension on that point. I suppose the editor meant a Broccoli that was hardy enough to stand our severe frosts, like a Brussels Sprout or a Borecole, and that is what I and others mean also. It is not one nor two sharp frosts which will kill Broccoli, but a spell of frost-continued severe cold. Mr. Gilbert's quarters of Victoria have not experienced anything of the kind this season, and, in addition, were probably covered during the whole or a portion of the time he had any frost with snow, the best protection that they can have, but not alluded to by Mr. Gilbert. It is interesting to learn, though, that Mr. Gilbert's *Chou de Burghey* is, now that its *true qualities are known, not "Gilbert's,"* but "*Wright's.*" Also that he, Mr. Gilbert, "never represented it as a Broccoli." I am almost certain that it was sent out as both, and in corroboration of that I here append an authorised description of it from a noted seed catalogue (Backhouse) only this year:—

CHOU DE BURGHEY.—A new vegetable raised by Mr. Gilbert, combining the good qualities of the *Cabbage* and *Borecole*. It is as hardy as a Cabbage, which it resembles, but encloses a *Broccoli* head, and has the rich flavour of *Cauliflower* and *Sakato*.

This description Mr. Gilbert has never denied, and I understand he authorised it originally.—J. S. W.

KITCHEN GARDEN NOTES.

CAULIFLOWERS.—Slight showers of rain induced us to have another turn at planting out Cauliflowers, the plants now put out being spring-sown, raised in heat, and grown on in a cold pit. The sorts are Early Dwarf Erfurt and Early London. Both are of high quality and do not grow too large, and therefore we plant them as near together as 2 feet by $\frac{1}{2}$ feet. They are planted in deep drills between rows of Peas, this half shaded position favouring a rapid succulent growth, without which mild-flavoured heads cannot be had. The plants lifted with plenty of soil adhering, as a great part of it was leaf soil, consequently planting had to be done with trowels, after which they were given a good watering, and now they show but slight signs of having been transplanted. The next planting of the same varieties will take place a fortnight hence, and will very shortly be followed by a first planting of Veitch's Autumn Giant, no other variety being grown for autumn and early winter use.

RUNNER AND DWARF FRENCH BEANS.—We have made a first sowing of runner Beans, a single row through one of the principal and deepest trenched plots in the garden. The shallow trench way of growing them is that preferred, because it allows the rain to descend direct to the roots, and admits of the ready application of manurial mulchings when drought seems imminent. Though we use tall-stakes, believing that to be the most profitable way of growing them, yet, by way of inducing them to develop a branching habit, the points are pinched out as soon as the growths are from 2 feet to 3 feet long, and the process is repeated twice or thrice before they reach the top of the stakes. By this plan a greater quantity and a much longer succession of tender pods are assured, simply because the check of pinching delays the production of pods. A second sowing of dwarf Beans has also been made on a warm sunny bank, the variety being Canadian Wonder, and which is truly a wonder in regard to productiveness, as it also is in vigorous constitution

We keep the rows a yard apart and by way of making the most use of the ground, we sow between the lines early Radishes, which will be cleared off before the Beans need the whole space. Small brushwood sticks, which are used to support them, are placed in position when the plants are about a foot high.

PEAS. Main-crop sowings have been made this week, the kinds being Telegraph, Champion of England, Duchess of Edinburgh, No Plus Ultra, and several seedlings for trial. The rows range from 6 feet to 10 feet apart, and between each row is a central line either of Spinach, Lettuce, Cauliflower, or Radish. Earthing up we strongly object to, for the reason that rain cannot reach the roots nearest the base of the stems; therefore we always sow in shallow trenches, and the only earthing they ever get never exceeds the ordinary ground level, and this renders the mulching of long manure that in dry weather we always strive to apply a ready conductor directly to the roots of whatever rainfall there may be. Second early sowings are all of them ready for staking, and this we hope to do in a very few days. As usual, sparrows and chaffinches started their work of destruction by eating out the young points. Dustings of soot and lime in a general way keep them at bay, but a better way is the plan adopted by Mr. Gilbert of dusting the rows with Tobacco powder; one dose is quite sufficient; our first sowings were given but one dressing, and it has sufficed to disgust the delinquents and preserve our Peas from harm.

TOMATOES AND VEGETABLE MARROWS.—Our first batch of the former has set a fine lot of fruit, and for a time all further flower-spikes will be kept picked off to give the fruit a better chance of swelling. When this fruit is about half grown other shows will be allowed to fruit, and so on (with the earliest plants) throughout the summer. The second or main batch of plants will be left more to themselves, or, in other words, be allowed to set whatever fruit may show, and this in due time will be thinned out to the best-formed examples. If given plenty of light and free ventilation they will bear any amount of heat. Our first lot of plants occupies space in a Muscat vinery, and they seem to relish the same high temperature that Muscat Vines enjoy. The plants for open-air planting are being gradually hardened off, as we hope to plant them out by the middle of May. Vegetable Marrows are now in 5-inch pots, and are kept steadily growing on in frames and are well aired, as they must be transferred to their summer ridges early next month. We have no handlights to spare, or they would be planted out at once. No matter what the character of the weather may be when the plants are first turned out, a thick wall formed of evergreen boughs will surround each plant.

WAITING FOR RAIN.—Harsh, drying north-easterly winds are so continuous that nothing as yet grows kindly, and rain was never more ardently longed for. We have done all that can be done by way of aiding growth, such as hoeing between any rows of seedlings that have appeared above ground. Spinach and Lettuce are also ready for thinning out, but the work is impossible in the present condition of the ground. Onions, Cauliflowers, and Cabbage that were planted out a week or two ago showed such signs of distress, that, much against our will, watering has had to be done, for the slight showers we have had seem to have done them no good. We began to dig out trenches for Celery, but the soil being so dry could not be fixed in position, and, therefore, that work also waits; as does the planting out of Globe Artichokes and Asparagus.

W. W.

SHORT NOTE.—KITCHEN.

New Potatoes.—The *Cornishman* of last week contained the following interesting note: "Potatoes, grown under glass, have been drawn from time to time for a month past. The 'good old' price of 2s. 6d. a lb. was given for the first few monthals, but rapidly dropped, and, within the last week, Potatoes of good quality have been sold in Penzance for 8d. a lb. It is said on this side of the water that Scilly will begin to draw in a few days from its most sheltered bits of Potato ground. Frosts, more particularly those of Friday and Monday mornings, have again cut or checked

many acres of Potatoes in West Cornwall. That of Friday was seen to have left its blighting mark on many a plant on the western cliffs."

FLOWER GARDEN.

THE ROCK GARDEN, BROXBOURNE.

A VISIT to Messrs. Paul's nursery at Broxbourne is a practical lesson in the culture of alpine. No trouble is spared in studying their needs and preferences as to soil and position, and even the kinds of stone most likely to suit them. Stones so placed as to supply an almost vertical position for plants in the chinks between them, damp and shady spots and some parts damp but unshaded, and banks of earth where plants can find an unlimited root room; these and other varieties of treatment give many a miffy alpine a good chance of success, and most of these requisites are possible even on the smallest scale wherever the culture of alpine is attempted. The undulating rock garden, with its little dell, miniature waterfall, and sunny banks seems to have been made on a flat piece of ground with no special natural advantages of position such as may be found in or near many a country garden. Yet the result is a singular success as regards the culture of rock plants.

Perhaps at no season of the year is this collection in greater beauty than in May and early in June. But this year a visit even early in March was full of interest, though but few flowers could dare to blossom early during so cold and late a season. *Saxifraga Burseriana* major had, however, braved the weather; it flowered almost a month earlier than the type. *S. Frédérici Augusti* was a week earlier than *S. sancta*, and amongst other rare *Saxifragas* grown here is *S. cochleata* minor, with much smaller and more glaucous foliage than the typical form; it grows well in light sandstone *débris*. Much the same light soil with the addition of limestone rubbish suits *S. lanuginosa*, which should face due south. *S. Rocheliana* sometimes blossoms earlier than *S. Burseriana*; it is not a difficult kind to grow well, at least as treated at Broxbourne. The curious little *S. Rudolphiana* is like a very minute form of *S. oppositifolia*.

Coptis trifoliata, with its bright gold-coloured roots and miniature Hellebore-like blossoms about half an inch across, is grown here, and the still rarer *Coptis brachypetala* with a larger and more divided leaf and a spike of white starry flowers; neither species being, however, in blossom at the time of my visit this year. It would be interesting to know the reason in the life-history of this Goldthread (*Coptis trifoliata*) for so exceptionally bright a colour in its roots. *Ramondia pyrenaica* grows well in shade facing due north; *Omphalodes Luciliae* is also grown in shade and in loose soil. The dark blue *Edraianthus serpyllifolius* is, on the contrary, grown in a sunny position in well-drained, light peaty soil, and amongst plants which prefer limestone soil as well as sunshine, and, if possible, a situation due south, are *Oxytropis pyrenaica*, *O. campestris*, and *Androsace sarmatensis*. *Hypericum Coris* is hardy on a southern slope, and *Adonis vernalis* prefers a western aspect. A few hints as to position might be a useful addition to the directions as to soil given for each plant in Messrs. Paul's catalogue. The soil used on the southern slopes of the rock garden for about 1 foot deep is sand and leaf mould. This can, of course, be varied for plants requiring special treatment—the sweet-scented white *Daphne Blagayana*, for instance, requiring peat, though liking an elevated position.

Where *Dryas octopetala* refuses to establish itself easily, it may be of use to give it a start in rich soil, as is done here. Another good suggestion in plant culture is the planting of *Tropeolum polyphyllum* and *Crocus speciosus* in the same spot for successional flowering. *Cyclamens*, which are largely grown, are found to do well under the partial shade of Elms. For *C. cilicium*, a mixture of limestone, leaf-mould, and loam is used. *C. coum* and *C. Atkinsi* were amongst the earliest of spring flowers, and amongst others of special interest or beauty were *Anemone blanda* var. *Ingrami*, with blossoms of deep blue; *Crocus dalmaticus*, pale lilac inside, the outer segments feathered with deep purple; *Colchicum crociflorum*, like a small white *Crocus*, with pale purple stripes; and *Bulbocodium ruthenicum*, with smaller and paler flowers than the type. Some rare Snowdrops were also in bloom, and one of the prettiest winter effects in this rare collection was that of the red-brown hairy stems of *Rubus phoenicolasius* drooping gracefully over the steep side of the miniature dell.

C. M. OWEN.

***Primula obtusifolia Gammieana*.**—Plants of this lovely Indian Primrose were recently shown by Mr. Douglas at the Regent's Park exhibition. It is a native of Sikkim, at about 15,000 feet elevation, where it luxuriates upon sunny banks. The flowers are purplish crimson, becoming deeper towards the eye, where it is tinged with yellow. It may possibly be a useful form in the hands of the hybridiser. G.

Jonquils. Nothing in the way of bulbous plants grown in pots has here given so much satisfaction as the Jonquils. They flower freely, are sweet-scented, and are alike useful as plants for house decoration or in a cut state. For filling vases used in connection with their own foliage, or for mixing with other flowers for bouquets, they are very useful. They are easily grown in 3-inch pots, and thus rendered suitable for many positions where larger pots cannot be used. Three bulbs can be grown in each pot by potting them in moderately rich soil in September, and a second batch in October for succession, and plunging the pots in coal ashes or Cocoa-nut fibre refuse until plenty of roots are formed, then introducing a few into gentle heat as required. Retain the remainder in cool quarters, and allow them to come into flower during the month of March, at which time their sweet perfume is much appreciated.—E. M.

***Spiraea palmata*.**—Though this beautiful species of *Spiraea* cannot be had in flower so early in the season as the well-known *S. japonica*, yet it may be had in bloom by this time of the year, and when in this stage is a very ornamental object for greenhouse or conservatory decoration. For forcing, only those clumps with good, solid, well-ripened crowns should be chosen, and it must be borne in mind that, like all the other members of the genus, this *Spiraea* needs an ample supply of water. The plants when growing must be well exposed to the light, otherwise the flower-stems get weak and the foliage acquires a yellowish tinge, while if they are shaded just as the blossoms are developing they come out very pale, and are not to be compared to the rich hue of those grown in full light. The white-flowered variety sent out a couple of years ago by Messrs. Veitch should also become a popular favourite, for it is well suited as a companion plant to the older kind, and though the blooms are of the same colour as *S. japonica*, the two differ so widely in other matters and are both so beautiful, that the merits of either will not be discounted by the near resemblance between them. Though *S. palmata* is perfectly hardy (as the quantities that are grown at Bagshot will testify), it suffers at times in many places from late spring frosts, but when it escapes, few more ornamental perennials are to be seen. In planting out this *Spiraea* its moisture-loving qualities should be borne in mind. The best plants for forcing are those that have been grown on for

the purpose under liberal treatment, as in this way the large plump crowns are produced.—T.

MIXED BORDERS IN SPRING.

IT has become a generally accepted theory that there should be very little, if any, bare earth visible in mixed borders. In the height of the summer and autumn displays it is easy enough to put this theory into practice; indeed, the difficulty at those times is to repress undue fulness. But it is by no means so easy in spring, when the larger herbaceous plants are at a minimum of leafage. It is true that borders then can be exceedingly attractive to plant-lovers with many chaste beautiful forms, from one to other of which the eye flits, even as do the bees in the sunshine of the early year. But still the fact remains that the eye has to perform this flitting process, and the flight is across small Saharas of earth, white and dry in an east wind and a brilliant sun. The individual figures in the picture are perfect, but the picture, as a whole, is not effective.

Now there are two ways in which a remedy for this is sought, and neither of these can be approved. The first is that which fills the border with purely spring-blooming plants and bulbs, which are removed when out of bloom. Of course, when planted sufficiently thick there is no bare earth; but neither is there a mixed border, in the usual acceptance of the term; there is only a modification—and not for the better—of the ordinary bedding out. The second mode of solving the difficulty consists in filling up the intervals, or, rather, interstices, between the larger-growing herbaceous plants with choice spring-blooming plants and bulbs, and leaving them there to shift for themselves in the struggle for existence as best they may. The result in most cases it is not difficult to predict. It is simply cruelty to plants.

There is, however, a third method by which the character of mixed borders is preserved: the earth is wholly covered, and no harm is done to valuable plants. The writer saw recently an excellent example of this at St. Ann's, Clontarf, near Dublin, the residence of Lord Ardilaun. In planting a long border with permanent herbaceous plants, there were left numerous irregularly shaped spaces, which had been filled thickly with the ordinary spring bulbs and plants—a mass of blue Hyacinths, for instance, filling its own space, and throwing its arms half round a mass of the double Day Lily, bending its young leaves over, as if approving the advances of its lowlier neighbour; or Violets and Polyanthus of distinct colour overflowed the limits of their patch of ground, and traced rivulets of brightness between large clumps of the taller herbaceous plants, which later on will meet in happy embrace. Choice Daffodils have not been massed, because they are too valuable to be disturbed when they have done their work. They were in clumps, and added much to the present picture, while they will neither interfere or be interfered with by the transformation scene of summer and autumn. The ordinary spring bulbs and plants will, of course, be lifted, and the spaces filled in with the choicest annuals according to height, with single and Pompon Dahlias, and other half-hardy or tender plants.

It seems easy enough to make such a border; and yet it requires no small amount of taste and forethought to do it well: for the herbaceous plants, which constitute the bulk of the occupants, being permanent, have to be planted with a view to the spring and summer occupants, so as not to overpower the one, or consort badly with the others in height or colour. But it can be done when the same care is used as Lady Ardilaun used in forming the border in question.

The very edge of this border contributes in no small degree to its interest, if not to its brilliancy. A border of large stones, from 2 feet to 3 feet in length, is laid irregularly by the gravel walk. This forms a dwarf retaining wall for a bed of choicest alpine plants in good clumps; while another row of large stones keeps up the mixed border itself. The chinks between these two rows of stones afford

the happiest quarters for Saxifrages, Sedums, dwarf Campanulas, and many other charming plants, which would have no chance if brought into direct contact with their robust neighbours. Thus this border is a kind of epitome of all the styles of gardening—the mixed herbaceous, the bedding, and the alpine—and is pleasing and interesting in all three. F.

Claytonia virginica.—In THE GARDEN (p. 368) "K." says that this is a much neglected plant, and ought to adorn many out-of-the-way and unsightly places in our grounds. Allow me to protest that I have never been guilty of neglecting *C. virginica*; on the other hand, it has neglected me; being one of many pretty North American plants to which I have given every indulgence I can devise in the way of soil and situation, and yet none of them will make themselves a happy home here in Cheshire. May I ask where out of North America *C. virginica* can be seen growing in the wild way suggested by "K."? It is a rare plant in English nurseries, and though I have imported it several times from America, it dies out or seems to live a miserable life. Other plants from the same country which behave alike are *Mitchella repens*, *Thalictrum anemonoides*, *Epigaea repens*, *Houstonia carulea*, &c. By *C. virginica* I mean *Botanical Magazine*, tab. 911. It might be thought that "K.'s" description suits rather *C. sibirica* (*Botanical Magazine*, tab. 2243), a plant I introduced into my garden about ten years ago, and have been trying in vain to get rid of ever since, but *C. sibirica* is a native of North-eastern Asia, not of North-western America. —C. WOLLEY DOD, *Edge Hall, Malpas*.

Planting bulbs after forcing.—Where a good display of bulbous plants, consisting of Hyacinths, Tulips, Narcissi, and Jonquils, are grown yearly for conservatory decoration, a corresponding display may be obtained at this season of the year in the herbaceous borders, Rose beds, or on the Grass, if the bulbs are planted out after being forced into flower or have flowered naturally. In the front of herbaceous borders and in what was formerly an orchard we have had an unusually fine show this year. So far the spikes of Hyacinths are larger and more perfect in form than hitherto; the flowers of the Tulips and Narcissi promise to be superior to those of other years, judging by the foliage and flower-spikes now springing up. How much better is it to utilise the bulbs in this manner than destroy them, as is sometimes done. As soon as the flowers of those grown in pots are withered we cut off the spikes, give the soil a good soaking, and plant out at once. The quantity of good soil in which the bulbs grew while in the pots answers for several years to assist growth when planted out in soil of a poor character. If they are planted on the Grass indiscriminately wherever a vacant spot can be found, a pleasant sight rewards the planter in the course of a few years.—M.

Petunias in the open.—We are now putting our seedlings of these in small pots, and this reminds me of the disparaging words "Cambrian" used lately about them in a recent issue of THE GARDEN. Here, on the contrary, we consider them very useful in every way. We use for summer decoration over 1000 of them. These are all planted at the foot of a wall 3 feet high, which supports all our numerous lean-to houses in front. The aspect is due south, and in such places, when properly tied to the lattice-work of the wall, single Petunias are simply splendid. I admit that these flowers are flimsy and do not like rain, but this is not of much consequence, because as soon as the sun shines they are up again. Their loose, trailing habit renders them very valuable for clothing vases in the garden, and, like many other flowers, they ought to be used in the right place. We obtained last year from the *Parc de la Tête d'Or* at Lyons a very nice variety called *Etoile de Lyon*, in which the bright purple colour was beautifully star-like disposed on a white ground. The flowers were not large, but produced in great quantities. Some parts of our walls are clothed with the old and nice *Calystegia pubescens*, but this does not flower freely late in the season. For

the last twenty years we have tried different kinds of trailing and flowering plants for covering the walls, but Petunias still remain the best.—J. SALLIER, *St. Germain en Laye*.

GALANTHUS GLOBOSUS.

THE Galanthus figured below was obtained from Asia Minor, and has been provisionally named *globosus*, from its very marked globular form. Caught before the sun has caused the petals to expand, it is an absolute sphere. It is probably a very near relative of *Elwesi*, but grown beside 1000 *Elwesi* its form is very distinct, the outer segments being a little shorter and much broader than in *Elwesi*; in *Elwesi* they are shaped like a gravy spoon, in *globosus* like a soup ladle. Another peculiarity of it is that it so constantly produces two flowers from one spathe without fasciation. I have only six bulbs of it, and of these four gave twin blossoms. The inner segments are deeply blotched with dark green, fan-shaped at the base, as in *Elwesi*, but always being clearly and distinctly arched at



Galanthus globosus. Engraved for THE GARDEN from a photograph by Miss Jekyll.

the edge; whereas the general form of *Elwesi* has two nearly square patches at the corners unconnected by the span of the arch, and even when the span is present it is comparatively faint compared with that of *globosus*, which is deep and sharp and clearly defined. It is an extremely pleasing variety, and very robust. The bulbs, like the flowers, are almost perfectly round, and the foliage is somewhat broader than in the general run of *Elwesi*. W. WILKS.

Shichen Vicarage, Croydon.

Anemone nemorosa. We have rarely seen so many *Anemone nemorosa* in the forest as there are this year. For some miles the underwood of the great Oaks along the beautiful *Terrasse de St. Germain*, so well known to tourists, is one white carpet, as the flowers are so densely crowded. These *Anemones*, perhaps more than any other flowers, are subject to movement. In the morning with the first rays of the sun they open their corollas, which were

closed during the night, and then they gradually turn during the day, keeping time with their bright companion, looking eastward at sunrise and westward at sunset. March and April have been cold and dry; this perhaps accounts for the profusion of blooms and their lateness. Amongst these wild flowers peeps here and there the *Bouton d'Or* (*Golden Button*), as we call the *Ficaria verna* here; in other places also may be seen *Pulsatilla officinalis*, with its bright blue flowers; *Primula officinalis*, much sought after by children; Violets, &c. The soil is so dry that the delicious *Morchella esculenta*, though generally plentiful at this season, seems very rare this year, as we have only found a few dozens of very small ones.—J. SALLIER, *St. Germain en Laye*.

NOTES FROM YORKSHIRE.

MARCH has been a destructive month here. At the end of February rather tender plants had suffered no damage. *Cyclamen coum* was out in flower at the foot of an Oak tree, *Garrya* and *Jasminum multiflorum* were in full beauty, and *Eucorcarpus* had shoots several inches in length. The very cold weather which prevailed during March, principally from the 11th to the 25th, was the real winter. The severe cold at night, coupled with cloudless skies and hot sunshine from the 12th to the 18th, did great damage to shrubs. Some plants of *Biota orientalis* 7 feet to 8 feet high, which have passed unharmed through eight preceding winters, are completely killed. *Pinus insignis* will, I fear, follow them. The various *Cupressus* (*orientalis*, *macrocarpa*, *Lambertiana*, &c.) are much injured, but a young plant of *C. Corneyana* remains unharmed. The *Fitzroya*, *Sequoia sempervirens variegata*, *Sciadopitys*, *Arthrotaxis*, and *Cryptomerias* remain unharmed.

The cold March seems to have suited the bulbs. I have never seen the *Erythroniums*, *Scillas*, *Chionodoxas* (both *Lucilie* and *sardensis*) finer than they have been this April. Is *Chionodoxa sardensis* at all an improvement on *C. Lucilie*? Is it not rather a poor form of that plant? Daffodils began to bloom outside April 1, the first being *pallidus precox*, from the Pyrenees, and trumpet minor, No. 25 of Hartland's catalogue. These were shortly followed by *Ard-Righ*, our own English *pseudonarcissus*, *obvallaris*, and the so-called *spurius* forms. *Gemms* came next, and now the Grass banks are aglow with flowers of *Horsfieldi* and a Pyrenean form nearly allied to it, as also *Emperor*, *Empress*, both of which, as also *Ard-Righ*, I consider superior to *Sir Watkin*, which is in bloom near them. The incomparabilis and odorus groups are opening, to be followed very soon by *Tazetta*, from near Cannes, and all the lovely forms of poeticus from Lachen, Albano, &c.

As with the bulbs, so with the alpine Primulas; I never saw *nivalis* more perfect than it has been this month. *Vivipara*, from the Pyrenees, and various Swiss forms, including the true yellow *Auricula* from the Eggischhorn, have made the alpine rockwork gay. *P. rosea* has been covered with bloom, *denticulata* likewise, and I see *P. sikkimensis* is starting. *Soldanella alpina* and *Gentiana verna* are in bloom. How fond the mice are of the latter! I have difficulty in preserving it from their ravages. *Saxifraga Burscheriana* proves itself to be a perfect gem, flowering throughout the intensity of March frosts, and it was almost rivalled by the lovely *S. sancta*, in bloom at the same time. *Saxifraga Fortunei* and *ciliata* have stood the winter unharmed.

R. MILNE-REDHEAD.

Holden Clough, Clitheroe.

Doubling of hardy Primroses.—In reference to this matter touched upon by "A. D." on p. 367, I may state that I have just received a letter from the Hon. and Rev. J. T. Euseawen, in which he tells me that he "found a double yellow Primrose in the midst of the common yellow in a wood miles from any garden. I should think that no double yellow had ever been grown within ten miles of the place I found it. It was, no doubt, a seedling."

from experiments carried out here the leaves appear to be just as good when the flowers are allowed to open as they are if the blooms are removed.—H. P.

SEASONABLE WORK IN PLANT HOUSES.

GREENHOUSE. STOPPING YOUNG HARD-WOODED STOCK.—Much of the future appearance of the specimens depends on due attention to stopping the shoots during the early stages of growth. If this is not attended to soon enough so as to induce them to branch out sufficiently to furnish the base, nothing that can be afterwards done will correct the mischief. But to do the work without regard to the habit natural to each particular kind of plant is a mistake; some things, such as *Aphelaxis*, *Tremandras*, *Dracophyllums*, *Erioste-mons*, *Hedaronas*, and *Pimeleas*, when once the shoots are fairly balanced, the plants usually branch out sufficiently of their own accord without further stopping. Whereas, such species as *Choro-zeumas*, *Acacias*, *Boroniads*, *Polygalas*, *Hoveas*, *Leschenaultias*, *Metrosideros*, and *Pleromas*, are always liable until they get old to produce some shoots much stronger than the others, and if these are not stopped in time they monopolise so much of the sap, that the weaker branches languish and ultimately make little progress. In addition to timely pinching out of the points of the over-strong shoots as they appear, it is well to tie them well out in a horizontal position, leaving the weaker growth more erect; in this way the heads will be more evenly balanced.

HEATHS. The difference that exists naturally in the habit of growth in the different varieties of Heaths is such that some forethought requires to be exercised in stopping the shoots. The erect-habited varieties of *ventricosa*, *Cavendishi*, *ferruginea*, *propendens*, and the *vestita* sections need more or less attention for several years after the plants have reached the ordinary trade size; whilst such kinds as *ventricosa coccinea minor*, the *tricolors*, *retorta major*, the different varieties of *ampullacea*, *gemula*, *Rhyana*, *Austiniana*, and a host of other bushy growing sorts, when a proper foundation is laid, no more is required to preserve well-balanced heads. As to the best time for potting Heaths there are different opinions; for young stock I prefer getting the work done before hot weather comes on; in the case of such as have attained specimen size early enough in autumn so as to admit of the roots getting well hold of the soil before winter is the best. My own experience is that there are fewer large Heaths die after repotting at the time named than when they are shifted late in spring or summer.

WITSENIA CORYMBOSA.—This fine old blue-flowered plant, though its blossoms are individually less conspicuous than those of some other greenhouse subjects, yet as it blooms at the latter end of the year and affords a colour that is not over-plentiful, it is acceptable to those who are not willing to confine their cultivation to the ordinary things met with. The plant is easily managed and not liable to get out of condition, continuing in a healthy state for a long time. It is a slow grower, and to this cause not unlikely may be attributed its seldom being seen. Young plants take several years to grow them up to an effective size; consequently those who purpose growing them will find it better to secure well-established examples that have made a few seasons' growth. Though, as already said, this *Witsenia* increases in size slowly, it is still a free rooter, and must not be under-potted; if this occurs progress will be checked. Where there are any doubts as to the roots requiring more space, it is well about this time to turn the plants out of the pots to ascertain their condition in this respect; if this is done carefully there need be no disturbance of the ball, so that in the event of additional room not being needed the plants can be replaced in the pots they have hitherto occupied. Good fibrous peat mixed with a moderate amount of sand suits this plant. Pot firm, and in the case of small stock that are required to attain size without delay a little closer atmosphere than most greenhouse plants require will be an advantage. Syringe

overhead each afternoon during the growing season, giving plenty of light with air in accordance with the state of the weather.

SWAINSONIAS.—There are two or three sorts of these handsome Pea-flowered plants that are deserving of cultivation. They are comparatively quick growers that when once fairly established soon attain enough size to be effective. Young plants that are now in 6-inch or 7-inch pots should be moved to others two or three sizes larger; they will thrive in either loam or peat, yet the latter if of good quality is preferable. Mix a fair amount of sand with the soil and pot moderately firm. These *Swainsonias* require frequent stopping until moderate sized specimens are secured, without which their natural habit of growth is such that they run up with a limited number of shoots. Full-grown specimens that were cut back after they had done flowering last summer will now have made considerable progress, and when grown as trained plants must have their shoots trained round the sticks intended for their support. Old plants of this description need not be re-potted every year, as by the use of manure water given at short intervals until they are nearly in flower, or by surface dressings of concentrated manure that will get washed down to the roots in watering, they may be kept in a sufficiently vigorous state. These plants are somewhat liable to the attacks of red spider; a regular use of the syringe will prevent this insect gaining a footing. *Swainsonias* make good pillar plants either when turned out in a bed or grown in pots; when so used less stopping is required whilst they are young. When grown in this way, especially if the roots are confined in pots, they must be well nourished either with manure water or with the surface dressings already mentioned. *S. galegifolia*, *S. galegifolia alba*, *S. Osborni*, and *S. Rollissoni* are good sorts.

ORANGES.—One of the characteristics common to the different varieties of Citrus is their ability to exist in some fashion under usage that would speedily end in death to most kinds of plants. Very often they have to struggle through the growing season with a much lower temperature than they like, and when the house in which they are located is such as to admit of their receiving a fair amount of light and the soil is sweet and of fair quality, and the drainage of the pots or tubs is efficient, the plants keep in fair health. But when they can have an intermediate temperature, especially during the time their growth is being made, it is much better. When large old specimens get out of health the growth made is thin and weak, the leaves coming small and pale in colour. When in this state it is well to turn them out of the pots or tubs and get away as much of the old soil as can be done without too much interference with the limited amount of healthy fibres that usually under such conditions exist, putting them in smaller pots or tubs in good, sweet soil, with enough sand in it to render it porous. If possible a gentle bottom-heat should be given, continuing it until the young wood is nearly matured. The atmosphere should be kept moderately moist, giving shade in bright weather and syringing overhead at the time of closing the house in the afternoon. Under treatment such as this, continued for two seasons and giving proportionately more warmth in winter, much may be done to restore the plants to their wonted health. Unhealthy Oranges are often much affected with scale, which, like most other parasites, attacks plants more persistently when they are in bad health. Means should be taken to rid the plants of these pests, which will increase apace with the extra warmth they receive.

CORREAS.—These distinct-looking plants are useful for conservatory decoration, and from the fact of their being much more easily managed than many other hard-wooded kinds, they might with advantage be more generally grown. Although moderately free rooters, they can be kept in a thriving state in smaller pots than many things of a permanent character. The best time to repot either young stock or larger examples is in spring. Though they will thrive in either peat or loam, the former is prefer-

able where the texture is such as will enable it to last well.

STOVE.—DRACENAS.—The different species and varieties of these plants that require warm treatment can be propagated in several ways. Most of the kinds form a thick fleshy root, or rather continuation of the stem, from which proceed the smaller feeding fibres that support the plant; this underground stem keeps descending until it reaches the bottom of the pot, where its downward progress is stopped; yet it still continues to grow, the effect of which is that the ball of earth is often lifted up above the rim of the pot. In the case of sorts that are scarce and that it is desirable to increase, young plants can easily be secured by taking off about 2 inches of the fleshy root described, with the fibres attached, putting them bottom upwards in small pots, just covering the ends. In a brisk, growing temperature they will soon make growth and produce leaves. In this manner additional plants can be obtained each spring at the time the old specimens are potted, as after the ends have been severed, the stumps soon begin to descend again. When old examples of *Dracena* get bare at the bottom they become unsightly, and it is best to head them down; the present is a good time to deal with any that require it. The extreme top if taken off with three or four leaves attached will soon root if treated in the ordinary way for cuttings. The lower part of the stem may be cut into pieces from 1 inch to 3 inches long, according to the character of growth natural to the particular sort. Each bit should have one or more eyes to it. These stem cuttings should be inserted 2 inches apart in a pot or pan in sand. In the course of eight or ten weeks they will have formed roots and made sufficient top growth to admit of being potted off singly. Another method of propagating *Dracenas* is to shake the soil away from the roots, cut off all the leaves and the extreme top, and then lay the stem, with its roots attached, down in a propagating box, covering the whole slightly with a mixture of fine peat and sand, keeping the material moderately moist, with plenty of heat. Treated in this way, the eyes will push into growth, and when they have made three or four small leaves each they must be severed from the old stem and potted singly. Any remaining eyes on the stem that have not moved will then make growth, and can in due time be taken off and potted. T. B.

GARDEN FLORA.

PLATE 594.

TUFTED PANSIES.

(WITH PLATE OF PANSIES *ABERCORN GEM* AND *MRS. KINNEAR*.)

WE adopt this name to avoid the confusion arising from giving the name *Viola*, the name of the genus, to a particular race of Pansies that are really raised from the common Pansy crossed with one of the alpine *Violas*. They were given the name of "*Viola*" to distinguish them from the ordinary Pansy, but giving the name of the genus *Viola* to one set of varieties leads to confusion and much questioning. Their habit is a little more tufted, they endure the winter better, and usually grow more closely than Pansies do; therefore, a good name for them would be tufted Pansies. They are beautiful things, growing freely, and flowering for a long time, and have pretty and delicately coloured flowers.

The Scotch nurserymen do these well, and in Scotland they are seen to greater perfection, owing to the cool air and long days. We prefer to move them every year, as they seem to do better by frequent removals; many of them when well grown are as large as Pansies, and, we think, more beautiful. Apart from their intrinsic beauty, they have value to people who

* DRAWN FOR THE GARDEN at Gravetye Manor, Sussex, by A. G. Moon, August 6, 1886, and printed by G. Severeys.



go beyond the garden for their types of beauty, for the self-coloured kinds admirably typify the pretty alpine Violas, which few of us ever see in their native pastures. We obtained these two kinds from Messrs. Dicksons, of Edinburgh. It is desirable that people who grow these flowers should make a selection of their own, and grow some of the beautiful selfs, as nurserymen are apt to pick out spotted and bizarre forms, and overlook delicacy of colour. It would be worth while to raise seeds too, so that one might select one's own colours in these flowers. Some of the prettiest kinds we know are scarcely in the trade, and were not raised in nurseries. The variety of lovely colour is so great, that the most fastidious would have little trouble in raising and increasing shades of colour they liked. We think this would be worth doing in many cases. It would help to add an individual charm to gardens. The two kinds we figure are very beautiful—the white, a most precious flower, superior, we think, to any Pansy we have tried in the flower garden, spreading freely into soft green tufts, and bearing bold flowers of a fine creamy white. The plants as drawn grew on deep loamy soil, and were planted at the end of April.

Lims for Cyclamens.—With reference to Mr. Wilson's note on this subject in THE GARDEN, March 26 (p. 272), I may mention that I once had a similar experience with some plants of *C. persicum*. I annually grow some on the easy plan of planting them out in cold frames in April, lifting and re-potting about the last week in September. Our ground is very full of worms, and one year they worked into the compost in which the Cyclamens were planted in great numbers. They were doing much damage, by coming up in the night eating off the tender young leaves just as they issued from the bulbs. I tried lime water, but it only drove them down for a time, as I could not sufficiently flood the soil to kill them for fear of making it sour. I then lifted them carefully and mixed a quantity of lime with the compost. I put so much in, that the soil was quite coloured, and I thought that I had probably overdone it, but there were no evil effects. On the contrary, I never saw foliage have better substance. This seems to prove that lime is of especial benefit to Cyclamens of all kinds. The addition of some to the compost when giving the last shift would, probably, be beneficial, especially in the case of loams that are naturally deficient in this respect. Watering with lime-water when the pots get full of roots I know does good. I fancy that the use of lime is not so fully understood as it should be. In the case of many hardy flowers I believe that a dressing of lime would make a great difference in their growth.—J. C. B.

Effects of frost on spring flowers.—Having read the remarks of "R. D." and "D. T. F." in THE GARDEN (p. 368) on the effects of the frost upon *Myosotis dissitiflora* and *Omphalodes verna*, I find that here, where *Myosotis dissitiflora* is planted out annually by the thousand, it has withstood the severe frosts better than any other bedding plant that we have; whereas great numbers of Pansies and Daisies have perished. Wallflowers have also suffered severely by the frost. Although some of the Wallflowers were not planted until late in the autumn, they have not withstood the frosts better than those planted five weeks earlier. In a bed fully exposed to the north and north-east we have planted *Chionodoxa Lucilia*, with a groundwork of *Myosotis*; the *Chionodoxa* was planted two years ago, and was only just peeping through the ground the last day in March, thus showing what a cold position it is in; and at the present time the *Myosotis* is one mass of flower. The severe frost that we had from March 13 to March 30 did more damage to the spring bedding than the whole of the frosts during the winter months. I have been watching with some curiosity the growth of some Daffodils growing round a pond here. Some of them have been covered to the depth of 2 inches

with water during the whole of the winter months, and only within the last fortnight has the water gone down to its usual level, yet the Daffodils sprang up through the water quite as early, and flowered as profusely as those growing higher up the bank in quite a dry position. Have any of the readers of THE GARDEN observed anything of a similar nature? F. H. L. Belton.

FERNS.

W. H. GOWER.

CHEILANTHES ARGENTEA.

THIS plant is a native of Siberia, Kamtschatka, Japan, and Khasya. In the latter place it is found growing at elevations varying from 3000 feet to 5000 feet. Our illustration was taken from a plant gathered in the neighbourhood of Yokohama, in Japan. It appears to have been introduced to cultivation as long ago as 1823. It is a most elegant plant, of tufted growth, not exceeding 4 inches in height and 2 inches in breadth. The footstalks are jet black, the upper side of the fronds bright green, the under side densely clothed with silvery white farinose powder, ornamented with a marginal line of black sori. This plant should be grown in a small pot, with good drainage and free open soil, composed of loam and peat, with pieces of sandstone intermixed. It should be liberally supplied with water to the roots, but the fronds must not be sprinkled with the



Cheilanthes argentea. Engraved for THE GARDEN from Nature.

syringe. It luxuriates in a cool fernery shaded from the sun.

C. chrysophylla is a similar plant to the preceding, but differs in having somewhat longer fronds, and these have a dense coating of golden yellow farina on the under side. It grows in Khasya at the same elevations as *argentea*.

C. Borsigiana, also known by the name of *Nothoekena sulphurea*, is a somewhat similar plant, but its fronds are more lobed; they are bright green on the upper side, clothed with light yellowish golden farina beneath, and should be potted in similar material to the others and treated in the same manner. It requires a warm house, being a native of Tropical America.

The Killarney Fern as a town plant.—As a reader of THE GARDEN, I may be permitted to give my experience of growing this Fern in London, though only an amateur. About sixteen years ago I had a case made, in shape something like a large cage. It was eight-sided, and had a wooden tray 6 in. deep, lined with zinc, on which rested eight glass sides, 18 inches high; two of these sides could be removed at will. The diameter of the case was 2 feet. I filled the bottom, first, with inverted flower-pots, then with broken crocks and charcoal,

lastly with good peat, mixed with bits of tufa and charcoal about the size of Apples, and raised it gradually until the centre was 6 inches or 7 inches above the edges of the tray, and watered it to make all firm. On the top I planted my Fern—a small, but strong plant of *Trichomanes radicans*, carefully pegging down the tawny brown rhizomes. It succeeded admirably, and in about two years my case was full of the loveliest green fronds. I never watered it unless some of the fronds appeared dry, and then only sprinkled it. It never had any air unless when being watered because of our burning gas in the room, yet it fruited very well. The case stood at a window which the sun did not reach, and was turned round a little every day (by a special contrivance) that the light might reach it evenly. I had it for twelve years in London, and it was the loveliest ornament in the drawing-room. During those years the soil was only once renewed. I quite agree with "R. D.'s" opinion that enthusiasm and attention are the main elements of success.—M. M., Haunts.

THE NEPHROLEPIS.

THESE handsome and very distinct Ferns on account of the graceful appearance of many of them, as also by reason of the many ways in which they may be effectively used, occupy amongst our decorative plants of all descriptions a most prominent place. All the varieties of *Nephrolepis* may safely be said to be of very easy growth, forming in a comparatively short time, especially when planted out in the fernery, some large and imposing masses of light and elegant foliage, hardly equalled, and certainly not surpassed, by any other Ferns. Some species are particularly adapted for the decoration of the warm house, while certain kinds thrive equally well under much colder treatment. Among these, the most useful are *N. tuberosa* and *N. exaltata*, the value of which may be seen in the numbers that are to be found in our flower markets. *N. tuberosa*, although an East Indian species, is the hardiest of the two, and its habit, which is more bushy than that of *N. exaltata*, recommends it. Its fronds are narrow, of a dark green colour, and seldom exceed 2 feet long. It has also a peculiarity which few other kinds possess of producing little tubers on the roots. *N. exaltata*, as its name implies, is a much stronger grower, its fronds frequently attaining from 3 feet to 4 feet in length; they are about 3 inches broad, and of a pleasing light green colour. Both kinds are evergreen, even when kept all the year round in the cool house, and both are particularly well adapted for planting on rocks or boulders near the water or under larger growing Ferns. The majority of the *Nephrolepis*, however, require stove treatment, at least during the winter, and certain sorts all the year round. Among the kinds of medium growth the most striking is undoubtedly *N. Duffii*, a species as beautiful as it is distinct; a native of Duke of York's Island, in the South Pacific Ocean. Its fronds, which vary from 15 inches to 20 inches long, are densely crowded, pinnate, and much crested. The pinnae, instead of being narrow as in most other species, are small, produced in pairs, and of variable shape, most of them being semi-circular, and all deeply toothed. The compact, elegant habit of this Fern, and its bright, pleasing colour, with the agreeable vase-like shape which it assumes when fully developed, combine to make it one of our most attractive kinds. It is also excellent for room decoration, if a little care is taken in hardening it off previous to its being used.

N. pectinata, although an old acquaintance, is not grown so extensively as it really deserves. It is a South American species whose fronds, dense and comparatively narrow, seldom exceed 15 inches in length. They are produced in profusion and form a very compact mass of most pleasing bright green colour. In *N. Bausei*, of garden origin, we have one of the most distinct and handsome of its kind among those of medium growth. Although a form of *N. pluma*, its habit is totally different, being dwarf and bushy, with fronds averaging about 15 inches in length. These, as in the species from which it originated, are of a particularly light green colour and of a somewhat thin texture, but they differ

from all other known kinds by their pinnae being pinnatifid instead of entire, as is the case with all others belonging to the same genus. It also partakes of the deciduous and tuberous characters peculiar to the species from which it springs, and its foliage generally lasts from April to December. During the resting season care must be taken that the soil does not get too dry, as then there would be a great danger of the tubers, which form the most ready means of propagation, shrivelling up. *N. philippinensis* is another pretty kind with medium growth; the fronds narrow, erect, and of a beautiful dark green colour. The strong-growing section supplies us with plants eminently fitted for the roof-decoration of the warm house, where, when grown in hanging baskets, they show themselves to perfection. Most of these are natives of Java and the Malayan Archipelago. The old *N. davallioides*, through the graceful habit of its growth and the handsome appearance of its fertile fronds, which attain, when grown in a favourable position, the length of 5 feet, is a species of no ordinary merit. The fertile portion of the foliage, which is limited to the upper third part only of each mature frond, is very peculiar and attractive, inasmuch as while the barren pinnae are only about 3 inches long, the fertile ones, which frequently attain 5 inches long, are very narrow, contracted, and gracefully drooping. We have in *N. davallioides* fereans a variety of robust growth, which, both in habit and general appearance, is a great improvement on the normal form, from which it differs in the furcation of the pinnae. In the barren ones, which are few in number, at the base of the fronds the furcation is less conspicuous, and in some cases only rudimentary; but in the fertile ones, which occupy the greater portion of the frond, the furcation is twice, and even three times repeated in the extremities of the first division, becoming more complex towards the apex of the frond, where it forms a massive crest. It also greatly differs from the species by its mode of growth, sending forth, as it always does as from a central tuft, numerous arching fronds from 3 feet to 4 feet long, and of a very bright and glossy nature.

Nephrolepis pluma, a native of Madagascar, is a beautiful drooping deciduous Fern, with light and very slender fronds, reaching about 5 feet in length and about 1 inch in breadth in all their parts. These fronds, which have on each side from eighty to 100 pinnae, are of so pendulous a nature, that a strong plant with its numerous plume-like fronds forms a most elegant object when grown in a basket suspended from the roof of the warm house. It is leafless, or nearly so, from December to March, during which time, however, it requires to be kept moderately moist at the roots. There are also *N. acuta*, *falciformis*, *hirsutula*, *ensifolia*, and others, which are all more or less grown; but the most distinct, and also the most beautiful, of all the gigantic growing kinds is undoubtedly the new *N. rufescens tripinnatifida*, a native of Fiji, whose fronds, which reach 3 feet or 4 feet in length, are of a lovely light green colour, and possess a peculiarly massive, yet plumose appearance, produced by the broad pinnae being regularly and constantly tripinnatifid, their margin being on both sides deeply cleft and covering each other in a most graceful and effective manner. Unfortunately, like nearly all plumose forms of species of Ferns already in cultivation, this is, or until now has proved entirely sterile; but being provided with the wiry running rhizomes peculiar to its genus, this new *Nephrolepis* is easily propagated by the same method as that employed for commoner kinds which produce young plants on their rhizomes at intervals. On planting them in the fernery, either warm or cool, a certain allowance must be made for the rapidity of their growth, as also for their spreading propensity, for if planted too near small growing kinds these will inevitably in a short time be smothered by the *Nephrolepis*. The *Nephrolepis*, although not very fastidious as regards the soil in which they grow, at all times prefer a compost of a very open nature, and nothing suits them better than a mixture of fibrous peat and Sphagnum Moss in about equal proportions, with an additional part of silver sand, and for the strong growing kinds a

little fibrous loam. In that compost, as in partially decayed vegetable matter, they produce in abundance their wiry rhizomes on which the crop of foliage is dependent. These rhizomes, besides their usefulness in procuring a ready means of propagation, constitute also one of the principal ornaments of the majority of the species, especially when these are grown in brackets on a wall or in hanging baskets, in which they form most attractive objects. *Nephrolepis* require plenty of moisture at the roots. This must not on any account be overlooked, as if allowed to get dry, even for a very short time, the pinnae, which are articulated, drop off suddenly, leaving only unsightly and bare stems on the plants, which greatly suffer in consequence, and require a long time of generous treatment to recover their former vigour.

S.

FRUIT GARDEN.

W. COLEMAN.

HARDY FIGS.

It will be interesting, nay more, highly instructive, to learn from non-protectors how their open-air trees have passed through this protracted winter. If the embryo fruit as well as the young wood is safe and the trees give promise of one good crop of Figs, this year of Jubilee will be a most fitting period for giving up protection and all such fussy and untidy contrivances, as I question if this now general favourite fruit has passed through such a trying spring since Cardinal Pole laboured for its extended cultivation. It will, however, I am afraid, be the same old tale so often repeated—the majority crippled, the few spared to bear fruit in the autumn. It is, of course, possible to carry protection too far, but this is no argument against its judicious use, as we find hobbyists in every department riding their favourite steeds until they drop. The same remarks apply to non-protectors, who, because once in a week's march they find a poverty-stricken tree in a dry, sunny corner braving all weathers and bearing fruit, arrive at the conclusion that thatching or matting should be dispensed with. I recollect many years ago an old friend waiting upon a gentleman in Warwickshire with a view to completing an engagement as gardener. On their way round the fruit garden the baronet said he grew excellent Figs without the useless trouble of protection. Not liking the looks of the trees—it was then late in the spring—my friend stepped up to them, and on his return remarked that it would have been better had he taken that trouble, as all of them were dead. Here, no doubt the pitcher had gone many times to the well, but received the fatal blow at last. The same thing happened at Arundel and other places in famed Sussex a few years ago, and will be repeated in less favoured parts of the country so long as Figs are grown. I have just uncovered my trees, and, judging from their appearance, believe they have plenty of living points well furnished with embryo fruit. Pruning will be deferred until they get more advanced, as we are quite a month later than we were at this time last year, when, provided they turn out satisfactorily, their food will be the reverse of rich, but they will have plenty of it, and ripe wood will be secured by thin training upon bricks from which the sun is not entirely excluded. Possibly I may be told by "W.," whose jeremiad at p. 365 I have just read, that Fig growing must be given up, as we can get them cheaper from Smyrna, but the price, low as it may be, will be an addition to the English gardener's wages. Therefore, whilst admitting the truth of some of his remarks, I cannot endorse his views, as I

am of the opinion that able men having the charge of large gardens should devote their energy to the production of all kinds of fruit and vegetables, whether from a market grower's point of view they are profitable or not. Whether they are necessities or luxuries, surely the more a man grows the better his services will be appreciated.

FRUIT PROSPECTS.

We have seldom had a better or more promising show than this year. Almost unprecedentedly late, the trees are exceptionally vigorous and crowded with healthy blossom, and as we have now reached the 20th of April it may be hoped that the blossom is almost through the danger period. Peaches, Apricots, and Plums on walls are now in full bloom. Pears and Plums in the open have scarcely moved, and Apples are still more dormant. Cherries are also late, and as well clothed with bloom as the others. This promises to be a great Plum year. I have seldom seen Plums on or off walls more thoroughly whitened over with bloom, or closely packed with blossom-buds. Apples also promise an extraordinary crop, and Pears a full average.

Gooseberries and Currants are also well furnished, and have passed through the long cold winter with but little bud-picking where care was taken to destroy bud-eating birds. The latter also threatened the Plums so much, that they had to be almost extirpated to save the Plums.

Raspberries have also passed through the winter well. We thinned out the fruiting and superfluous current year's canes as early as possible, and have reaped the benefit of the full exposure of those left, in their perfect hardness and unusual strength.

Strawberries here have mostly lost all their old leaves, but the crowns do not seem greatly injured, though experience proves that the crops are seldom quite so good when the plants are denuded of all their old leaves in the winter or early spring. I have found a dressing of soot a good reviver for plants thus defoliated, as well as a capital and sure exterminator of slugs, snails, or other such pests that hug the crowns more closely and devour them more ravenously in the absence of the old leaves.

A slight sprinkling of guano is also helpful to Strawberries under such conditions. It is certain that the sooner a new head of leaves is formed the better for the size and flavour of the current year's crops. D. T. F.

The best time to mulch.—The best time for mulching is of considerable importance, for, as a rule, it is too late in being put on. Many never think of assisting the development of the wood and fruit of their plants by mulching or top-dressing until it has attained a large size and is nearly matured; then it is applied unstintingly with the object of finishing off the crop; but mulchings and surfacings at this late period are useless, and if they are to be beneficial they must be put on at the time the fruit is beginning to swell. No trees pay more handsomely for mulching than those growing against walls, such as Peaches, Plums, Apricots, Cherries, &c., and as these crops are now forming, I would strongly advise their owners or cultivators to mulch at once with good manure, and both the trees and the fruit will soon show its application. I have generally noticed that mulched trees suffer less from insects and blight than unmulched ones, and the plan of mulching ought to be reduced to a system everywhere.—CAMBRIAN.

Planting Strawberries.—In forming new Strawberry plantations, gardeners often put out young runners late in autumn. This is about the worst method that can be followed. Even if good strong runners are selected, they cannot get good root-hold by winter if the planting is delayed until the middle of October. The ground, by reason of the previous preparation, being in a more or less loose state, is sure to be brought into a close condition by the heavy rains of winter. Moreover, the plants, however firmly they may be set in the ground, inevitably become loosened by the action of

frost. After hard winters, when severe frosts have alternated with periods of mild weather, I have known autumn-planted runners to be worked almost out of the ground. When this occurs, and harsh drying winds, such as we have lately experienced, set in, unless prompt remedial measures are taken, the plants are sure to suffer. They should be looked over, and any that may be displaced pressed into the ground again; at the same time the soil around them should be well trodden down. When new plantations cannot be made in summer, so that the plants get well established by winter, it is better to defer the planting until early spring. The runners may be pricked in thickly together for the winter, but I prefer to let them remain where they have rooted. If the ground is laid up roughly early in March for a week or two, and then well broken and the manure forked in, it will remain in a free condition all through the season, and on soils of a tenacious nature the plants will make better progress than when set out in autumn. It is only when the natural staple is of a very light description that autumn-planting is preferable. Such soils dry up very quickly in spring and early summer, so that plants put out at these seasons of the year are apt to suffer in their earlier stages of growth, unless looked to well in the matter of watering. All light soils before planting should be well trodden or rolled, and a mulch of manure is of great service. — *The Field*.

MEALY BUG ON VINES.

ALL experienced Grape growers have a natural dread of stocking their Vines with mealy bug, but after all that can be said about it, there are yet worse and more common pests to contend with. For instance, I would rather have to manage or clean bug-infested Vines than to have charge of a vineyard where red spider invariably effects a lodgment on the foliage. The mealy bug can be kept under, if not actually destroyed, and any way, if they can be kept out of the bunches not much harm is done. At any rate, it does not effectually stop the proper colouring of the berries, and this cannot be said of the red spider so common to many modern structures. Where so many thousands of short-lived summer-bedding plants have of necessity to be propagated, the vineries as well as nearly all the other houses have to be crowded for a time with various plants. Among these *Besines* and *Colenses* figure largely, and if there are any mealy bug on the place they will be found on one or both of them. From the bedding plants to the Vines is only a short distance for the comparatively active bug to travel, and they are liable to become well established before they are observed. This is no imaginary solution of the difficulty of accounting for their presence, and the overworked gardener must not receive all the blame. Either fewer tender bedding plants should be grown or there should be proper facilities for their preparation provided. What, however, we are most concerned about is not how they came on the Vines, but

HOW TO GET RID OF THE BUG. — In *THE GARDEN* (p. 365) a correspondent, "C. T.," condemns gas-tar as a winter dressing, and ventures to predict it will never come into general use. In this and in other respects I am confident he is much wide of the mark. Six years ago I took charge of an old bug-infested vineyard, and a friend strongly advised me to dress the rods with a mixture of equal portions of gas-tar and clayey water, and this advice I followed, the two ingredients well stirred together being of a consistency of thin paint. The rods were not closely skinned, only quite the loosest bark being removed, but they were well scrubbed with hot soapy water, the house also being thoroughly cleansed and the walls whitewashed. The tar mixture was applied cold with home-made matting brushes, and keeping it well stirred prevented the clay from separating from the tar. No attempt was made to fill all the crevices, neither is it necessary, the mixture effectually closing them up. I do not assert that one dressing of this "wretched" compound completely clears all the bug from the Vines; on the contrary, neither this nor the dressing recommended by "C. T.," viz., Gishurst

compound, will accomplish it, but I do say it is the least liable to injure the Vines. The dressing of the rods by the tar or any other mixture must be supplemented by close attention in the spring and early summer months. If the Vines are looked over frequently and what few bugs show themselves destroyed, a complete clearance will be effected. The time taken up in this almost daily search is scarcely worth mentioning, but if it is neglected the bug soon regains an ascendancy, as anything in the shape of one dressing powerful enough to kill them also damages the Vines. We had a few bugs on our Vines the second season, but these being caught in time they did no harm, and not one was found the following year. Last year a quantity of *Besines* were thoughtlessly placed along the front of the house, and from these the Vines were stocked once more. They were well hunted for, and the tar remedy has apparently nearly cleared them out again. As to the tar

INSAURING THE VINES, I must say it has never occurred here, nor would any injury befall them elsewhere if the mixture was intelligently applied. Nothing but tar and clayey water are needed, and if the former does not preponderate, or is not allowed to accumulate on the surface of the jar or pan containing the mixture, there is no fear of its interfering with the growth of the Vines. The spurs and buds may be completely coated over with it, and yet they will break strongly and may be safely tied down. If I might hazard an opinion I should say "C. T.," in common with many other cultivators, is in too great a hurry to tie down the laterals, and in this case many of them are liable to be drawn out of the sockets. This is especially the case with those that are started late and are naturally very strong. Black Alicante, at times, will scarcely bear touching, even syringing over-head being liable to cause some of the laterals to break away. Where they can be left, it is advisable not to tie them down in any way till they have flowered, after which they will stand comparatively rough treatment. The shy setters, such as Muscat of Alexandria and Mrs. Pine, flower more strongly when not tied down, the bunches of bloom getting much more light when the laterals are nearly upright, and all the others set and do well under this treatment. In the majority of vineries the rods are trained much too close to the glass to admit of the laterals being left so long untied, but this may be obviated by dropping, or suspending, the rods much lower than usual. They may be brought up to the wires again all in good time. If this plan cannot be adopted, then the laterals must be very gradually brought down, taking care not to strain them to any extent, as only a jar may cause them to fall off. It is a critical job and must be done with very great care, and if tar really made matters worse I can quite understand anyone ceasing to use it. I ought, perhaps, to add we annually dress Vines in four houses with the clay and tar mixture, bug or no bug, and this season I cannot find the least trace of any injury to the laterals from its use. Paraffin or, properly speaking, petroleum, on the other hand, is a dangerous remedy to resort to. Many rods have in various gardens been completely ruined by it as a winter dressing, while isolated bug in the summer may be easily killed without it. W. J. M.

Peach trees casting their fruit buds.

"A. M.," page 364, says, "Can any of your readers state the cause of my Peach trees dropping their fruit buds? They have been planted twelve months last autumn and grew well last summer; they are in a border 18 inches wide and 1 foot deep, at the back of a lean-to vineyard. When the buds should have begun to swell they all turned brown at the base and fell off." The old story. Peach trees planted in a border of the above dimensions under extraordinary management might be induced to produce perfect flowers and fruit, but the chances would be heavily against them. Like many more, you have allowed your shallow borders to get dry through the winter and did not restore them to a growing condition before the trees were started this spring. But why confine them to 12 inches of soil when double that depth is not too much? and why

plant them beneath the shade of Vines, as though any dark, dry, spiderly place were good enough for a Peach, when, as all fruit growers know, these natives of the East rejoice in bright sunshine, plenty of light, and fresh air? Having lost the season, all that you can do may be summed up in a few words: increase the width and mulch well the surface of the border; never let it get dry winter or summer, and pay proper attention to the training of the young wood. Meantime, study the pages of *THE GARDEN*, where you will find the fullest information down to the most trifling details upon the management of this or any other fruit. Had you been a careful reader this disappointment might have been avoided. W. COLEMAN.

THE PRODUCER AND CONSUMER.*

THIS essay on fruit and vegetable growing, and the economic distribution of farm produce, is dedicated to the Worshipful Company of Fruiteers, and published by Mr. J. L. Allday, Edmund Street, Birmingham. The author's first idea was to circulate it privately among growers with whom he is acquainted; but noblemen and gentlemen to whom it was submitted in manuscript advised that it should be published, and Mr. Rawson specially acknowledges the unremitting kindness and help received from Sir J. E. Eardley Wilmot and Sir Edmund Leechmere, M.P. He advances the great fact that England imports produce, other than corn, of the annual value of fifty millions sterling, and urges that, by altered conditions (to include revision and reduction of railway rates), the greater part of this money might be kept in the country for the general benefit and the special advantage of British agriculture. As a fruiterer and salesman of thirty years' standing, he unselfishly proposes that the agency of middlemen should be dispensed with. He indicates the kinds of fruit, vegetables, and flowers which sell best; maintains that poultry farming may be profitably developed; recommends bee-keeping (steps being taken to prevent the traffic in so-called honey, which is nothing but glucose-sugar syrup made from starch); and then deals with the important question of distribution. He thinks there is but one way of dealing with the produce with the most advantage to the seller and to the immediate benefit of consumers generally, and that is by a combination of the landowners, farmers, market gardeners, fruit and vegetable growers, agricultural labourers, and all classes interested, to form companies or societies properly organised and carried on in large centres, to provide for the reception and sale of produce. He believes that a trade of this kind to the extent of £150,000 a year might be done in Birmingham. In connection with a central depot there might be ten shops for doing retail business; and the company should also possess a factory for making jam and marmalade where all suitable fruit unsold might be taken at a price to pay the grower, instead of being disposed of at an unremunerative price in the market. Fruit syrups and other things in good demand might also be made for home consumption and export. Mr. Rawson does not adopt the notion of establishing jam factories in fruit-growing centres. He thinks they should be placed in large market towns so as to serve for the surrounding district and to provide ready means of distribution to consumers. A company might also assist small farmers and other growers whose credit is not considerable, and might hire trucks to enable small sellers to send their produce cheaply. Further, Mr. Rawson states his views as to railway rates and agricultural education. On all subjects of which he treats he writes plainly and concisely. His style is that of a practical man, who knows what he has to say and says it shortly and clearly. Birmingham politicians have often talked of what should, in their view, be done for the land. Mr. Rawson is not a political theorist. He may not intimately know all the difficulties and all the work of the farmer; but he is a man of business who has been closely connected with practical men, and as he writes with considerable knowledge and with unmis-

* "The Producer and Consumer." By Samuel Rawson, Small Heath, Birmingham.

takable sincerity, his essay is well worth reading.—From *Berron's Worcester Herald*.

Grape Bidwill's Seedling.—This Grape is not much grown now, owing to its having received a bad character, which, in my opinion, it does not deserve, as I am satisfied from inquiries I have made during the past four years that there are two Grapes which have been grown under the same name. I have seen and tasted both. One of them I allow is of really bad quality as compared with a Black Hamburgh, and the other very little inferior to that well-known sort. The latter, I have been assured by a gardener who has grown and shown it for several years, is the true Bidwill's Seedling. A west country gardener told me that he had shown it in the Black Hamburgh classes, and obtained prizes with it in a strong competition. The bunches, never large, even on vigorous Vines, are short and thick, and as they always colour well (while the spurious sort does not) they have a striking resemblance to the Black Hamburgh, but when seen growing side by side Bidwill's Seedling is quite distinct from it. The original plant from which the stock was obtained was in existence three years ago in the neighbourhood of Exeter.—J. C. C.

SEASONABLE WORK AMONG FRUITS.

ALTHOUGH this is one of the latest seasons on record, severe frosts and keen north-east winds having prevailed up to the end of the closing month, fruit prospects are fairly satisfactory, and, provided the long-delayed improvement is permanent, the realisation may yet exceed our hopes. This, however, is just one of those peculiar reasons which throws the oldest observers off their guard, if not out of their reckoning, as we often find the most promising-looking trees casting their flowers wholesale, from the fact that the long-retarded sap as well as the frost has proved too much for them. A very short time, however, will now set this anxious and important matter at rest, and whether our crops are abundant or light, those who have left no stone unturned in the way of preparation of the trees and protection of the blossoms will have least reason for regret. When trees are properly prepared they endure the severest winters, and often carry full crops of fruit after passing through the most inclement springs; whilst others not so prepared, although pictures of promise up to the flowering stage, with wind and weather in their favour, become infertile and unprofitable, with the result that some of the finest varieties are obliged to bear in silence the blame which should fall elsewhere. Preparation, then, being quite as important as protection, fruit growers this spring who have kept the two points in view will most likely have the best crops of fruit to compensate them for their attention.

APRICOOTS, which have been so long in a semi-flowering state, are not likely to be good; but, comparatively speaking, these are of much less value than Peaches and can be better spared. Still, so long as Apricots are grown, they should receive the most minute attention to every detail, or be given up. Here I do not think them worth the good south walls upon which Peaches do so well, and have therefore transferred them to a west aspect, where their early flowers escape many sharp frosts, and, what is equally disastrous, bright sun striking them before they are thawed and dry.

PEACHES, as I observed some time ago, are this year better with us than I ever saw them, and, judging from present appearances, thinning will be no sinecure. The trees, too, are perfectly clean, no small matter after three weeks' exposure to a dry, scorching east wind. Disbudding in ordinary seasons might now be commenced; but after so many checks and delays, this operation will be postponed until the trees have thoroughly recovered their power, and warm nights, the best of all guides, justify our removal of the superfluous shoots. Many people disbud every part of a tree at one and the same time; but when it is borne in mind that the strongest tree can be reduced to a state of weakness by the simple pro-

cess of pinching off a portion of its leaves, few will attempt to gainsay the statement that the process should be performed piecemeal and with the greatest caution. The first step, in which none can go wrong, is the stopping of gross shoots, which, as a matter of course, emanate from gross and not infrequently half-ripened wood of the preceding year. These may be checked before they have time to rob the weaker parts of the trees; but, as I have just observed, if well prepared for fruiting these gross shoots should never have been allowed to exist, as pinching and re-pinching force the superfluous sap into other and weaker channels. Once the balance of a tree is secured, it is better to be a little behind than a little too forward in the general disbudding, as it is pitiful to see a fine tree suddenly stripped, its fruit and limbs exposed to frost, and its leaves attacked by insects and blister. In our most favoured counties disbudding may be performed by a mechanic, or it may go by default, and the trees grow and fruit freely for a time; but a bad season settles them, simply because the careless hands that allowed them to go wrong cannot give the attention necessary to their restoration. In cold districts, where every ray of sunshine must be turned to account, disbudding, like root-pruning, is one of our most important operations, and for this reason it must be followed up until every bare stem and bit of wall is covered with foliage, hanging from shoots which cannot overlap nor become crowded during the summer. Indeed, where this work is well done, autumn pruning becomes a very light business; the shoots, just enough and none to spare, get thoroughly ripe; insects are not allowed to exist, and Peach-growing is profitable and pleasing. The Peach-grower must ever be on the watch for insects. Although clean to-day, the trees may be attacked to-morrow; therefore, with the sap in a backward and languid state of circulation, not an hour must be allowed to pass unoccupied in making preparations for their destruction. Insecticides are numerous, but all are not alike applicable, especially when the trees are in flower, as many washes are quite as fatal as the insects to the tender organs of fructification. Once set, the usual dips and washes may be applied; but here two points must be observed—the washes must be weak, and their application on the appearance of a frosty night must be avoided. This, at least, is my experience, as embryo fruits are very tender and often suffer from the two causes combined. This season I intend making my Peach trees distasteful to fly, by running over them every week with Bloxham's excellent little fumigator. The plan has answered economically and well under glass, and I have arrived at the conclusion that rendering trees insect-proof, either by the use of smoke or bitter washes, is often better than awaiting the approach of the enemy.

PEARS AND CHERRIES are masses of flower, and promise well, as may readily be supposed, when the lightness of last year's crops is taken into consideration. Plums, on the other hand, are thin, and in many places will require quite two years to recover from the strain of the enormous crops they bore last year. Then, to make matters worse, the bullfinches have preyed upon the buds to an extent rarely experienced in the annals of fruit culture.

GOOSEBERRIES from the same causes are in similar plight, and unless they recuperate beyond expectation our trees will not give pecks where last year they gave bushels.

CURRANTS look better, and Raspberries having ripened their canes to the top are sure to be good. If these were not heavily mulched in the autumn they will now require a copious supply of water through the hose, when more light, rich manure may be cast round the stools or along the sides of the rows. The Raspberry sends a few strong roots into the subsoil, but all the most useful feeders run a few inches below the surface, where, the winter having been comparatively rainless, nothing short of heavy mulching, combined with plenty of water, can possibly secure a full crop of luscious fruit. Because the Raspberry belongs to the humble bush fruit section, many people, if they do not exactly neglect, certainly do not give it the best attention

within their power, and yet I question if nine-tenths of the owners of good gardens would not give up their Pines, and Melons, and Grapes in preference to parting with their bush fruits. Quite right too, for independently of the fact that bush fruits, green, ripe, or preserved, form one of our most wholesome articles of daily consumption, one might challenge the English gardener to produce a fruit that in point of flavour will beat a first-rate Raspberry or Gooseberry. Unfortunately, in one sense, birds, having been deprived of their natural enemies, now have time and strength to play sad havoc with their friends' property, and we are put to the expense of converting our gardens into sundry aviaries, with this difference—the birds are allowed to look on, but not assist in harvesting the crops. This protection we have always given to Strawberries, Raspberries, Currants, and Cherries, and now we are preparing to enclose the blocks of Gooseberries in fine wire netting. Some of the breadths of wire must be movable for letting in insect-destroying birds at certain seasons, otherwise caterpillars innumerable will soon average this coercive step by devouring every green leaf, and one may as well be without fruit as without leaves.

APPLES generally are looking well and flower-buds are abundant, but late, so that with a sudden change to growing weather we may find the wood-buds taking the lead. The only point in their favour is well-ripened wood, for had this been defective our orchards would certainly have been in full leaf before opening their flowers. What we now want is a plentiful fall of warm rain to soak the dry bark and buds of the trees, to cleanse them from the larvae of insects, and penetrate to the lowest roots. The ground in this part of England is unusually dry, and unless we have a repetition of the heavy falls experienced last May, when miles of the country were flooded, fruit trees of all kinds must suffer, if not when setting, certainly before they mature their crops of fruit. Already all our wall-tree borders have been twice watered, and this week another inch will be given them. The craze for concrete bottoms and a filter-bed of rubble 12 inches or more in depth has not proved an un-mixed benefit, especially where provision has not been made for a frequent deluge in dry weather. By all means let us prevent the cold spring water from rising by the use of concrete, and let us prevent an excessive rainfall from hanging in the subsoil to become cold, sour, and injurious, but we must bear in mind that there is reason in all things; and if we plant our fruit trees in light borders resting on heavy drainage, we must tank up our rain water in wet weather for setting at liberty when long periods of drought prevail. With the exception of watering, mulching, staking, and tying, the work in this department will be light for some time to come; but one matter it is not yet too late to put to the test, and that is the thinning of the buds of Apples on Paradise and Pears on Quince stocks.

We have just finished grafting, and although rain is wanted, a dry spring is not unfavourable to the roots of recently beheaded stocks. W. C.

Apples as ornamental trees.—I wish some of your readers who have considered this question would let us know the kinds of Apple which form the largest and most picturesque trees when full grown. I am not now thinking of their quality as fruit at all, but if they happen to be good kinds as well as handsome, all the better. There is no tree so beautiful as the Apple, and I believe many people would plant it for the sake of its beauty if they knew the kinds that make the finest trees. Beauty of bloom should be a consideration as well as size and form of tree.—W. R. R.

SHORT NOTE.—FRUIT.

Best manure for pot plants.—As a stimulant and food four components "W. M." should use guano, either Peruvian or ichthemic; the latter is preferable for pot plants. Next in merit is sulphate of ammonia. Nitrate is a dangerous manure to use, and constitutes a stimulant only.—REX.

ORCHIDS.

W. H. GOWER.

PROMENEAES.

THIS genus includes a small and natural group of Brazilian Orchids, the members of which are dwarf and compact in habit of growth. Some few years ago these plants were more frequently to be found in our plant stoves than is the case at the present time, the desire for novelty having apparently caused them to be neglected. They do not long remain in a healthy condition when their roots are surrounded with much soil, and for this reason they are admirably adapted for cultivation upon blocks of wood or in small, shallow suspended baskets. During their growing season they enjoy an abundance of water to their roots, if it can pass away quickly, and also daily sprinklings overhead from the syringe. This,

of deep purple, the thick, fleshy lip being deep blackish purple. *P. citrina* has rich, deep yellow flowers, the lip bearing a blotch of deep crimson at the base, whilst the inside of the side lobes is spotted with the same colour. In *P. micropetra* the flowers are creamy white, except a few lines and spots of purple and crimson at the base of the lip.

Cymbidium tigrinum—This is a dwarf growing and very handsome member of this now popular family, originally discovered by the Rev. C. Parish growing upon rocks in the Tenasserim Mountains of Burmah, at an elevation of some 6000 feet. It was introduced to Messrs. Low's nursery at Clapton in 1863, and was figured the following year in the *Botanical Magazine*, t. 5457, but has always remained very rare. The pseudo-bulbs are roundish-ovate; the oblong lanceolate leaves are leathery in texture, from 4 inches to 6 inches long and bright green; flowers large and spreading; sepals and petals yellowish



Promenea Rollissoni.

however, must be discontinued when the plants are in flower. Treated in this manner and subjected to good light, with the temperature of a Cattleya or intermediate house, they flower freely and form very attractive objects during the autumn months. A very pretty effect can be produced with these Promeneas by grouping two or more species in the same basket, as they are tolerably uniform in size, and bloom about the same time, thus intermingling flowers of different colours and affording an agreeable contrast. The following are a few of the best kinds: *P. Rollissoni* (represented natural size in the annexed cut) is about the largest of all the species. In this plant the sepals and petals are soft golden yellow, the side lobes of the lip being stained and spotted with crimson, and the column streaked with bright red. In *P. stapelioides* the sepals and petals are greenish yellow, thickly spotted and barred with transverse lines

green faintly dotted with red; lip large, middle lobe white marked with numerous short transverse lines of dark purple; side lobes erect, inner side purple with a faint tinge of yellow. We recently noted a fine specimen of this handsome species bearing sixteen flowers in the nurseries of Messrs. Shuttleworth & Carder, Clapton Park, where it has been grown in the cool end of an intermediate house. —G.

Cypripediums at Clapton—These plants are grown in very large quantities by Messrs. Low. Nearly all the kinds are kept in a warm, moist atmosphere, which, judging by their vigorous growth and their floriferousness, suits them admirably. At the present time some 2000 flowers of *C. Lawrenceanum* may be seen, some fully expanded and others ready to open. The bold, handsome flowers and brilliant, marbled leaves render this the showiest kind in the barbatum section. *C. ciliolare*, introduced from the Indian Islands, is another very handsome plant, and is at the present time bearing

hundreds of its beautiful flowers. The plant appears to be somewhat intermediate between *C. Argus* and *C. superbiens*, *C. bavigatum* and *C. Lowianum*, two other distinct and handsome Slipper Orchids, are now very beautiful. —G.

Odontoglossum polyxanthum.—This plant resembles *O. Halli* in its habit of growth. It produces a spike upwards of 2 feet in length, the individual blooms measuring upwards of 4 inches across. The sepals and petals are deep tawny or bronzy yellow, blotched with numerous chestnut-red markings; lip chocolate-brown edged with white, fringed round the edge with tooth-like spines. It is one of M. Kluboeh's discoveries, and still continues rare. We recently saw it flowering at The Woodlands, Streatham, where it is grown with such kinds as *O. coplatum* and *O. Pescatorei*. —G.

Vanda teres. Mr. Roberts, of Gannery Park, has adopted a plan of growing this Orchid by which it flowers in the most profuse manner. The plan is to plant it out in a frame, heated underneath by hot-water pipes, on which are placed about 4 inches of corks, which are covered with about the same depth of Sphagnum Moss. In this compost the plants are placed and slightly shaded for a few days. After they begin to form roots the shading material is entirely dispensed with, and they are allowed to grow in the blazing sun. This treatment seems to suit them admirably, as they were growing and flowering very freely, the spikes bearing on an average from six to eight flowers. We should add that the plants in question have not received any water since last August until they began to develop their flower-spikes. —W. T.

Cattleya intermedia.—The typical *C. intermedia* produces long, stem-like pseudo-bulbs, 2 feet or more in length, and is somewhat straggling in habit when compared with those of the labiata section. It is exceedingly useful, however, for blooming during the month of April, just when the beauties of *C. Trianae* are on the wane, and before *C. Mossie*, *C. Mendeli*, and *C. Gaskelliana* open. Where this species is objected to on account of its height, a dwarf form which I recently saw in the gardens of Mr. Measures at Streatham will become a great favourite. It produces flowers as freely and as large as its taller relation, and is identical in colour, but its pseudo-bulbs are from 9 inches to 1 foot high only, so that it forms a compact and handsome mass. *C. intermedia* is one of the easiest of Cattleyas to grow, and will thrive at the cool end of the Cattleya house. —G.

Odontoglossum Halli.—I send you by today's post a box containing a spike of *Odontoglossum Halli*, which I consider very superior, and would be much obliged for your opinion on the same. I also send you a raceme of *Dendrobium thyrsoiflorum Walkerianum*—at least I bought it for that. I send you as good a truss as any on the plant, and the longest bulb of this year's growth is 2 feet 6 inches. —A. C. M.

* * * The *Odontoglossum Halli* received is a large-flowered and excellent variety; the same may also be said of the *Dendrobium thyrsoiflorum Walkerianum*. —ED.

SHORT NOTES.—ORCHIDS.

Masdevallia xanthina is a very pretty and distinct kind, which we recently saw flowering at The Woodlands, Streatham. In shape it resembles *M. Shuttleworthi*, but the flowers are somewhat more relaxed; the sepals are lemon-yellow, stained at the base with purple-black. It appears to thrive under the very coolest treatment. —G.

Odontoglossum vexillarium Cobbianum—This very distinct and handsome form is now flowering with Mr. Measures at The Woodlands, Streatham. The sepals and petals are of the same colour as the type, but the lip is pure white, which renders it very conspicuous, especially when seen side by side with the deep-coloured forms. —G.

Cœlogyne cristata—In reply to Mr. Douglas in THE GARDEN, April 16 (p. 358), the other occupants of the house in which the plants were grown, referred to by me, consisted of *Cypripediums*, *Cymbidium*s, *Odontoglossum*s, and *Masdevallias*, the minimum winter temperature being 45° to 50°. When I stated that heat was only applied in cold or dull weather, I meant during the growing season. I quite agree with Mr. Douglas that this Orchid will not succeed in a cool greenhouse. —C. R.

SEASONABLE NOTES ON ORCHIDS.

THE COOL HOUSE.—This section of Orchids has already become the most popular in some gardens, and in many instances contains the most valuable plants. The Orchids cultivated in the cool house are natives of the mountain districts of South America principally, and if we confine the occupants of this house to these plants, introducing only such other species and varieties as are known to succeed well with the same treatment, the results will be satisfactory. Those who insist upon saying that this, that, and the other Orchid will do best in a cool house, with insufficient knowledge of the subject, are much to blame. Inexperienced cultivators trust to the editors of the horticultural press to supply information upon which they can depend, and unless the cultural details given are based upon successful practice they may mislead the unwary. The introducers of new Orchids, too, have a habit of over-lauding the plants they introduce, which is natural, as they go by the descriptions of collectors, who see the plants in all their pristine beauty in their native habitats. We could excuse all this if they would also send with the plants a correct description of the position in which they were found growing, with the night and day temperatures as far as they can supply them. It would save much worry and needless expense if information of this kind was always forthcoming. I well remember trying to grow *Odontoglossum Roezli* in the cool house when it was first introduced, and after losing nearly half our plants—which cost a guinea each—the remainder were saved by placing them in the warmest house. Any *Odontoglossums* requiring repotting may now be attended to; but I may add that we have none so late in the season as May; all ours were potted in February and March. Any newly imported plants are potted at once into as small pots as the roots will go into, and they are not again repotted until the last-formed pseudo-bulbs have been matured, and the plant has once more started into growth. Some species very speedily show by their vigorous growth that they require plenty of pot-room. Such is *Maxillaria venusta*, a species that ought to be in every collection; it is a cheap Orchid, producing its beautiful, sweet-scented white flowers at mid-winter. I prefer it to *Lycaste Skinneri alba*. Small specimens in a few years grow into large, handsome masses, and it can be as easily divided as any common herbaceous plant. Another desirable winter-flowering plant is *Odontoglossum Edwardi*; it does not grow so very freely in some collections, but we have no trouble with it, treated exactly like *O. crispum*, and watered freely all the year round. *O. pardinum* is another disappointing species, but the best varieties when well grown are exceedingly showy plants. The colour of the flowers is a clear yellow. All the *Odontoglossums* requiring large supplies of water at the roots ought to be potted in good fibrous peat and Sphagnum, with plenty of potsherds mixed with them; and the pots should also be filled to half their depth with good drainage. The smaller growing species flowering at regular periods, such as *O. Rossi*, *O. Cervantesi*, *O. blandum*, *O. Ernesti*, &c., we re-pot in May, and place them near the glass roof, some of them being suspended in baskets close to the glass. This makes all the difference between success and failure sometimes. We have at the warmest end of the cool house a large group of *Masdevallias*, and among them a variety of *M. Harryana*. This particular variety did not succeed on the stage with the others; many of the young growths rotted off when they had pushed about an inch or so. A portion of the plants was suspended near the roof in Teak baskets, and these immediately improved in health—not a single growth damped off; whereas they still continue to do so on the stage. This is a simple cure for any refractory subjects that do not succeed well when placed amongst others on the stage. All the smaller species of *Masdevallias* are grown in that way, so also are the *Chimaphila* group, the latter being placed in Teak baskets for the better development of the flowers. If it is necessary to divide and re-pot any specimens at this season, break them up with the fingers in preference to using a knife. One good grower told me that *Masdevallias* failed to grow when a knife was used to

part a large specimen into smaller portions. The night temperature is now ranging between 15° and 50°, with a rise by day; with sun heat the temperature has run up to 75° with the shading down. When the temperature is high, sprinkling the paths and stages with water has an excellent effect on the health of the plants. The shading should be let down before the temperature rises to 70° in this house.

We will re-pot plants of various kinds in the Cattleya house whenever opportunity offers during the months of May and June. *Cymbidium eburneum* has now gone out of bloom, and every plant requiring re-potting will be seen to at once; we use for these and some others of this genus, good, fibrous, yellow loam, with the addition of leaf-mould and a little decayed manure. *Zygopetalum crinitum*, now growing freely, after flowering should also be re-potted in good peat and Sphagnum. Many species and varieties of *Cattleyas* may also be repotted, but not unless they really require it. Better err on the side of under than over-potting these plants. It is difficult to hit the exact requirements of *Cattleyas* as regards the quantity of water to be given to them. They must not be watered every day like the little *Platanos* suspended from the roof; even small plants do not require it oftener than twice in a week; we have large specimens which may not require water oftener than twice in a month. These remarks apply to established plants. The temperature is from 55° to 60° at night; by day, with sun heat, 80° to 85° is not too much. In fact, the plants do best with a high temperature and moist atmosphere by day, but the flowers do not last so well in it, and in order to keep up a good display we are tempted to maintain a lower temperature and drier atmosphere.

The East India house is kept about 5° higher, and a growing, moist atmosphere is maintained. The air of this house is laden with the perfume of the Rose-scented *Odontoglossum Roezli*. Summer-flowering *Cypripediums* are pushing up their flowers. We will pot during the month some of the *Angracums* and *Saccolabiums*, using Sphagnum Moss only. J. DOUGLAS.

CHRYSANTHEMUMS.

E. MOLYNEUX.

SINGLE VARIETIES.

GROWN in such a manner that the plants produce blooms in masses is the way this section shows to the best advantage. They flower profusely, the blooms lasting a long time either on the plants or in a cut state, and they do not require either so much space or so much pot room as do the larger kinds. They are extremely useful when grown to flower later than the ordinary kinds, and are well adapted for growing in a dwarf state for room decoration, or even as dinner-table plants they are appreciated by some, and the bright-coloured varieties make an agreeable change during the dull season of winter. The most effective method of cultivating them is growing the plants in bush form. Long spikes branching freely in a natural manner produce flowers in abundance, but where large individual blooms are required for exhibition—as they are when staged in bunches of three flowers of each kind—other means must be resorted to. I think the above way of staging the single varieties is not the best manner, as they are far better staged in bunches where all the flowers which grow upon each stem can be set up, thus showing how floriferous they are when properly cultivated; however, fashion decrees otherwise, the rage being all for size of individual blossoms. To have flowers in quantity the following details should be followed: Strike the cuttings in the ordinary way from the middle of January to the same time in February. When the plants are 4 inches high pinch them for the production of side branches,

shifting as required before they are at all root-bound. Keep them stocky in growth by standing the plants thinly, thus allowing a freer circulation of air amongst them, and keeping them as near the glass as possible. Remove them to cold frames as soon as circumstances will admit. Capital plants may be grown in 8-inch pots, but if extra large ones are wished for, 10-inch pots should be used. One topping is enough for some of the plants; while those required to be grown to a larger size to assist in the decoration of lofty conservatories should be topped again when the shoots are 5 inches long. Place them about the middle of May outside in an open, yet sheltered, position, and never allow them to suffer for want of water. Thoroughly syringe the foliage overhead on the evenings of fine days, thus rendering the leaves clean, and keeping them free from many kinds of insects which are apt to attack them. Whether the plants are intended for very large specimens or moderate-sized ones, the shoots resulting from the topping of the branches should be allowed to grow away at will, never thinning any out or dislodging any of the flowers, as the effect of such spikes laden with flowers must be seen to be realised. During the growing season supports of some kind should be fixed in the pots to prevent the branches from falling about. This is best done by placing in each pot three stakes in a triangular shape, attaching a piece of bast to each. This will answer well until growth is completed, when other stakes may be placed to the stems, spreading out the shoots to the best advantage. To have larger flowers suitable for exhibition stands the cuttings may be struck at the same time as advised for bush plants, but, instead of topping the plants at 4 inches high, allow them to grow with one stem uninterrupted until they break naturally into other growths. From three to five blooms on each shoot is a fair number, according to the size of the flowers of each kind. Those which are intended to produce the former number should at the first natural break be selected, rubbing out all remaining branches and subsequent growths, also the flower buds, which will again form at the point of each shoot, until the buds show which will be the best for the production of large blooms. This will take place during the end of August and the early part of September. Soil similar to that described in a previous issue should be used, and stimulants freely given when the pots are full of roots. After the central flowers are cut, others are produced by the side shoots in succession. House the plants in batches to prolong the display, and if some can be temporarily protected from frost before they are placed in the houses, the season will be much prolonged.

For the production of small plants suitable for vases, the following details should be observed. Plant old or young plants on an open space of ground; the former may be planted early in April, while the latter should not go out until about the middle of May, tying the stems firmly to stakes as they grow to prevent breakage by wind or other accident. Do not top the shoots, but allow them to grow uninterrupted; but in the case of the old plants thin the stems to six on each, and if more spring from the base remove them. Early in September when the bloom buds are forming, take off the points of the shoots about 8 inches long, inserting them in pots, five cuttings in a 4½ inch and nine in a 6 inch pot, using sandy soil with a free admixture of leaf mould, and give a good watering to settle them firmly in the soil. If the cuttings are not taken off the plants till the flower-buds attain a good size they do not root so quickly, and consequently the leaves

flag more when they are taken from the hotbed, for they require a gentle heat with shade to prevent loss of foliage. Sprinkle with tepid water every day in fine weather until they are rooted, then gradually harden off and place in a cool house as near to the glass as possible to keep them sturdy. Each plant will produce several flower-buds if the side ones are removed, retaining only the one at the extreme point of the shoot; this flower will be much larger than if all were allowed to grow.

The following varieties I find are first rate for the various purposes named: Helianthus, yellow, shaded with bronze, large flower. Crushed Strawberry is an excellent variety, having long, drooping florets of the true Japanese type. America has the largest florets of all the varieties, light pink, large, and of good form. Oriflamme, dark red, large blooms. White Perfection, as its name implies, is a pure white, medium in size, of good form. Patience, deep lilac, with fringed florets. Miss Gordon, light pink, having long, drooping, thread-like petals. The above are excellent for growing where large blooms are required for exhibition, while those named below are good for bush plant culture, producing blooms in quantity: Oscar Wilde, dull brick-red. White Perfection, Mrs. Wills, white. Mrs. Langtry—this is a gem, the colour light lilac, blooming most profusely, dwarf in habit, while the flowers have a powerful violet odour. Lady Brooke, bright yellow; small flowers of a buttercup shape. Nelly, light pink. Meteor, dark. Mrs. Dr. Duke, bluish. In addition, the above-mentioned varieties are also as good for this form of cultivation as for producing large blooms. The three kinds I will now name are the best for late flowering, lasting long after all others are over, therefore they are of much value: Elsie Maud, white, free-flowering; Miss Lulu Martin, small pink blossoms; Miss Rose, dwarf in habit, pink.

TRAINED SPECIMEN CHRYSANTHEMUMS.

THE method of growing trained specimen plants is not largely adopted for the reason that considerable space is required to house them, and much time is necessary to bring them to that state of perfection which will entitle them to the name of specimens. These trained specimens are not so useful as other styles of growth, because by removing any of the flowers from the plants their appearance is spoiled; still this way of growing Chrysanthemums finds many admirers. Exhibitions would lose much of their attractiveness if well-grown and skilfully trained plants were absent, as it often happens at some shows that the specimens are the leading features. There are two methods of producing specimens: one is growing them to a large size, say 5 feet in diameter, with 200 blooms, or sometimes more, on each plant—the plants trained in a Mushroom-like manner. The other is limiting the plants to about 3 feet in diameter, with from thirty to fifty blooms of high class merit, quality being the first consideration. Plants of the latter type are much more desirable than those grown for mere size, as the quality of the flowers must then be a secondary consideration. Medium-sized and not over-trained plants remarkable for large deep green foliage and grand blooms are the most meritorious. Plants intended for either system should at this period be furnished with from four to six stems, having been topped when 4 inches high, and again when additional branches have grown, consequent upon the pinching out of the points of the plants. The plants at this stage should have a position close to the glass in a cool house or a cold frame where a free circulation of air can be given, great care being used that they neither become pot-bound nor dry at the roots. Neglect of either at this time would cause a serious check to the plants, which might not be visible at once, but later on, a partial loss of the lower leaves would do much harm to the future

welfare of the specimens; therefore strict attention should be paid to all the details of culture, and at the proper time shift the plants into larger pots as necessary until the largest plants are in those of 12 inches in diameter, while weaker-growing kinds or those intended for the smallest class of specimens will do in pots 11 inches in diameter.

Chrysanthemums which have been planted at the base of bare walls, in order to cover them at the time and manner previously described, will now require attention in the matter of thinning out the young shoots, which generally spring from the base of old plants in numbers far in excess of what is needed. Neglect of this selection of the best stems renders all weakly by overcrowding, and where the wall is dwarf this is a serious mishap. Select four or six of the best on each plant, removing all the others.

E. M.

PROPAGATING.

JASMINES. None of the species of *Jasminum* are difficult plants to increase from cuttings, yet one or two matters require to be taken into consideration in order to ensure a reasonable measure of success in their propagation. Probably no *Jasminum* has attracted so much attention within the last few years as the beautiful sweet-scented *J. pubescens* or *gracillimum*, and this also merits note as being the easiest of them all to increase, for suckers are pushed up with considerable freedom, which may often be detached with a few roots; next, cuttings of the young shoots will strike if put in sandy soil and kept in a close case in the stove; while lastly, cuttings of the roots will grow under the same treatment. In mentioning cuttings of the young shoots I did not mean those that were still in a succulent condition, but rather just as that stage is passed, and the shoots commence to acquire a woody texture. In *Jasminum Sambac* and its double-flowered variety, the principal consideration is to select the right kind of cuttings, as if they show at all a tendency to flower, they will stand a long time without growing, even after they are rooted. Such being the case, it will be necessary to choose the growing shoots as cuttings, but they strike best if not too stout and vigorous. The same rule will apply to all the tender kinds, and regarding those that are hardy, the greatest interest is centred in the common white *Jasminum* and the beautiful golden spring-flowering *J. nudiflorum*, both of which can be increased by cuttings put in a cold frame at any time during the latter part of the summer, and kept close and shaded till rooted. Besides this, cuttings about a foot long can be inserted in a sheltered border about September. The cuttings should be buried in the ground for about three parts of their length, and the soil pressed down firmly, as a most critical ordeal for them are the drying winds of early spring. Both of these will also strike root from layers, and as their rambling habit often places a branch at disposal in a convenient position for layering, added to which larger plants can be produced than by means of cuttings, it is a method of increase that commends itself where but few plants are required.

DIPLODENIAS that have passed through the winter in a state of rest will be now in active growth, and when in that stage they may be readily propagated. The best cuttings are those formed of the growing shoots (not the most succulent, as they are liable to decay), and inserted singly in small pots. The advantage of putting such subjects in single pots is that some often take a longer time to root than others, and being each in a single pot, the rooted ones can be removed from the close case without disturbing those that have not yet reached that stage. A light soil largely composed of peat, leaf-mould, and sand is a very suitable compost for the cuttings, and before use it must be passed through a fine sieve. The pots used should be small, not more than a couple of inches in diameter, and drained by a few broken crocks, or, better still, pieces of charcoal. The pot being filled up with the above compost pressed down moderately firm, and finished off with a little pure sand on the top, is then ready for the cuttings, which should be pre-

pared by taking off just below a joint and removing the two bottom leaves. They must then be inserted up to the two next leaves, and where needful, secured to a small stake. After a thorough watering the pots must be placed in a close case in the stove, and being attended to in the matter of watering, shading, &c., can in about a fortnight be plunged in a gentle heat, when they soon root. A common error in watering cuttings when first put in is not to give them enough, for even in those that are liable to decay, a thorough watering may be given when first put in without in any way endangering the success of the operation. In the case of all cuttings by far the better way is to water them before placing them in the close propagating case, and it should be applied through a fine-rosed water-pot in such a way that not a cutting is disturbed, and yet sufficient quantity must be given to wash the sand on the top into a smooth unbroken surface.

COMBRETUM PURPUREUM.—This can be struck occasionally from cuttings of the young growing shoots, but they take a very long time to root, and failures are frequent. Such being the case, another method is usually employed for the increase of the *Combretum*, and that is by grafting portions of the branches on to pieces of the roots. In order to obtain roots large enough for stocks it will be necessary to take them from an established specimen, and, generally speaking, the best are furnished by one that has been planted out. A length of about a couple of inches is a very suitable one for the stocks, and the scion, which should be formed of a half-ripened shoot, may be fitted either in the wedge manner or by side grafting, but whichever is done great care must be taken to make the union as complete as possible, and the whole must be tied securely in position. After this they must be potted so that the point of union is below the surface of the soil, and then plunged in a gentle bottom heat in a close case, where they are to remain till a union takes place. During the interval considerable care must be exercised in watering, shading, and air giving, as the *Combretum* is in this stage rather a delicate subject to deal with. When they begin to grow air must be gradually given till the plants are inured to the atmosphere of the house, when they can be shifted on as required.

OLEA FRAGRANS.—This Olive, remarkable for the delicious fragrance of its blossoms, will strike fairly well from cuttings, but to get up a stock quickly, by far the better plan is to graft them on young vigorous stocks of the common Privet, with which they readily unite and form a lasting union. The stocks are best if established in small pots for the purpose, but if they are not at hand, young, clean plants can be carefully lifted from the open ground and potted. Side grafting is the method usually followed, but it matters little as long as the two portions fit well together. If possible a twig or two should be left on the plant above the graft to maintain a constant circulation of sap till a union takes place. After grafting the plants must be kept in a close frame, either with or without a little heat, till the scions commence to grow, when they should be at once hardened off. The hardy *Osmanthus* can also be propagated under exactly the same conditions, and using the same stocks as for the *Olea*. At the same time they will strike from cuttings, but, as in the case of the other, grafted plants make the quicker progress during their earlier stages. Standards of the *Osmanthus* may be formed by grafting them on tall, stout stems of the Privet. As they require to be kept close till a union is complete, the stocks, if too tall to stand upright in the frame, can be laid down, as this does not affect the progress of the union in any way, provided they are stood up and watered when necessary.

ANTHURIUMS.—The seeds of these take a long time to ripen, as those originating from the blooms that were fertilised last year are only now fit to gather. The small round fruits containing the seeds should be allowed to remain on till they turn red and are ready to drop, when they may be gathered and rubbed up with a little dry sand, in order to remove some of the glutinous substance in which the seeds are embedded. If laid on a shelf for a

little while they get dry enough to allow the sand to be separated from the seed, which will then be ready for sowing. The pots prepared for the reception of the seed must be well drained, and then filled to within half an inch of the top with a compost consisting of peat, chopped Sphagnum, and silver sand. After the seeds are sown they may be covered with pure silver sand and placed in a close propagating case, for a humid atmosphere is very necessary to their well doing. After germination takes place and the young plants are large enough to pot off, they should be put into small pots, using the same kind of soil, and after that returned to their same quarters, as they make much more rapid progress if kept close during their earlier stages. As division is so readily effected in the case of *A. Scherzerianum* and its varieties, seedlings are seldom raised; yet if needed they can be without difficulty, and young plants produced in this way will yield plenty of interest as the flowers expand. In the case of plants that are divided, they do much better if kept close for two or three weeks after that operation. T.

TREES AND SHRUBS.

W. GOLDRING.

THE WEYMOUTH PINE.

(*PINUS STROBUS*.)

THE history of cultivated trees in England commenced with the introduction of many of the finest forest trees of North America, and among these is the Weymouth Pine, or white Pine, as it is called by the American lumbermen. It has been in this country for upwards of 180 years, and as it has been extensively planted, it is a familiar tree in all parts of the country. It is quite as much at home as the Scotch Fir, Larch, or Spruce, and, like them, has become naturalised. But it has not been planted so largely as a timber tree as the Scotch Fir or Larch, as its timber is comparatively worthless, a singular fact, seeing that in America it is one of the staple woods of the country, and is, in



An old Weymouth Pine (*Pinus Strobus*).

fact, used more than any other Pine in the States, for, according to Michaux, the majority of the houses in the earlier towns of the Northern States were constructed of white Pine, so that it is remarkable that with us the timber is so inferior. But we have here to look upon it more as an ornamental tree, or at least its uses apart from its timber.

In the neighbourhood of old estates the Weymouth Pine is a familiar tree, as it used to be largely planted during the last century, for throughout the country its merits as a timber

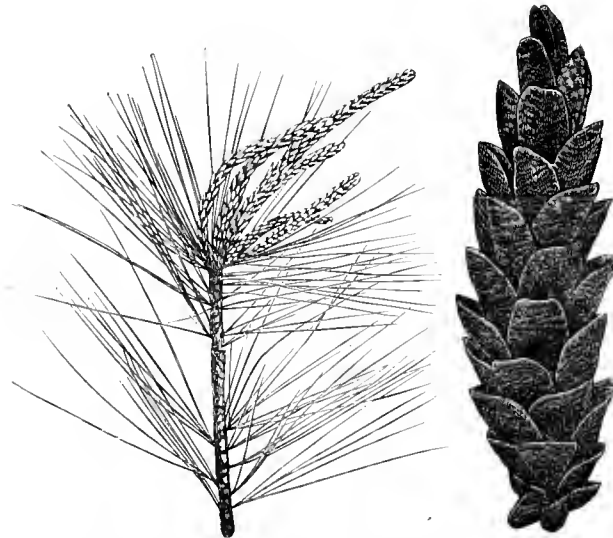
tree for shelter and for ornament were extolled, and in some estates, especially at Longleat, in Wiltshire, large plantations were formed of this tree alone; indeed, Lord Weymouth, who then owned Longleat, planted such large quantities of it that it has ever since been commonly known as the Weymouth Pine. It is a tree possessing considerable beauty both in its juvenile and adult stages. A young tree well developed and vigorous is admirable, its light feathery foliage being of that pale glaucous green tint which is only seen in the group of Pines to which *P. Strobus* belongs, and which includes *P. monticola*, *Lambertiana*, and *excelsa*. In fact, it is these that have in a great measure supplanted the Weymouth Pine in ornamental planting, as they are all newer introductions, though scarcely more beautiful and certainly not so hardy.

This Pine is not a tree for all soils and situations, as a number of other Pines are. It dislikes a bleak exposure, and a seaside exposure is fatal to it. It must have shelter to do well, such as that afforded by hills or plantations. Its favourite soil is a gravelly loam, though it grows freely on sandy gravel. Clay it

it grows to a height of 150 feet, with trunks as straight as ship masts.

The Weymouth Pine belongs to the *Strobus* section of the genus, all of which have five leaves in a sheath. The leaves are much shorter than those of its Himalayan congener, *P. excelsa*, but longer than those of *P. monticola*, which is another American Pine. The leaves and cone are well shown in the accompanying engravings, so that a description of them is scarcely necessary. It may be always recognised at a distance by its ashen-grey, smooth bark and its thin, feathery foliage. There are a few very distinct varieties of it, the most important being the dwarf form called *nana*, which is quite a pigmy, of globular outline, and very dense.

Robus deliciosus.—From the great beauty of this Rocky Mountain species of Bramble one would expect to find it in general cultivation. Such, however, is not the case, as not only is it a rare shrub in gardens, but it is by no means common in nurseries. This is not owing to the plant having been so recently introduced that a sufficient time has not elapsed to work up a stock, for it has been known for years, and though frequently noted in



The Weymouth Pine (*Pinus Strobus*); branch and cone (reduced size).

objects to, or, in fact, any kind of waterlogged soil. The heaviness or lightness of the soil is easily discernible where this Pine is planted. On heavy soils the growth is dense, while on light soils the foliage is comparatively scanty, and the branches and trunk more spindly. The accompanying illustration shows fairly well the appearance of the adult stage of the Weymouth Pine, the large tree being a portrait of one that grew in Studley Park, being at the time over 60 feet high. Large specimens of the Weymouth Pine are not uncommon, and probably the finest in Europe are those at Longleat, which were among the first planted in this country. There are several groups of magnificent trees still in the greatest vigour, some being nearly 100 feet high, and girthing as much as 8 feet in circumference. This, however, is not an extraordinary size considering that the trees were planted over a century ago. This Pine is, in fact, not a fast grower compared with most other Pines, its average rate of growth in this country not being much more than 1 foot a year.

In its native woods, which extend from Canada through the Eastern United States to Virginia,

THE GARDEN, its merits, generally speaking, seem to be ignored. This species of *Robus* is widely different from our common Brambles, for it forms a much-branched bush with lobed leaves, and is altogether devoid of spines; indeed, in general characters when out of flower it bears a certain resemblance to a Currant. The blooms are large, pure white in colour, and borne in such profusion that a specimen when seen at its best is one mass of white. With regard to its propagation, I have succeeded fairly well with this Bramble by taking cuttings of the growing shoots about midsummer and putting them under a hand-glass in sandy soil. Root cuttings, too, will often yield a few plants, and when once started they grow away quickly.—T.

Daphne Genkwa.—This differs very much from the other *Daphnes* in general appearance, and is at the same time of especial interest from its early flowering habit, blooming as it does in March or April before the expansion of the foliage. It forms rather a neat growing deciduous shrub, with deep green, lanceolate leaves and small clusters of flowers, which are disposed thickly along the still leafless branches. The individual blooms greatly resemble both in colour and shape those of a Lilac (*Syringa*) the tube being about half an inch long. It is fairly hardy around London, but, owing to its early blooming qualities, is seen at its best when treated as a

wall plant. It is a native of Japan, and was introduced by Fortune, but was apparently lost again till re-introduced into this country about twenty years ago through the Botanic Gardens, St. Petersburg, but its merits do not appear to have been recognised till within the last two or three years. A couple of years ago it was shown in such good condition at one of the spring meetings of the Royal Horticultural Society as to be awarded a first-class certificate.—T.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL.

APRIL 26.

THE meeting of the fruit and floral committees was held in the conservatory, and was rendered very attractive by the fine groups of Roses in pots, collections of Orchids and hardy flowers, and also by the fine display made by the southern section of the National Auricula Society, who also held their show on this occasion.

First-class certificates were awarded to the following, viz. :—

Primula obtusifolia Gammiciana, exhibited by Mr. J. Douglas, Great Gearies, Ilford.

Narcissus Johnstoni, from Messrs. Barr and Sons, King Street, Covent Garden.

Trillium sessile californicum, from the New Plant and Bulb Company, Colchester.

Primrose Mrs. Wilson, exhibited by Mr. G. F. Wilson, Weybridge.

Odontoglossum vexillarium leucoglossum, from Mr. Tautz, Hammersmith.

Odontoglossum Cambridgeanum, sent by Mr. R. J. Measures, Cambridge Lodge, Camberwell.

Amaryllis Ambient, from Messrs. Veitch and Sons, King's Road, Chelsea.

A fine group of dwarf-trained Roses in pots was exhibited by Messrs. Lane and Sons, Berkhamstead. These were excellent, the most notable being Étienne Levet, Royal Standard, Fisher Holmes, John Keynes, Mme. Victor Verdier, Richard Wallace, La Rosière, Ed. Morren, and Hippolyte Jamain. A silver-gilt Banksian medal was awarded.

Groups of Roses, consisting of standards and dwarfs, also cut blooms, were sent by Mr. Rumsey, Joyning's Nursery, Waltham Cross; and also by Messrs. Paul and Sons, Cheshunt, each of whom received a silver-gilt Banksian medal.

Cut Roses were staged by Mr. Walker, Thame, Oxford, amongst which a box of *Maréchal Niel* were conspicuous for size and colour. A similar box of *Niphotos* were remarkable for their size and purity. A silver Banksian medal was awarded.

Rhododendrons were shown by Messrs. Lane and Sons, and the group deservedly received a silver Banksian medal.

Among the Orchids shown upon this occasion were *Oncidium macranthum lamelligerum*, from Mr. R. J. Measures, of Camberwell. This is said to be a natural hybrid between *O. macranthum* and *O. serratum*. The flowers are of a bronzy hue, the upper portions of the petals being yellow. From the same exhibitor came a beautiful group of *Trichopilia*, amongst which were *T. lepida rosea*, *suavis*, and *suavis alba*, also a very fine hybrid *Odontoglossum* called *Cambridgeanum*. It had somewhat the appearance of a cross between *O. Halli* and *crispum*; the flowers are large, sepals and petals rich deep chocolate, lip large and flat, cordate, apiculate, white with a large blotch of reddish crimson at the base, the crest deeply fringed.

The same exhibitor also sent cut blooms of the rare and beautiful *Cypripedium Wallisi*, a species belonging to the caudatum group, introduced from Ecuador; the sepals are light canary yellow, petals very long, slightly duller in colour, pouch large, fawn colour on the outside, profusely spotted within with dull crimson; mouth of the pouch milk-white with a continuous border of crimson.

Mr. Smee, of The Grange, Wallington, sent *Phala-*

nopsis Sanderiana alba, which much resembled *P. amabilis* in general appearance.

Messrs. Shuttleworth and Garder, Clapham Park Nurseries, sent a fine specimen of the rare and little-known *Cymbidium tigrinum*, bearing fifteen handsome flowers.

Mr. Bond, Elstead House Gardens, Godalming, staged a group of *Cattleya Mossia* in bloom, also cut flowers of *C. Mendeli* and a hybrid *Odontoglossum crispum*, the ground colour yellow, blotched with chocolate.

Mr. Tautz, Studley House, Hammersmith, sent a pretty group comprising *Odontoglossum radiatum*, a fine spotted form of *O. crispum*, *Dendrobium Wardianum candidissimum*, *Cattleya Lawrenceana*, *Odontoglossum vexillarium leucoglossum*, &c. The New Plant and Bulb Company, Colchester, contributed a plant of *Cattleya Trianae Schroederae*.

Amaryllids were staged by Messrs. Veitch and Sons, of Chelsea, and Messrs. Paul and Sons, the Old Nurseries, Cheshunt. In Messrs. Veitch's collection we noted *Credo*, a deep crimson flower, shaded violet, white star; *Ambient*, vivid crimson-scarlet, good shape and substance; *Czarina*, white, beautifully flaked and tinged with magenta-rose; *Endymion*, deep crimson, shaded purplish violet, flaked with white.

Groups of *Narcissi* were contributed by Messrs. Barr and Sons, King Street, Covent Garden, Messrs. Collins and Gabriel, Waterloo Road, and by Mr. Ware, of Tottenham. These were all very handsome groups, less crowded than is usually the case, and being arranged with their own leaves were very pleasing. A silver Banksian medal was awarded to each. Another handsome group was shown by Mr. James Walker, Whitten, Middlesex, for which also a silver Banksian medal was awarded.

Alpines were exhibited by Messrs. Paul and Sons, the Old Nurseries, Cheshunt. This was a remarkably fine group, amongst which we noted *Soldanella minima*, *Anemone Robinsoniana*, *Pulmonaria dahurica*, *Sanguinaria canadensis*, *Ranunculus crenatus*, *Aubrietia tauricola*, *Draba brunkifolia*, *Saxifragas arctioides alba* and *præcox*, *Houstonia cærulea alba* and *serpyllifolia*, *Dentaria polyphylla*, *Alyssum podolicum*, *Erythronium americanum*, *Androsace Chamæjasme*, *Primulas*, *Doronicums*, *Narcissi*, *Violas*, *Calthas*, *Muscari*, and other hardy gems. These were awarded a silver Banksian medal. A group of alpines also came from Mr. T. Ware, Hale Farm Nurseries, Tottenham, to which a similar award was given.

A group of *Primulas* also came from the Royal Gardens, Kew, containing many beautiful and interesting species, amongst which the following were conspicuous: *P. rosea*, *verticillata*, *Balbisii*, *specabilis*, *japonica*, *obconica*, *denticulata*, *hirsuta*, *intermedia*, *ciliata*, *Balfourii*, *Palinuri*, *viscosa*, *biflora*, &c. A silver Banksian medal was awarded. Primroses were sent by Mr. A. Waterer, Knap Hill Nurseries, Woking, and were awarded a bronze Banksian medal. They consisted of a rich and varied collection of coloured forms of the common *Primrose*.

Mr. R. Dean sent *Viola Miss Barron*, a tufted Pansy with creamy white flowers, with a few streaks of purple round the small yellow eye.

Mr. Owen, nurseryman, Hartford, Cheshire, staged *Polyanthus Queen Victoria*, a double-flowered kind, crimson with gold keeing.

Mr. Millar, Southdown Nursery, Shoreham, sent a large tray of a variety of *Myosotis dissitiflora*, which appeared very compact in growth, whilst the flowers were large and conspicuous.

Mr. Wilson, Heatherbank, Weybridge, sent *Primula Mrs. Wilson*, a variety with rich purplish violet flowers having a yellow eye; and a little miniature species named *P. Pylabra*, which resembled a very minute plant of *P. denticulata*.

From the New Plant and Bulb Company came *Trillium sessile californicum*, a plant with marbled foliage, bearing large handsome white flowers, stained at the base with crimson.

Primula Kingi, sent by Messrs. Veitch and Sons, Chelsea, is a variety with pendulous yellow flowers, the calyx being slightly farinose. A plant very

similar, if not identical, was exhibited by Mr. J. Douglas under the name of *P. reticulata*. It is said to grow naturally in wet rocky places in Northern India, at some 11,000 feet elevation. Mr. Douglas also staged the beautiful *P. obtusifolia Gammiciana*.

Messrs. Standish and Co., nurserymen, Ascot, staged a large and handsome group of *Erica Wilmoreana*. The plants were well grown and profusely bloomed, amply illustrating the value of this kind for early spring use.

Mr. Bannister, Westbury-on-Trym, exhibited a new white-flowered Mignonette, named *White Perfection*, apparently robust in habit, with very large white fragrant blooms.

Mr. Chambers, of Isleworth, again sent his very fragrant dark blue double-flowered *Violet Queen Victoria*.

Fruit committee. Apples were sent by Messrs. Cheal and Sons, Lowfield Nursery, Crawley, Sussex. The collection comprised sixty dishes, amongst which we noted the following as being in excellent condition: London Pippin, Beauty of Kent, Lane's Prince Albert, Golden Reinette, Winter Peach, Galloway, Lord Derby, Wellington, King of the Pippins, Gloria Mundi, Hereford Pearmain, Reinette du Canada, Blenheim Orange, Tower of Glamis, Ribston Pippin, Golden Mundi, Cox's Orange Pippin, and Emperor Alexander. They were awarded a silver Banksian medal for the collection. Mr. A. Smee, The Grange, Wallington, Surrey, sent fifty dishes of Apples, all sound and bright, the most notable being Henry Moming, Wallington Beauty, Duck's-bill, Winter Coleman, Omar Pasha, Lane's Prince Albert, Cox's Pomona, Dumelow's Seedling, Orange Goff, Beauty of Kent, Blenheim Orange, Winter Pearmain, Fall Pippin, Lady Hayes, Cellini Pippin, Cove Pippin, and London Pippin. A silver Banksian medal was awarded. Mr. Mundell, Moor Park Gardens, Rickmansworth, staged a collection of twenty-eight dishes; and Mr. Divers, Wierton House Gardens, also contributed a collection of twelve dishes; these were also in excellent condition, and for the most part consisted of the kinds enumerated above.

NATIONAL AURICULA AND PRIMULA SOCIETY (SOUTHERN SECTION).

THE annual exhibition of this society took place in connection with the meeting of the Royal Horticultural Society on Tuesday last. The Auricula being a flower that is grown only by a few for exhibition purposes, the number of exhibitors is necessarily limited, and it seemed as if they were fewer than usual on this occasion; had not several growers come up from the north, the exhibition of southern-grown flowers would have been a comparatively poor one. The Rev. Mr. Horner brought from his northern home, as usual, flowers of excellent character, but, as a rule, they appeared somewhat rough and lacked that smoothness and symmetry which constitute high quality in this flower. Perhaps some of the plants are grown too strongly to be consistent with quality in the flowers; at the same time, if trusses of eight to ten pips are to be had, high culture is necessary to produce this. The season proved a very trying one, being cold, changeable, and retarding, and advantage had to be taken of artificial warmth to get the trusses developed in time for the show. The growers did their best, but they had a stiff battle with adverse influences.

SHOW AURICULAS. In the class for twelve varieties of show Auriculas, the Rev. F. D. Horner, Lowfield, Kirkby Lonsdale, was an easy first, having in the main flowers of his own raising. Of green-edged varieties he had *Ivy Green*, *Merlin*, and the Rev. F. D. Horner; of grey-edged flowers, *George Lightbody*, *Fairy Ring*—a fine and promising flower—and *Candida*; white-edged, *Magpie* and *John Simonite*; selfs, *Heroine*, *Dulcic*, *Rubra*, and Mr. Douglas. Mr. J. Douglas, Great Gearies, Ilford, came second, but a certain amount of roughness and over-development appeared to characterise several of his varieties. He had, of green-edged flowers, *Abbé Lizet* and *Prince of Greens*; grey-edged, *George Lightbody*, *Mabel*, *Sylvia*, and Mr. Moore; white-edged, *Marmion*, *Dr. Kidd*, and *John Simonite*;

sels, Negro, Sir William Howett, and a shaded purple flower unnamed; third, Mr. W. Bolton, Warrington. Two other prizes were awarded. Mr. Horner also had the best six plants, staging of green-edged the Rev. F. D. Horner; grey-edged, Grayling and George Lightbody; white-edged, Miranda; sels, Heroine and Kathleen; second, Mr. H. W. White, Killingworth, Newcastle-on-Tyne, who had of green edges, Prince of Greens (perhaps as fine as ever it was shown) and the Rev. F. D. Horner; grey-edged, Luna and George Lightbody; white-edged, Beauty; self, Mrs. Douglas; third, Mr. F. Pohlmann, Halifax. Mr. A. Potts, Hoole Hall, Chester, had the best four plants, staging good examples of the Rev. F. D. Horner (green), George Lightbody (grey), Mrs. Dodwell (white), and Mrs. Douglas (self); second, Mr. S. Barlow, Stakehill, Manchester, with Miller's Green (green), George Lightbody (grey), Acme (white), and Carbuncle (self); third, Mr. W. L. Walker, Barley, Reading. Mr. A. Potts also had the best two specimens in the Rev. F. D. Horner and John Simonite; Mr. Barlow being second with George Lightbody and Black Knight; third, Mr. A. Spurling, The Nest, Blackheath.

Single plants of Auriculas were scarcely so numerous as usual. The best green-edged flowers given in the order of merit were Prince of Greens, Rev. F. D. Horner, Lancashire Hero and New Green. The best grey-edged were Florence (Douglas), Richard Hoadly, George Lightbody, and Silvia. The best white-edged—Acme, Beauty, Luna (Horner), John Simonite, and Conservative. The best sels—Sir William Hewitt, Heroine, Pizarro, Mrs. Douglas, Ellen Lancaster, Lord of Lorne, and Loveliness (Barlow).

In the class for fifty plants, one which is imposing from the number staged, but in which the inferior rather than the best flowers find a place, Mr. J. Douglas was first, and his group contained the following: Green-edged—Abbé Lizst, Verdure, Campbell's Green, and Prince of Greens. Grey-edged—Marmion, Frank Simonite, John Waterson, Mabel, Richard Hoadly, Jumbo, Dr. Horner, Ajax, and Alexander Meiklejohn. White-edged—Acme, Smiling Beauty, Beauty, Sophie Dumaresque, Conservative, and Dr. Kidd. Sels—Teresia, Pizarro, Dignity, Vulean, and Sir Lancelot. Second, Mr. C. Turner, with green-edged—Mrs. Batcher, Mrs. Knighton, Duke of Wellington, and General Havelock. Grey-edged—Colonel Champeys, C. E. Brown, Dr. Horner, Robert Trail, Competitor and Frank Simonite. White-edged—Beauty, Acme and John Waterson. Sels—Vulean, Bacchus, C. J. Perry, Meteor Flag, Lord of Lorne and Clipper.

The trustees of the Turner memorial offered prizes for six show Auriculas, open only to amateurs, and here Mr. W. Bolton was first with Prince of Greens, Rev. F. D. Horner, Lancashire Hero, Reliance, John Simonite, and Mrs. Douglas; second, Mr. T. E. Henwood, Reading, with Lancashire Hero, Rev. F. D. Horner, George Lightbody, Conservative, Black Bess and Pizarro; third, Mr. C. Phillips.

Prizes were also offered for seedling Auriculas, and in the class for green-edged flowers Mr. Bolton was first with James Douglas, and the Rev. F. D. Horner second with Conquest. Grey-edged—first, Mr. Bolton, with Samuel Barlow; second, Mr. S. Barlow, with Grey Friar. White-edged—first, the Rev. F. D. Horner, with Amanda. Sels—first, Mr. J. Douglas, with Perfection; second, the Rev. F. D. Horner, with Red Rover.

The premier show Auricula, selected from the whole show, was a very fine Prince of Greens, shown by Mr. H. W. White, in his second prize lot of six plants.

ALPINE AURICULAS.—These were somewhat numerous shown, but they lacked the finish and brightness usually seen in this class. Mr. C. Turner had the best twelve, staging Mrs. Llewellyn, Eclipse, Wrestler, Sceptre, Mungo, McGeorge, Garnet, Faust, Sunrise, Sir H. Darvill, Symmetry, Lady H. Grosvenor, and Edith. Second, Mr. James Douglas, with Unique, Love Bird, King of the Belgians, Princess of Waldeck, Rosamund Fellowes, Elvina, Lady H. de Walden, Queen Victoria and seedlings. Mr. C. Turner also had the best six, staging Mungo,

McGeorge, Unique, Sunrise, Symmetry, Acquisition, and Olympia. Second, Mr. J. Douglas, with Diadem, Unique, Love Bird, Princess of Waldeck, Ada, and Lady H. de Walden. Third, Mr. A. Spurling. The best four came from Mr. S. Barlow, who had three of his own raising, viz., Velvet Fife, Polly and Charley, and Mrs. Meiklejohn. Second, Mr. F. Pohlmann, with four pretty faced varieties. Third, Mr. T. E. Henwood. Then followed prizes for the best single specimens, gold centres: first, Mr. C. Turner, with Sunrise, and second, Lady H. Grosvenor; third, Mr. Pohlmann, with Emir; fourth, Mr. Douglas, with Love Bird. White centres: First, Mr. C. Turner, with Lady H. Crowe; second and third, Mr. J. Douglas, with Ada and Queen Victoria; fourth, Mr. C. Turner, with Florence. The best seedling golden centred flower was Charles Needham, from Mr. S. Barlow; Mr. C. Turner coming second with Sunrise. The best white-centred flower was Lady H. Crowe, from Mr. C. Turner; Mr. Douglas being second with Ada.

POLYANTHUSES, GOLD-LACED.—Some choice varieties in excellent character were shown by Mr. S. Barlow, of Manchester, who was first with six plants, having George the Fourth, Exile, Cheshire Favourite, Prince Regent, Lancer, and Sunrise. Second, Mr. J. Douglas, with Exile, Formosa, Prince Regent, William the Fourth, Lancer, and George the Fourth. Mr. Barlow also had the best three plants, viz., Sunrise, Prince Regent, and Exile; second, Mr. W. Bolton, with Exile, Cheshire Favourite, and Prince Regent. The best specimen was Naxara, from Mr. J. Douglas; second, Mr. Barlow, with Exile, and third, with Cheshire Favourite.

FANCY POLYANTHUSES.—These, though well shown by Mr. B. Dean, Ealing, who was placed first with twelve fine plants, were, owing to the lateness of the season, not up to the usual mark; Mr. Douglas was a good second.

SINGLE PRIMROSES.—These were very bright. Mr. R. Dean being first with a fine bright lot; Mr. J. Douglas being second, and Messrs. Paul and Son third.

DOUBLE PRIMROSES.—Messrs. Paul and Son were the only exhibitors of these, having large and striking pans of Crossii, platypetala plena, Harlequin, purple, sulphur, and white; second, Mr. H. S. Leonard, St. Catherine's, Guildford, with white, old velvet crimson, platypetala plena, purple, crimson-purple, and Crossii.

SPECIES OF PRIMULAS.—The best collection of twelve came from Mr. J. Douglas, who had a good representative lot, consisting of *P. Sieboldi* lilacina, obconica verticillata, rosea, denticulata, nivea, pubescens, villosa, marginata, ciliata, intermedia, and ciliata coccinea; second, Messrs. Paul and Son, with *P. sinensis*, ciliata purpurea, nivea, auriculata, denticulata, &c. Mr. S. Barlow had the best six, setting up *P. obconica*, denticulata, intermedia, rosea, viscosa, and nivea.

First-class certificates of merit were awarded to the following show Auriculas, all of a very fine and promising character: Amanda (Horner), Samuel Barlow (Bolton), James Douglas (Bolton), Sir William Hewitt (Douglas), Magpie (Horner), Dulcie (Horner), Grayling (Horner), Edward Pohlmann (Turner), Rubra (Horner), and Abbé Lizst (Douglas).

NARCISSUS COMMITTEE.

A MEETING of the committee was held at South Kensington on Tuesday, April 26, when a number of specimens were submitted. The chief interest lay in the following:

Mr. Maw showed the flowering scape (dried) of *N. tazetta* papyraceus, which he had found south of Tangiers, and which was considerably over 2 feet in length; also a collection of the different typical forms of British pseudo-Narcissus for comparison.

Mr. Wolley Dod sent Portuguese forms, supposed hybrids between triandrus and pseudo-Narcissus, bearing a remarkable resemblance to Johnstoni.

Mr. Kendall brought a very fine seedling from Emperor, similar in form, but of a citron colour; a bold flower, of good substance. It was resolved to register it as The Czar. Other good seedlings the

committee desired to see again; and a pseudo-Narcissus (? hybrid) of very perfect form, always quite constant, was registered as Vicar of Lulworth.

Mr. Corder sent flowers of Portuguese varieties collected last year; and Mr. Threlfall showed dried flowers of a *Tazetta* he had received from the Canary Islands. Flowers of Johnstoni were received from several sources.

A number of the older and better-known varieties were considered, and it was resolved to register the following: Emperor, J. B. M. Camm, Horsfield, Empress, Sir Watkin, C. J. Backhouse, Princess Mary, Minnie Hume, Beatrice, Mary Anderson (Leeds), Gem (Barri), conspicuous.

Attention was drawn in a communication from Mr. Wolley Dod to a disease to which Daffodils are subject, and which was very prevalent in his garden this year. The Daffodil comes up weakly at the end of winter, the green leaves soon become brown at the points, and their growth is arrested. When dug up the bulb is found soft and rootless. It generally attacks whole clumps, by which it would seem to be contagious; the germs are in the bulbs the previous summer, for clumps that have been divided in July and replanted in different soils have all shown the disease in the following spring. It did not appear to be attributable to frost nor to imperfect maturing, for in the wetter and more sunless parts of the garden, where the leaves of Daffodils remain green almost till it is time for them to start again, no signs were seen of it.

Many members of the committee stated that they had found this disease especially prevalent this year; all classes of Daffodils seem to have been attacked alike, and not only those of more delicate constitution. Mr. Wilks had suffered chiefly in the wetter parts of his garden, but he thought it had arisen from too heavy or too fresh a dressing of manure. Observation is specially requested to this disease, and the committee will be glad to receive intimation of any facts bearing on the question of its origin. C. R. SCRASE-DICKINS, *Hon. Sec.*

The Matrix Draught and Dust Excluder.

Will you allow me to draw your attention to the accompanying matter, which I venture to think, you will consider of public interest, seeing the admitted difficulty all householders experience in finding a reliable means of freeing themselves from troublesome and dangerous draughts from doors, windows, and other crevices. The Matrix Excluder is on an entirely fresh principle, and I am encouraged to place it before the public, because I consider that the excluder fulfils perfectly all the requirements for the purpose, and is the first thing introduced which has done so. If you will try the sample on any door or window I believe you will be pleased with it. T. J. PORTER.

** We have received from Mr. T. J. Porter, of Fleetwood, a sample of his Matrix Draught and Dust Excluder, and have submitted it to our architect, Mr. William Simmons, of 92, Long Acre, who reports it admirably adapted for the purpose intended, but adds that in an intelligently warmed and ventilated house there can be no objectionable draughts, however ill-fitting the joinery may be.—Ed.

Names of plants.—*J. I. M.*—*Narcissus spurius*.—*Bolton*.—*Forsythia virens*.—*J. B. I. of B.*—The common Snake's-head (*Fritillaria Meleagris*).—*J. C. M.*—*L. Oncidium barbatum*; 2, probably *O. barbatum*.—*J. H.*—*Nottolophium*.—1, *Oncidium cucullatum*; 2, *Cypripedium ciliolare*; 3, *Odontoglossum cirrhosum*; 4, *O. tleya* Mossie.—*Fraser*.—1, *Cypripedium Boxalli*; 2, *Cymbidium lowianum*; 3, *Dendrobium lituiflorum*; 4, *D. Woodianum*; 5, *D. crassinode*; 6, *D. primulum*.—*Apha*.—1, *Pellaea Colchetonis*; 2, *P. cordata*; 3, *Lomaria Patersoni*; 4, *Sitotilobium adiantoides*; 5, *Feca spicata*.—*R. A. Arthur*.—1, probably a *Lactigata* form of *Thunbergia gigantea*; 2, *Abies balsamea*; 3, *Epidendrum album*; 4, *E. vulgatum*; 5, *E. punctatum*; 6, *E. Muschianum*; 7, *Tillandsia umbrosa*.—*J. R. S.*—1, *Catantopium gnominum*; 2, *Lycaste plana*; 3, *Zygopetalum maxillare*.—*T. B. Z.*—1, *Adiantum delabarrierei*; 2, *Humata pelata*; 3, *H. heterophylla*; 4, *Nephrodium Hookeri*.—*H. R.*—*Noveborac*.—1, *Boerhaavia megastigma*; 2, *B. elatior*; 3, *Epacris pulchella*.—*G. G.*—1, *Odontoglossum citrinum* roseum, good variety; 2, *Masdevallia ignea*; 3, *M. bogolyubskii*; 4, *Odontoglossum inter-papuanum*.—*Flores*.—1, *Elaphoglossum plicifolium*; 2, *Colysis membranacea*; 3, *Phymatodes pustulata*.—*Z. B. D.*—*Clivia ternata* (Mexican Orange lily).

WOODS & FORESTS.

"YORKSHIREMAN."

MISMANAGED TREES.

As "B. T." (p. 386) speaks of "extensive tracts of land throughout the country," and goes on to speak of "all such cases as those in question," I apprehend him to advocate the "trenching 2 feet deep" of the said extensive tracts if the preparation of the land is to "be of a nature to give a reasonable chance for the well-doing of the trees after they have been planted." If this interpretation is correct, I dispute it *in toto*, and I would only recommend "B. T." to go to the nearest wood planted on the natural soil without any trenching to see how far wrong he is. I do not dispute that a young plantation will make perhaps the best start in newly trenched ground, but the cost is out of all proportion to the return that may be expected even by the most sanguine, and the advantage is only temporary, as the tree gets hold of the subsoil very soon below the trenching line. Moreover, what is added to any soil by trenching at 2 feet deep, manure being out of the question? Answer, nothing. The hard crust is broken up a little deeper; that is all; nothing is added. I could show thousands of marvellous examples, all tending to show the uselessness of trenching, and on very dry bottoms, too. "B. T." himself quotes examples proving that "deep down where the principal feeding roots exist" the roots are quite beyond the advantage of the 2-feet trenching, and then, forgetting this, goes on soon after to tell us that the said trenching is indispensable. It is this kind of ill-digested writing that misleads people. Do not trench for timber trees if you expect any return for your labour and planting. In past times, and lately here, tracts have been planted successfully where the soil was apparently so thin and rocky, that it cost as much to make the pits for planting as would in some places cost for buying, pitting, planting and all together. Yet the trees have done well and will produce good timber in time, as they have done before in the same places.

"B. T." says that the want of thinning makes the trees grow like a plantation of "clothes props." There could not be a better sign of good management. The trees must have top room, of course, to produce the thickness of trunk required, but the nearer they approach the shape of clothes props the better for those who have to sell them, as such trees are worth from ten to twenty per cent. more than any other.

"B. T.'s" alleged robbing the soil of its moisture by having too many trees upon it does not amount to much, as I am pretty sure no plantations are killed or much injured in this country for want of moisture at the root. It does no good to invent possible causes of mischief; let us see them. Besides, if thick planting robs the soil of the moisture, how is it going to be helped if the trees left are sufficient to take up the ground that is cleared and absorb the same quantity of moisture as the thicker plantations of smaller trees would have done?

Rings in trees and in the trade.—I trust "Yorkshireman" and other experienced foresters will continue to favour your readers with their experience on both subjects. Possibly the rings in the trade are the more difficult to deal with. That they exist no one of wide experience can doubt. They are not only felt at sales, but in some private contracts. The timber trade in many localities is so limited as almost to be a close corporation. Frequently one man dominates a county or district,

and it is seldom that the influential factors of it exceed half-a-dozen. Tacit understandings about prices are therefore easily arrived at and as easily enforced. No one can urge very valid reasons against tacit understandings, but the modes of controlling prices are sometimes most objectionable. They are also said to be unlawful, but I have never met with any statute that expressly forbids one or more purchasing for the many at auctions, and arrangements being made afterwards for a virtual re-sale among the members of the ring at prices, thus beaten down by an unfair monopoly in buying. Similar tactics are at times adopted in sales by private contract. The writer had some valuable timber to offer this winter. An offer was made by a large merchant, being preposterously under value. For several days the same offer, with the slightest possible variation, was made from several quarters. At first blush this appeared almost conclusive of the reasonableness of the first offer. Unfortunately, however, from this view of the matter, abundant evidence was forthcoming that the several offers were merely rebounds of the first. An underground railway of woodmen, haulers, &c., seems to exist in some neighbourhoods, whose interest, it seems, is to depreciate the value of timber. Sellers for these and other reasons can hardly be too reticent and prudent about prices, values, &c. Of course there are timber merchants far above these questionable tricks of the trade, and when the seller meets with such he should sell to them at reasonable prices and stick to them. But unfortunately, members of the rings will occasionally far out-bid these at times, and for special and what seems inscrutable purposes, I have even seen honest buyers driven off the field by mere speculative bidding for a time, until the speculators had it all their own way towards the close of the sale. Shrewd auctioneers, who know their men, can do much to check the evils of rings. But on the whole, timber is most profitably sold to honest merchant-by private contract, a mode of selling that if generally adopted would speedily break up the rings in the trade, and ensure fair profits alike for seller and purchaser. Reports that have reached me from the "Golden Crown" as to the second sales of some timber rings reflect most severely on some portions of the trade, and ought to be rendered impossible in the future. CALEDONICUS.

THE CLUSTER PINE.

(PINUS PINASTER.)

THE rugged grandeur of a well-grown specimen of the above Pine was never more forcibly brought home to me than a few days ago when paying a short visit to the old Roman villa at Caerhun—a charming spot pleasantly situated on a rocky eminence in the vale of the Conway. Often enough do we hear the Cluster Pine spoken of as an excellent tree for planting in exposed seaside situations, even in poor, drifting sands, and a capital subject it is for such places, but far more rarely, indeed, is it mentioned as a fitting Pine for the ornamentation of our parks and lawns. That it is, however, admirably adapted for such places is beyond doubt, its tall, massive, and rugged stem, its far-spreading, flatly-rounded head, and refreshing light green foliage, which contrasts so markedly with the numerous clusters of terra-cotta coloured cones, all combining to impart an air of massive grandeur that is, I think, hardly surpassed by any member of the family to which it belongs.

But, apart altogether from its ornamental qualities, this Pine is peculiarly adapted for planting in even the most exposed parts of our wind-swept isle, a statement the truth of which can be well borne out by the numerous fine trees which exist all along the coast from the most northerly point of Scotland, where it hardly raises its head 12 feet in height, to the more genial surroundings of Southern England, where specimens 70 feet high are not at all uncommon.

It has been used with the most satisfactory results for the double purpose of binding the shifting sands on the sea-coast and reclaiming vast tracts of maritime lands from sterility, uses for which it is peculiarly well adapted, as it will grow and attain to a large size, down even to high water mark, and where exposed to the most keen and

searching winds, and where the roots have nothing to wander amongst save vast banks of sand. On the sandy shores of the Bay of Biscay, the Landes of France, as well as in Scotland and England, the Cluster Pine has been turned to good account, and now covers vast tracts of ground that previous to planting were but dreary and monotonous stretches of worthless, shifting sands. No other tree is so well adapted for binding these sands and rendering them fertile as the one in question, and no other tree affords such an amount of shelter or is so peculiarly fitted for withstanding the almost constant hard-blowing gales of our coast lines.

Strange to say, the Pinaster is not a satisfactory tree for planting far inland; indeed, in order to ensure satisfactory growth it requires a hot climate and deep sand, no matter how barren this latter, so as to allow of the free penetration of its long tap root, which, more than of any other Pine, is a marked characteristic of the one in question. The lateral roots are not at all abundant and of weak growth, even they having the inclination to emit miniature tap roots rather than the fibrous-spreading ones that tree planters place so much dependence on for safety and ease in removal. We have tried for years to get home-raised seedlings of the Pinaster to produce bushy, fibrous roots, but all to no purpose, annual transplanting and the best of management otherwise being found of little avail in furthering such an object. Staking, and that of the firmest description, must be resorted to when a specimen of the Pinaster is placed *in situ*, and not only must this be performed when the young tree is planted out, but in our own case we have had to pay strict attention to the same for upwards of a dozen years afterwards. On the lawn at Penrhyn Castle, where the south-western wind blows almost unchecked, a number of these trees, in conjunction with *P. Laricio*, were planted thirteen years ago, and the amount of trouble the Pinaster has given to keep it on its feet is simply surprising, and contrasts strangely with the sure-footed *Laricio* that has received no attention, save, indeed, the commonly used wooden stake placed alongside at time of planting, and to which the stem was tied. In contradistinction to this, the specimens of Pinaster had each three strong wires placed at angles around the stem and firmly fastened to stout stakes driven into the ground at a distance of 6 feet from the same. Sure as we generally consider this method of mooring trees, yet it was not sufficient, the dense, heavy head and few roots acting as powerful motors in rendering such a practice of staking or staying as not to be fully relied upon. To-day I have been examining the roots of a number of these trees in the home nursery here that were raised from seeds saved on the estate, and found that even in the hard soil where they grow the long tap-root and its usually three minor brethren strike down almost perpendicularly to a great depth, those of 2-feet high plants having succeeded in finding their way for fully 18 inches into the hard soil, and those of 1 foot for fully 2 feet in depth. Now, in lifting such specimens for final planting out, it is well-nigh impossible to do so without injuring these long, though stout, roots, and if this is done a considerable time elapses before side roots are emitted to take their place. Even could the plants be successfully lifted with their 6-foot or 9-foot long roots, another difficulty immediately presents itself as to how to place these roots when planting the tree, for it is no easy task, if not indeed an utter impossibility, to give them a natural perpendicular position, and too often they are simply spread out, as are those of other Pines on the surface of the pit bottoms.

These evils are, however, easily overcome, and a practical lesson regarding the best method of establishing this Pine may be learnt from the method which was pursued with such commendable success in planting the sandy coast line of portions of France, Spain, and other of the countries bordering on the Mediterranean. The plan adopted with such an amount of success was simply sowing the seeds where the trees were intended to remain, the rearing and putting out of seedlings having been found to be both troublesome and uncertain. From the fact of the Pinaster being of remarkably rapid

growth during the first few years of its existence, it is thus well adapted for such a course of treatment as that above described.

Two-year-old seedlings are not unfrequently 7 inches in height and very bushy in proportion; while plants of six years' growth are frequently more than a corresponding number of feet in height. A few days ago we transplanted from the seed-beds plants of the Pinaster 8 inches in height and 6 inches in diameter of head that had only been sown two years before.

The whole appearance of a full-sized tree of the Cluster Pine was well delineated in *Woods and Forests* of November 19, 1884. The engraving represents a fine tree indeed, that is growing at Monroith, in Wigtonshire, and this so much resembles the fine specimen in the flower garden at Penrhyn, and the larger still tree referred to in the introductory notes of this paper as growing at Caerhun, that I cannot help referring to it, although both the latter trees are of much larger size than the Scottish specimen.

The Caerhun tree is, in truth, a noble specimen of some 72 feet in height, with a stem girthing 15 feet and 1 inch at 5 feet from the ground, and a spread of branches covering a space of 61 feet in diameter. At about 12 feet from the ground the stem divides into two massive limbs, either of which would form, so far at least as size is concerned, a goodly specimen of itself. This tree, as is usually the case, is destitute of branches for about 50 feet, after which height it spreads out into a wide head that is literally crowded with clusters of cones in all stages of development. These conelusters present a remarkable appearance when viewed from beneath, their pretty brownish colour and vast numbers surprising one most.

This tree is growing in a free loam and is much exposed, no neighbouring clump or even single specimen guarding off the dread southern blasts. No age can be ascribed to this tree, but that it was planted but shortly after its introduction to this country is pretty evident. The gigantic specimens of Yew tree growing in the churchyard hard by, one of which is about 19 feet in girth, was, by some members of our Antiquarian Society who visited the old Roman camp lately, said to have been planted 1300 years ago, but if we divide this number by 5, a more correct idea of the Pinaster's age will be arrived at.

The Penrhyn specimen occupies a rather prominent and partially sheltered situation in the flower garden, and is growing in sandy loam of only second-rate quality. It measures 65 feet in height, girths 12 feet at 1 foot and also at 3 feet from the ground level, and the branches cover a space of fully 12 feet in diameter.

The Monreith Pinaster is 61 feet in height, 9 feet 8 inches in girth at 2 feet from the ground, and 8 feet 10 inches at 4 feet from the ground.

Many other fine specimens of the Pinaster might be brought under notice, notably those growing in several of the southern English counties and in various parts of Ireland, notably the north and east.

The Pinaster has nothing of a refined character about it, its whole contour impressing one with an air of rough and simple grandeur. The stem is large, strong, and covered with rough and deeply-furrowed bark; the limbs and branches are contorted and somewhat spiny; the leaves are long, strong, sharp-pointed, and saw-like on the margins; while the whole outline is easy and pleasing in the extreme. For planting in conjunction with other trees, be they conifers or hard-wooded, the Pinaster must not be slighted; but it should always be allowed ample room for the perfect development of stem and branch, for few members of the Pine family present a more wretched or miserable appearance than does a half-suffocated Pinaster. Give the Cluster Pine plenty of room and it will develop a fine, sturdy trunk, a well-balanced and richly-foliaged head, and be a pleasure to behold; but coddle it up in too close proximity to other trees and you have a weak, half-barkless stem, for the rough bark which is so characteristic of this Pine dies off when dampness caused by overcrowding is

present, branches in all stages of decay, and a few tufts of leaves atop the stem, that remind one far more of the sickly appearance of the so-called golden conifers generally than the bright, healthy foliage of a typical Pinaster.

The branches have usually a semi-upward tendency, and are well covered with pleasant green, slightly serrated leaves, these in full developed specimens being 8 inches or more in length, and arranged in pairs. The cones are in clusters of from half a dozen upwards; a specimen now before me has 37 cones, each 6 inches in length, by about 2½ inches diameter at the widest part, and of a light shining brown when fully matured. In early spring the buds are very conspicuous, this being caused by their great length, white, woolly appearance, and recurved scales.

The timber is of little value, save for very temporary purposes, such as making packing boxes, &c., but it burns readily, and is therefore used extensively for firewood. Although a native of the Mediterranean district, the Cluster Pine is now largely grown in most parts of the world, and I was not a little surprised, though agreeably so, when strolling through the Cape of Good Hope Court in the late Colonial and Indian Exhibition, to see a fine section of this wood, and which I noted down as being "far more resinous and weighty, and of deeper colour than any specimen of the same wood that I had ever seen cut in this country."

Nearly 300 years ago, in 1596, this Pine was introduced to us by Gerard. A specimen, which dated from 1685, was cut down about 1862, it being then dead, at the Bishop of London's Palace at Fulham. This was supposed to be the oldest specimen known, and was, when measured for Loudon in 1835, 80 feet in height.

The following pleasant description by Dr. Fleming of the introduction of the Pinaster to Moffat, in Dumfriesshire, is worth mentioning:—

Dr. Walker, who long occupied with distinction the Chair of Natural History in the University of Edinburgh, was, when minister of the parish of Moffat, regarded as rather of weak intellect in consequence of the fondness which he displayed for weeds and vermin. On returning one afternoon in spring from Edinburgh, he was observed to have the pocket of his coat full of what appeared to be Fir branches. The witnesses now imagined that a crisis in his lunacy had arrived, and began to set a watch on his future motions. He was observed in the course of the evening going forth to a corner of the glebe and putting some plants into the ground. When he had retired to the manse, the spies immediately proceeded to the spot and found that he had been planting some young Firs (that these had appeared as branches sticking out of his pocket), and hence they were led to conclude that their minister was not so great a fool as they had suspected. The plants took root, were protected, and, as trees, now prove an ornament to the glebe, and a monument to the doctor's arboricultural tendencies. These trees must now (1857) be at least seventy-three years of age, and one is 45 feet in height, and 6 feet 3 inches in circumference at the ground; and they to this day preserve the name of Pouch Firs, in memory of the part of the doctor's dress in which they were first observed.

A. D. WEBSTER.

THE CATALPA FOR ECONOMIC PLANTING.

THE Catalpa (*Catalpa bignonioides*), says Professor Sargent, long known and generally planted as an ornamental tree, has of late years begun to attract considerable attention as offering peculiar advantages for economic planting. The wonderful durability of the wood of this tree, long ago pointed out by General Harrison, but until lately imperfectly understood, its rapid growth in good soil, and freedom from attacks of insects, make the Catalpa a most promising subject for general planting in rich, strong soil in any portion of the United States south of the 12nd parallel. Further north it often suffers in severe winters, especially when young; and in the New England States, except in exceptional situations, the soil is not rich enough to make the planting of this tree as profitable as that of many others better suited to reach maturity in that section of the country.

The wood of the Catalpa is soft, light, close-grained, and susceptible of a good polish. In general appearance it closely resembles Chestnut, but, unlike that wood, it is easily "filled," and shows none of the tendency to warp or start which renders Chestnut unfit for the best cabinet work.

Should the wood of the Catalpa ever reach the market in quantity, it will rank with Butternut for cabinet and architectural work, and will make a valuable addition to the hard woods now so freely employed in interior decoration. It is, however, for railway ties, fence and telegraph posts, hop and vineyard poles, and such purposes that the wood of the Catalpa is particularly adapted, and it is for these and similar employments, where a wood capable of resisting decay when exposed to the soil and weather is required, that Catalpa will probably be more profitably employed than the wood of any other tree suitable for cultivation over so large an area of the United States.

Why the soft wood of this fast-growing tree, which is traversed with large open ducts, nearly as broad as those of Red Oak—a wood which notoriously rots very quickly—should resist decay longer than almost any other of which we have any knowledge, is not clear. Many other similar instances of its power to resist decay are recorded. Another peculiarity of the Catalpa is its small amount of sap-wood or living tissue, so that, unlike the Red Cedar and most exogenous trees, in which the soft and worthless sap-wood turns by death into durable heart-wood only at the end of many years of growth, the Catalpa produces heart-wood when the stem is scarcely 1 inch in diameter. For this reason the Catalpa has not an equal for fence posts and different sorts of small stakes, for which, if other woods are used, many years of growth must be sacrificed in order to avoid the rotting away of the outer and living layers, which have no power to resist decay.

The few experiments which have been made with Catalpa wood for railway ties seem to promise that it will be of great value for this purpose, although such experiments are neither frequent enough nor of sufficiently long duration to be entirely conclusive; and it is evident that a longer test than it has yet been subjected to is necessary to demonstrate that this wood has the power to resist the crushing of the rails and to hold spikes equally well or better than Chestnut or White Oak, which, all things considered, are the best North American woods yet extensively employed for this purpose. It is but fair to say, however, that many practical railway men of excellent judgment, who are carefully watching in the West the Catalpa ties, speak with great confidence of their value, and already very large experimental plantations of this tree are being made in Eastern Kansas by railroad directors of that State, with a view of raising their own ties in the future. The Catalpa would seem, then, to be one of the most valuable trees which our cultivators, suitably situated, can plant. It grows readily and rapidly from seed, and can be very easily transplanted either in the spring or autumn. If planted thickly

say 4 feet between the plants each way—they will run up with tall straight stems, and make trees very different in appearance from the short-stemmed, round-headed, and rather distorted looking specimens which are met with in ornamental grounds, especially in the Northern States. The thinnings of a grove of Catalpa, if planted in good soil, will in a few years be large enough for vineyard stakes; in a dozen years the alternate plants will each make two or three fence posts, and the remainder will each, in twenty-five or thirty years from the time they were planted, probably be large enough to be cut into five or six railway ties. Cultivators to whom the annual expenditure for posts, fencing, or stakes is very considerable, will do wisely to plant every year a few hundred or thousand Catalpas, according to their circumstances, and thus ensure for themselves an abundant supply of home-grown material. Should the objection be raised that the planter of trees must wait too long for his returns, it must be borne in mind that the money value of land will be largely increased if it has upon it a thrifty growing grove of Catalpas.

A well-marked variety of the Catalpa is recognised in cultivation in some of the Western States flowering two weeks earlier than the ordinary form, which it is said to greatly excel in hardness, with larger white flowers and more upright, rapid growth. This variety reproduces itself from seed.

No. 807. SATURDAY, May 7, 1887. Vol. XXXI.

"This is an Art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—*Shakespeare.*

EDITOR'S TABLE.

"Went out at early morning when the air
Is delicate with some last starry touch,
to make sure
At worst that there were Roses in the world."
ELIZABETH B. BROWNING.

SATINY STAR OF BETHLEHEM.—Charming in rooms—bold spikes and many satiny stars. Better effect in the house than out of doors—a very free-growing plant and hardy. Too free for some! A plant for the wild garden, where it may take liberties. Improves after cutting and placing in house; the stars become more open and whiter. Goes well with sprays of Portugal Laurel leaves. If there be no wild garden, do not plant it among or near any delicate alpine.

BUDDING LARCH TWIGS.—Very nice for table for first fortnight after showing green. Very fragrant; something like Mock Orange. Makes a pretty bunch if twigs with new bright cones and old cones are chosen.

SWEET BRIER SHOOTS.—Always delicious in rooms either with or without flowers—on cold, east-windy days seeming grateful to be brought into a room.

SCARLET WINDFLOWER.—The Pan form of this best for rooms because of softer colouring. It has the good quality, even if picked with the flowers closed for want of sun, of opening when brought into a warm room. It yields many flowers for cutting during several weeks.

DAY LILY LEAVES.—A tuft of the strong-growing orange Day Lily should be grown in some corner for the sake of its leaves for cutting. The whole leaf-stem cut just above the ground goes very well with flowers in the house.

JONQUILS.—The common Sweet Jonquil, a good flower for the table day or night. Stars very pretty in form. Odour pleasant and not too strong. Arranges well with tinted leaves and flowers of common evergreen Barberry.

DOUBLE JONQUIL.—A beautiful old plant, good for cutting and pretty on the table. Pretty in established tufts, but too rare in gardens.

DOUBLE DAFFODIL SULPHUR PHOENIX.—The prettiest and best of all yellow-tinted double Daffodils; beautiful in colour, better in a room than out of doors, where the weight of the head causes it to droop. Lasts well in a cut state; colour between primrose and buff. A form of the Nonsuch Daffodil, and the prettiest in colour of its double forms.

THE GOLDEN FRITILLARY (F. Moggridgei).—A large golden bell with brown dots inside and out—a singularly beautiful spring flower. One wishes to see enough of it to judge of its effect. What a beauty, dotted through Grass or Moss, this would be! I hope there is plenty of it somewhere. From Lady Ardilaun, St. Ann's, Clontarf, who also kindly sends other pretty

things, among which, more interesting for the table, are the following:—

THE WILD TULIP.—This neglected Tulip seems to me of great value in a cut state; its graceful way of opening and closing makes one take a fresh interest in wild Tulips. Its good colour and form should make it useful to hardy flower lovers, more so than many of the varieties and hybrids.

HOOP-PETTICOAT NARCISSUS.—Glad to see this so strong from Clontarf. I have no doubt it will have as graceful a use in the house as other bold Narcissi. The white Narcissus William Goldring is really a very graceful large flower, beautiful for any work. The Gentians—the vernal and the large Gentianella—opening a little earlier at Clontarf than about London; the Grape Hyacinths recently spoken of; the Persian Iris, exquisite in its delicate colour.

THE CYCLAMEN-FLOWERED NARCISSUS.—A lovely little form to have near one in a glass. With a profuse growth of hardy flowers in the open air, and in woods and shrubberies, the old and natural prejudice of gardeners against cut flowers will and should disappear. When one had only a small parterre or a greenhouse or two to cut from, it was necessary to be careful. Many hardy flowers are much more beautiful in form than those from the greenhouse. It will be a great gain to have these fine forms near the eye, and fresh flowers almost daily.

CLEMATIS MONTANA.—The beauty of this old-fashioned climber needs no extolling from me, as it clothes the walls of cottage and mansion alike with a sheet of the loveliest of white blossoms, and for covering arches, arbours, or anything where climbers are needed, there is really nothing likely to surpass it. I do not remember having seen it grown under glass before. The spray enclosed is from a cold house, but it is nearly a month in advance of the outside plants. The reason for planting it under cover was from having a demand for white flowers all the year round, and finding this Clematis, when in bloom, one of the very best for wreaths, I decided to try and get a longer supply than can be had from the usually sunny walls of the south coast, so I put a plant in a cold greenhouse (from which the enclosed spray is cut), and another on the darkest north aspect that I have, and from these plants I get a longer supply by several weeks. Many try to grow plants in a cold house that really require heat, and thereby court failure; whereas if they took hardy plants, and just gave them the shelter of a glass roof, they would be amply repaid. Many gardeners who know this old Clematis well, say, on seeing it under glass, "Well, what new thing have you here?" thinking it was some new Clematis, and have been rather surprised to find an old friend put to a new use.—*J. GROOM, Gosport.*

CARPENTERIA.—Flowers gathered from back wall of a cool greenhouse, where the effect of leaf and flower is very beautiful, plant covering wall. Flowers charming in lamplight. A grateful and delicate odour, like Larch in its first week of buds.

OXLIPS.—Very bold and handsome, from Mr. Hartland, of Cork. I often see the wild ones on the fringes of woods, and am struck with their beauty, and wonder why they are not more cultivated. One that Mr. Hartland calls William of Orange is a singularly good, bright

plant, and so is the paler Danesfort Sulphur, which is a kind of Hose-in-hose. He also sends a rich Irish Hose-in-hose Polyanthus and the crimson Hose-in-hose, nice old flowers, but certainly not so good as the handsome William of Orange.

STOVE AND GREENHOUSE.

T. BAINES.

THE CAMELLIA HOUSE.

CAMELLIAS have been plentiful and very fine this season. We have had an unlimited supply from Christmas up to the present time, and they will last nearly to the end of May. All the varieties have done well, the very best, so far as abundance of flowers is concerned, being the old French White, alba plena, Lady Hume's Blush, Marchioness of Exeter, and Woodsii. I cannot help thinking that a small Camellia house should find a place in all gardens of any size, as a great quantity of bloom can be cut from a comparatively small structure when the plants are well established, and this, too, with very little labour or expense. The treatment of Camellias after the flowering season, from the end of May until the following Christmas, will naturally depend in a great measure on the age and condition of the plants. In our own case, with plants that have been in their present quarters over half a century, it may be summed up in a few words—viz., a good thinning out of the wood about the latter end of May, a liberal top-dressing at the same time, plenty of water and plenty of air. Where there is abundance of space at command, the knife may, of course, be dispensed with; but where the plants are at all cramped for room they must be kept within bounds, and if the growth is dense and luxuriant this cannot be wholly effected by tying in. Some varieties, as Lady Hume's Blush, Cup of Beauty, &c., are rather impatient of the knife, but with strong growers I generally remove rank, forward growth, together with any spindly stuff, reserving the hard, sturdy back shoots for another season's bloom. No shade of any kind is used at any time throughout the year, and I have never noticed any scalding, except, perhaps, on one or two tender shoots that may be close up to the glass. The wood under these conditions gets thoroughly well ripened, one of the essentials to the production of plenty of fine flowers before the approach of autumn. After all pruning and tying in is finished, a top-dressing of cow manure is put on all over the beds, from 2 inches to 3 inches in depth, and copious supplies of water are given at intervals of ten days all through the summer. The house is fumigated occasionally through the summer to check any fly that may make its appearance, and has a good syringing once or twice a week during the hot weather, the foliage at these times having a thorough drenching with the garden engine. A little extra care is required after this to prevent any scalding in the early morning, but if a hot, dry evening, with, if possible, a slight wind, be selected for the operation, the foliage will be dry before the sun has any power on it. Disbudding is attended to at the proper time, at intervals of a week or ten days. It is invariably our practice to leave about three buds on each shoot, about 2 inches or 3 inches apart; this ensures a succession of flowers, and, in addition, admits of a little wood being cut with the bloom when this is necessary. I have been cutting on an average 60 dozen per week for the past two months.

E. BURRELL.

Weigelas forced into bloom.—The common *W. rosea* will expand its blooms in a very satisfactory manner when forced, but is seldom treated in this way, though when in full flower it is a worthy companion to the many flowering shrubs whose season of blooming is hastened on by a little gentle forcing. One point with regard to the Weigela is that it seldom blooms freely when small, and on that account can only be relied upon for indoor decoration in the form of fair sized bushes, which should be grown in an open position fully exposed to the sun in order to thoroughly ripen the

wood. Besides *W. rosea* there are *W. Abel Carrière*, whose blooms are finer than those of the older kind, *W. candida* and *hortensis nivea*, both white, but widely different from each other, the first being upright in habit, while in growth the other is spreading, and the leaves are larger and more rugose. Of the two, *W. hortensis nivea* seems the easier to force. Among deeper coloured kinds, which, however, are by no means so effective under glass as those above mentioned, may be noted *Lavallei*, *Beranger*, and *Emile Gallé*. All the *Weigelas* have long been recognised as beautiful outdoor shrubs, but their value for conservatory decoration has been to a great extent overlooked. They may all be struck from cuttings or raised from seed, which in a warm spot ripens in abundance. In the case of seedlings I found that there were several inferior to their parents.—H. P.

PLANTS FOR HOT, MOIST WALLS.

THE number of climbing plants that require the temperature of a stove is very great, but the list of those that will clothe a wall with foliage and at the same time attach themselves thereto without constant attention in the matter of tying or nailing is by no means extensive, yet there are a few well suited for such a purpose, and as they will thrive even where heavily shaded, are thus rendered additionally valuable. The back or end wall of a hot-house is a good place for them, for though in the lighter places a wire screen may be put up, filled with peat, and then planted with Ferns, foliage Begonias, and such things, yet where heavily shaded many subjects will refuse to grow. Of plants that need no preparation in this way, as they secure themselves to the wall by means of their aerial roots, the best include a few Aroids and two or three species of Ficus. One of the finest of all plants for such a purpose is *Pothos celatocaulis*, rather a quick-growing climber, with very deep green, oblong-shaped leaves about 5 inches or 6 inches in length. These leaves are tightly pressed to the wall against which they grow, and are arranged so closely together that they slightly overlap at the base. Another plant with the same habit is *Maregravia paradoxa*, with roundish, unequally-sided foliage in its juvenile form, for this *Maregravia* occasionally grows out of the above character, and the stem thickens greatly, when large divided leaves, something like those of *Monstera deliciosa*, are produced. This character, however, does not appear to be very common, so that for general purposes the simple closely-fitting leaf may be regarded as the normal form. *Maregravia dubia* is another of this class, with smaller leaves, much narrower in outline, but disposed as regularly on either side of the stem as the ribs in the skeleton of a fish. The next (*Scindapsus pictus*) attaches itself to the wall by means of roots from the stem, but the leaves do not press closely to the wall in the same formal manner as the others. The leaves of this are unequally-sided, in shape something like a Begonia, and marked with irregular blotches of greyish white on a dark green ground. The colour of its foliage renders this plant admirably suited for planting in such a manner that it will grow and intermix with the above-named dark-leaved kinds. *Philodendron melanochrysum*, with deep olive-green leaves, overlaid with a satiny lustre, is very pretty. The colour of the foliage will only apply to the adult leaves, for the young ones are lighter in tint and have the satiny character still more pronounced. *Pothos aurea*, with the leaves more or less marked with gold, promised to be a very desirable subject for such a purpose when first sent out, but it rapidly developed into a coarse-looking plant, and in most cases almost lost its variegated character. The small-growing *Ficus repens* and variety (*minima*) are first-rate wall plants, for they attach themselves with great tenacity to brickwork that is kept moist. The stronger-growing *F. radicans* is also available for the same purpose, its style of growth being more rapid and less formal than in the other two. *Piper Futokadsura* is a Japanese species of Pepper, with dark green heart-shaped leaves, a good deal in general character like a *Philodendron*, but, in common with the above-named kinds of *Ficus*, it will thrive

in a greenhouse temperature. In order to encourage aerial roots, the surface of the wall must be occasionally moistened. All the plants mentioned above are of the easiest possible culture, for even if branches cannot be separated with roots already formed, they quickly strike when placed under favourable conditions. Insect pests, too, do not trouble any of them, and as they are so fond of moisture, the leaves can always be kept clean by liberal syringing. T.

SPECIMEN CARNATIONS IN POTS.

I AM unable to endorse all that has been said in favour of the Carnation as a winter-flowering plant, as I consider that the number of flowers they produce is a very inadequate return for the labour they involve when grown as single plants. So far as I have seen or read, the placing of half-a-dozen plants in a pan of a suitable size is quite a new departure. This mode of growing the Carnation has been practised in a garden in this county for three or four years past, and with the most satisfactory results. The pans were specially made for the purpose, being 6 in. deep and varying in diameter from 12 in. to 18 in. Only one variety was grown in a pan, as Carnations differ a good deal in the character of growth as well as in height of flower-stem. Having seen the stock grown in this way on several occasions, I have no hesitation in saying that not only do the plants grow and flower better, but they are more effective, and are very suitable for the front bench of a light and airy conservatory. When seen growing in this way, that leanness of appearance of a single plant in a pot is got rid of, as more growth and a greater number of flowers are brought into a smaller space than is the case when they are grown in the ordinary way. With regard to other details of management, the plan followed in the case alluded to was to strike the cuttings on a gentle bottom-heat early in the year, and as soon as they were sufficiently rooted they were placed in the pans in which they were to flower, and until they got well established they were placed in a vinery from which frost was kept out until about the middle of April, when they were transferred to a cold pit. In this structure they got more air, and as the spring advanced the lights were removed during the day when the weather was suitable. My friend assured me that he placed more reliance on securing an early growth and a suitable soil than anything else, and that he never pinched out a flower-spike after the middle of June. If any felt disposed to flower after that they were allowed to do so. What he appeared to aim at was to get a vigorous growth without subjecting the plants to a close-heated atmosphere.

By giving abundance of air, the growth is sufficiently strong to bear a strain that will successfully carry them through the depressing influences of a long winter. If there is one other feature in the management that should be mentioned, it is that the stock is not exposed altogether in the open until the plants have made good growth, all weakly ones being kept in the frames all the summer. Another point of interest is the Carnation's love of sunshine, as the stock is never shaded after the plants have become established, and when they are turned out of doors in the summer it is in a position in the full sun, with the pans standing on a hard bottom to prevent worms entering them. The question of providing a suitable soil for winter-flowering Carnations is, I think, of the greatest importance. I find that they have a dislike to a heavy root-medium, therefore it is not desirable to use more than half loam, to which should be added one-fourth each of peat, leaf-soil, and sand. A mellow sandy loam will, I am aware, grow them well with no other ingredient mixed with it; but loam varies so much in its composition, that if used in larger proportions than one-half, much of it is altogether unsuitable where an open medium is required for a considerable time, and Carnations, not being strong-rooting subjects, cannot endure any excess of moisture in the soil. J. C. C.

Amaryllis marginata conspicua. For general decorative effect this *Amaryllis* is one of the best. Its constitution is good, while the spikes of bloom

are freely produced; the flowers, four and five on a stem, are striped with white on a rich crimson ground. We find the plants do well stood on slates over the evaporating troughs in the Melon house, potting them and starting them into growth towards the end of January. When well rooted they are freely supplied with liquid manure until the plants are in flower. After they have flowered the plants are stood on a shelf in the vineries close to the glass, where they make free growth.—E. M.

Eucharis amazonica.—I think the finest lot of specimen *Eucharis amazonica* I ever saw is at Gammersbury Park, Acton. There are about a dozen or so of specimens in the most healthy and vigorous condition in No. 2 pots, and they have not been repotted for nearly two and a half years. At the time they are flowering they are liberally fed with soot water and liquid cow manure, and they throw up large trusses of very fine and handsome blooms. Mr. Roberts states that the secret of growing *Eucharis* is that when a young leaf comes up a flower-stem will be sure to follow, and as soon as the young leaves appear the plants should be dried off and the flower-stem comes up. Mr. Roberts evidently proceeds upon the principle of growing his *Eucharis* in more heat than is generally the case, and to this he attributes his success. He keeps his plants in the house in which he grows his East Indian Orchids, and they measure from 5 feet to 6 feet in diameter. The number of flowers they supply is almost incredible.—R. D.

Sea sand for plants.—My experience with sea sand is entirely at variance with your correspondent's. Two years ago, falling short of silver sand, and residing within a few minutes' walk of a beach largely composed of sand of all "grades," which may be had for taking away, I sent for a load and used it throughout the potting season. The result was that most of the plants suffered from its effects; many died, others survived, but have not yet wholly recovered; in fact, very few, indeed, bore it unharmed; even such robust things as *Strelitzias*, *Caladium esculentum*, and *Bruguansias* suffered severely, and are still sickly. The effect was in all cases alike; black blotches appeared on the stems and leaves, where rotteness set in afterwards. I suppose the salt was taken into the circulation. But the same material, passed through three or four waters, answered the purpose without any injurious consequences. J. M., *Charmouth, Dorset*.

Clematis indivisa. This *Clematis* has flowered most profusely with me this season in a cool conservatory, trained thinly close to the glass. Where its branches have full light and sun, the wood becomes thoroughly ripened, which is the principal cause of success in flowering this lovely *Clematis*. Now is a capital time to attend to such plants for their future welfare. Should the last season's growth have become in any way too thickly entangled, remove entirely some of the weakest branches, tying those remaining thinly to wires stretched to the rafters, and top-dress the plant by removing some of the old surface soil down to the roots, replacing this with some turfy loam, leaf-soil and bone dust, and when growing freely give copious supplies of liquid manure. Vigorously syringe the foliage in the evening after a hot day, and attend to the tying in of the young growths before they become laced together. Mildew sometimes attacks this plant in the spring. For this evil apply flowers of sulphur dusted over the parts affected. E. M.

Aloe plicatilis.—At the present time a remarkably fine specimen of this plant, measuring 8 feet high and 9 feet wide, is now in bloom in the succulent house of the Botanic Gardens, Cambridge. The flowers, which are just beginning to expand, are red tipped with yellow. The base of the plant just above the surface of the soil is 5 feet in circumference, and directly above this it branches out into three spreading stems. About a year ago it was retubbed. The results of this shift may easily be recognised by the extra strength and length of the foliage. The compost used was good yellow loam, with a proportion of coarse sand and broken pieces of soft bricks well mixed together. Aloes are rather slow growers, and the above specimen must be a considerable age. Growing in the same house is a

much smaller plant, a variety of the above called *majus*, which is extremely handsome. It has more robust foliage and single branches, and resembles a large fan spread open. These plants thrive best in a temperature where frost is excluded.—W. H.

SUCCESSSES OF A SMALL GREENHOUSE.

I HAVE for nearly twenty years been the owner of a small greenhouse, of which I am not a little proud; it is only 20 feet long by 12 feet wide, and yet I have managed to grow in it more things than some people would think possible, and some which are not ordinarily considered easy in so small a structure, and I think that perhaps a few notes on some of these may not be unacceptable to the readers of THE GARDEN, especially as I see frequently questions are asked concerning some of them.

DISA GRANDIFLORA.—I have had a long acquaintance with this, the most beautiful of terrestrial Orchids, since my late friend Mr. Charles Leach, of Clapham Park, who first flowered it in 1861, gave me a small piece of it. This I lost after two or three years, owing, I believe, more to the bad quality of the peat used than from bad management. About a dozen years ago I obtained a nice clump of it, and with this I have been most successful. Last year I had two pans of it; one about 9 inches across had ten flowering stems containing twenty-six flowers. The variety is that called *superba*, and is the brightest of any I know. Last autumn, after it had done flowering, I had to separate it, as I wished to give pieces to some friends. I was told that it delighted in being pulled to pieces, but I have not found it so. I have now four pans of it, but I shall not have such blooms as I had last year, and I much doubt the statement that it likes being pulled to pieces. When dividing it I left one clump untouched—that is, did not divide it, and potted it separately, and this is the strongest piece I have. When the advice was given to pull it to pieces, I fancy the writer's experience had been with what is known, I believe, as the *Glasnevin* variety, which seems to me more robust, but very inferior in the quality of its flowers. Mr. Burbidge kindly sent me a piece of this to compare, but I question very much whether I shall care to increase my stock of it, and in dealing with my own plants this autumn I shall simply take out a large portion of the peat and replace it with fresh. As I have before said, this Orchid is as easy to grow as a scarlet *Pelargonium* if people will only attend to simple rules, but that is the difficulty; being an Orchid, they think it must require heat, whereas really the less it has the better. In winter I simply keep it where frost will not reach it, and in the spring remove it to the shelf nearest the door of my house. It is potted in good peat, with lumps of charcoal. Some advocate *Sphagnum*, but I have never used it. It is always kept moist, and when growth commences in earnest I syringe it twice or three times a day. With this treatment it is sure to do well.

LAPAGERIA ROSEA AND L. ALBA.—It showed, as I was told, some considerable courage to attempt these somewhat rampant climbers in so small a house, and I was warned that if they grew they would certainly shade and injure the other inhabitants of the house. However, I determined to try; and as my house runs east and west and is a span-roof, I planted them in two large pots and placed them at the east end. They grew and flowered well, but two years ago I found it necessary to give them more root-room, so I had a box made, which fitted on the platform in the middle of the house at the east end. They were planted in this, and have done uncommonly well. Last year I had, I should think, a hundred blooms, and although this is child's play to those who have large spaces at their disposal, and even houses devoted to them, yet it may be an encouragement to smaller men to know that they can be thus grown. I have found *alba* the sturdier of the two. There is one thing that has to be carefully guarded against—the depredations of slugs, who, if they possibly can, will find out the young shoots and eat them clean across. When the days begin to lengthen and the sun to acquire power, I nail a piece of shading over the end of the greenhouse where they are, so as to give them the

shade they delight in; they are also during the spring and summer well syringed.

MARECHAL NIEL ROSE.—Some years ago I placed a plant of this in a large pot in the small lean-to which I have annexed to my greenhouse, and in which is a Vine; it grew so well, that I trained it to the back wall of the house. It has gone on increasing from year to year; the roots have pushed themselves through into the soil, and it has completely covered the wall. Last year I cut about 150 blooms from it, and this year shall probably cut more. The plant is as healthy as can be, and has evidently got into something that it likes; and although the blooms are not so highly coloured as one could wish, they are excellent, with good stiff foot-stalks and fresh green foliage. As to the deep colour which this flower sometimes exhibits, I should be glad to know how it is produced, although my experience of a reply to this is not much in favour of getting a satisfactory one. I was standing the other day at South Kensington by the beautiful golden blooms exhibited by Mr. J. Walker, of Thame, and made use of the expression, "I wonder how they get so rich a colour!" There were two or three *Rose* growers standing by. "Oh!" said one, "evidently by shading." "Not at all," said another; "I believe it is by being in bright sun." When doctors disagree, who shall decide? At any rate, I have had great pleasure in my plant, and can safely contrast its brilliant green foliage with the yellowish green of some other plants I see elsewhere. It gives me all its flowers before the Vine shoots are any length, and, as it is in a warm position, ripens its wood sufficiently. When I first had it I had no idea of keeping it so long, but thought that perhaps after a year or two it would have spent itself, and I should have had to throw it away; but it has improved every year, and I hope to retain it for some time to come.

FREESIA REFRACTA ALBA.—At one time this was considered a difficult bulb to grow, and its specific name was thought to be in reference to its refractory character! It has, however, proved itself amenable to culture, and this season I have had it very fine. They were planted six in a 5-inch pot, and the plants grew to from 15 inches to 18 inches high, and although each bulb threw up only one flowering stem, yet this had four flowering shoots, and so vigorous were they, that this observation was made concerning them—that the pots were too crowded with bloom. As I know some people still complain of a difficulty in growing them, I may say that I believe one element of success is to thoroughly roast the bulbs after the flowering season is over. I place the pots on a top shelf near the glass, and leave them there until thoroughly dried off; they are then removed and laid under the stage until the time for potting comes round; but had I the convenience for doing so, I should keep them in the same place all the summer. They seed freely, and if it is wished to save seed they must be treated differently—water must not be withheld, and they must not be placed in quite so warm a position. It is very satisfactory to find that this most fragrant flower is so easily managed, for, both for its beauty and perfume, it is invaluable for cutting.

PRIMULA ORCONICA.—This, I think, is the most remarkable plant for continuous blooming that I have ever seen; the two plants I have of it, which came to me from my friend Mr. Lewelyn, have now been in flower for twelve months—by in flower I do not mean a spike or two, but a dense mass of flowering stems, making quite an effective head of bloom—and on examining it to-day I see quantities of fresh trusses showing themselves in various stages of development. Is there any other flower that acts thus? Its treatment is simple enough; it requires, I think, tolerably rich soil, but not to be over-potted, must have plenty of drainage, and then, like most of the *Primulas*, it enjoys plenty of water. DELTA.

Lachenalias.—These plants are popular favourites, and are very useful in the greenhouse or conservatory, as they remain for a long time in flower. They are usually grown in pots, in a com-

post composed of peat, loam, leaf-mould, and sand with some charcoal broken in small pieces. They must be placed close to the glass. For growing in baskets I know of no other greenhouse plant to equal them. We have had them in the same baskets without disturbing them for the past two years. Before planting them we line the baskets with turfy loam, pulled to pieces and the dust shaken out, and when the bulbs show signs of growth they are placed in the interstices of the wires at a distance of every 2 inches or 3 inches apart, and also over the surface of the basket. They are never allowed to become dry after they have once commenced to grow. For the past two months they have been in full beauty, the framework of the basket being completely hidden by an abundance of luxuriant foliage and flowers.—W. H.

SPRING NOTES ON THE AURICULA.

THE exhibitions of Auriculas are now over, and, writing from my own experience, I have to say it is a time of careful preparation for next season. When plants are required to be in their best dress on a certain day they have either to be forced or retarded, and the Auricula is impatient of either treatment. Everywhere it has been necessary to put pressure upon them; nowhere has it been necessary to keep them back. The result of artificial heat or a close atmosphere is to cause the leaves to become rather flaccid, but as soon as the show-day is over the treatment is reversed; more air is admitted to the plants, and no artificial heat is allowed. When the weather is fine the lights are removed altogether; but it must not be done in high winds, nor ought the plants to be exposed to rain. Give the choice varieties as much space as it is possible to afford them. If no seeds are to be saved, preparations must be made during May to repot the plants; but see first that they are quite free from greenfly; and the best way to destroy this troublesome pest is by fumigating.

The pots used for the plants must not be too large, and if they have been used previously, wash them clean and place a fair proportion of drainage in the bottom. The best potting soil is good decayed turfy loam four parts, one of leaf mould, one of manure, and some sharp silver sand. Before repotting any of the plants examine them carefully for the Auricula aphid (*Triana auriculae*); this pest must be destroyed if possible. When the plants are repotted, place them in a frame on the north side of a wall or fence, as being the best place for them. The small offsets and seedling plants should also be potted on as they require it. Offsets taken from the parent plants last summer will be the best to flower next year if they are carefully attended to.

THE CARNATION AND PICOTEE.—I would like to allude first to the seedlings planted out in the open borders; not a single plant has been killed by the frosts, that is, the seedlings which have not yet flowered. Older seedlings that flowered last year and were not layered have suffered considerably. We keep up a constant succession of these interesting plants. The seeds were sown over a hotbed about the first week in April. About 700 plants have been already planted out in boxes from the best crosses. My plan is to select a different section of the Carnation or Picotee each year, instead of spreading the experiment over the entire field. For instance, this year I am dealing almost exclusively with the yellow Picotee. The white ground varieties have not been touched, but I would only deal with one of the sections, if they were taken up next year, and even then the field is wide enough. I would take the red-edged section, which in itself contains a broadly marked division in the light and heavy edges. The best of the red-edged type would be, in heavy red, John Smith, J. B. Bryant, Brunette, and Princess of Wales; place plants of all these together, and use the pollen brush indiscriminately amongst them. Place together of light red-edged varieties Mrs. Gorton, Thomas William, Emily, and Dr. Homer. It is not to be supposed that all of the seedlings will produce red-edged Picotees, or Picotees at all; in fact, our finest self Carnations have been produced by crossing Picotees with each

other. After the above slight digression, I will return to the Picotees pricked out in boxes; they will be planted in the open ground about June in good, deep soil. Careful cultivation subsequently will produce good substantial plants by the end of the season, and the quantity of bloom some of them will produce is astonishing. I have counted over 200 flowers on one seedling treated as described above. The named plants in pots are still in frames; they are quite a month late this year, but they soon gather strength when hot weather sets in. The surface of the soil in pots may be treated to a dressing of rich compost—loam, leaf-mould, manure, and sand in equal proportions. The plants will be turned out of doors as soon as fine weather sets in.

PANSIES are now coming into bloom; the plants were wintered in a cold pit, close together in boxes. In February or early in March they were replanted further apart again in boxes to be planted out about the middle of April. The soil is deeply trenched and made rich with a liberal dressing of decayed manure, as the plants spread very much in summer, entirely covering the ground. Seedlings grow more freely, and make even a better display than named varieties. The seedlings do not require any glass protection during winter. The time for planting them out is early in October from seeds sown in August. J. DOUGLAS.

Passiflora kermesina and **P. princeps**.—To those in quest of stove climbers with beautiful flowers, and, at the same time, of easy cultivation, I would recommend the above. *P. kermesina* is now bearing in profusion its rich carmine flowers in one of the stoves at Gunnersbury Park. It is growing in a 10-inch pot, and trained along the roof displays its wealth of bloom very effectively. *P. princeps*, with its rich carmine-scarlet flowers, is also very effective treated in the same way. W. T.

Bougainvillea spectabilis.—I forward you a few sprays of *Bougainvillea spectabilis* to show how freely it flowers when the conditions are favourable. The plants from which the sprays are taken are grown by Mr. Rogers, Frimley Park, Surrey, and occupy a position in an intermediate house, trained to wires and fully exposed to the sun, and seldom fail to flower satisfactorily. *B. glabra* grows luxuriantly and flowers freely planted out in the same house.—E. B. L.

* * The sprays sent well bear out the remarks of our correspondent. We have seldom seen the flowers so rich in colour and on such strong footstalks. The foliage, too, is remarkably bright and handsome, the tips of the leaves being as highly coloured as the flowers. When seen in a mass, it is truly a grand sight.—ED.

SHORT NOTES.—STOVE AND GREENHOUSE.

Melon Pear.—What is the botanical name of the above, offered this year by one or two seedsmen? It looks like a *Solanum*, but I have not seen it in flower.—J. M.

Soot for Azaleas.—Will any of your correspondents kindly inform me as to the best way, and at what strength, to apply soot to Azaleas making their growth?—G. S. W.

Seedling Tree Carnations.—I send you blooms of two seedling Carnations, and shall be glad of your opinion regarding them.—T. ASH.

* * The blooms sent are no improvement on existing varieties.—ED.

Salvia Bruanti.—*Salvia* are grown well at Frimley Park; some fine plants of *S. Bruanti* are now in full beauty. This variety is much superior to the old *Salvia splendens*, the growth being more compact, and producing a much finer spike of flower.—E. B. L.

Double-flowering Pelargoniums.—I send you a box of *Pelargonium* flowers. Kindly say in your next issue what you think about them. They were cut from plants from which we have been cutting all the winter, and we could not as many as thirty trusses from some of the plants at this time.—G. H. MOTTSON.

* * The trusses received were large and of a fine colour. They consisted of pink, white, scarlet, and salmon varieties—altogether very pretty and bright.—ED.

Pepino and Curuba.—Why are not seeds of these seemingly valuable plants to be obtained in England? The Passion Vine referred to seems to me a precious treasure, quite suitable for cool houses in this country, and, therefore, almost everybody's plant. It is a pity that nurserymen do not direct their attention to such things instead of the hosts of tropical plants that so few comparatively can possess, or, possessing, successfully cultivate. Will M. Gustave Eisen attend to this? I, for one, would gladly pay for some seed.—J. M., *Charnooth, Dorset*.

SEASONABLE WORK IN PLANT HOUSES.

STOVE.—TRAINING AND TYING.—The rapid growth which healthy, well-managed stove plants make is such that constant attention to training and tying at this season is requisite, without which the shoots of many kinds get so entangled that they cannot afterwards be separated without injury. Climbing and twining plants, such as *Allamandas*, *Dipladenias*, *Bougainvilleas*, *Aristolochias*, some of the *Thunbergias*, and others of like habit, are now much oftener grown in pots as trained specimens than they used to be when the roof or rafters of the stove were the positions usually assigned to them, and where, unless their number was much restricted, they formed a thicket that excluded the light too much from the plants in the house. But when the plants in question are grown in specimen form, it is particularly necessary that they receive close attention in regulating the shoots, keeping the extremities, as advised some time back, well up, for if bent down, or allowed for want of support to hang down until the flower-buds are set, the plants will bloom sparingly, or not at all. The flow of sap, in place of being directed to the extremities of the shoots in the way it would if they were in an erect position, expands its force in pushing the lateral eyes. Through keeping the young shoots constantly trained down, I have seen specimens of *Allamanda* and *Dipladenia*, otherwise well managed, that scarcely produced a decent spray of flowers during a whole season. Where there happens to be a conservatory that is kept at an intermediate temperature, specimen stove plants of many kinds will do good service for many weeks in the summer, as if too much external air is not admitted they will then keep on blooming in less heat than is needed to bring them into flower. Most of the *Ixoras*, for instance, though requiring as much heat as any plants to grow them well, will keep in good condition for a month in a temperature such as that just named. In no way can such plants be turned to better account, as they afford variety to the ordinary occupants of a conservatory, and this at a time when there is comparatively little in the shape of flowering plants available.

SHRUBBY CLERODENDRONS.—The different kinds of shrubby-habited *Clerodendrons*, such as *C. fallax* and *C. Kempteri*, are most useful for ordinary decoration when in the form of small examples confined to single stems, such as are obtainable in plants struck from cuttings last summer, or raised from seed sown as soon as ripe. Plants raised in this way will now be making vigorous growth, and will soon show their flower-spikes. They should not be stinted for root-room: 12-inch pots are not too large to give the heads of bloom a chance of attaining their full size. Where larger pots are needed, it is not too late to give them a shift, being careful not to disturb the roots in the removal. The double variety of *C. fragrans*, although now seldom met with, is worth growing for its distinct and agreeable perfume. It occupies comparatively little room, as the stems are best cut down to the bottom after flowering. It is a Chinese plant, and does not require quite so much heat as most of the other species; it will produce two crops of flowers in the season, the first coming in spring, the second in the latter part of the summer. With this kind it is better to grow several medium-sized examples than to confine the stock to a few large specimens, as with a little management in regulating the time of flowering, a succession can be had. The flowers, when mounted two or three together, are very useful for bouquets and button-holes, whilst a small plant will scent a large house. It strikes readily from cuttings, suitable materials for which are usually present in the weaker growths that spring from the collar of the plants, and which are not strong enough to flower. These, if taken off now, will root readily with shade and moisture in a brisk heat. With the requisite attention afterwards in growing them on through the summer, they will make useful flowering plants next season.

EUPHORBIA JACQUINLEFLORA. Some growers find this fine winter-blooming plant difficult to manage in several ways, whilst in the hands of others it grows as freely as a weed. Results so different can only be accounted for by assuming

that those who fail with the plant do not realise its peculiar requirements. To grow this *Euphorbia* properly it must be pushed along in a brisk growing heat from the time the cuttings are struck. It likes a temperature as high as most stove plants; it must be kept close to the glass, lowering the shelf, or whatever the pots are stood on, as more head room is required. Unless it is desired to grow the plants in bush form, it is better not to stop the shoots at all, simply letting them grow as high as they will. As a rule, the taller they get the stronger they will be found. From the time the young plants are established and have begun to grow freely, they like to be regularly fed with manure water given at a moderate strength. Scarcely any plant that I know requires so little pot room; if supplied with manure water in the way suggested, a 6-inch or 7-inch pot will be large enough for three or four plants. They do quite as well thus grown together from the cutting pot onwards as if potted singly. Another important matter is to be careful never to over-water; the roots will not bear the soil being too wet. The plant likes a moist atmosphere; consequently air should not be admitted in such quantities as will dry the air of the house too much. A thin shade is necessary in bright weather. It is well to shut in plenty of sun heat by closing early, syringing overhead at the same time. Towards the end of summer more air should be given, but enough heat ought to be kept up to maintain free growth. Treated in this way this most useful winter bloomer rarely fails to answer.

WINTER-FLOWERING BEGONIAS.—The amount of bloom which this section of *Begonias* is capable of producing in a great measure depends on the size and strength the plants attain. To get them up to the requisite condition they should be pushed on early in the season by giving sufficient warmth to keep the growth moving freely. As the soil gets full of roots give more pot room, regulating the size of the pots in accordance with the size and strength which the kinds grown naturally attain. Repeat the shoot-pinchings sufficiently often to secure the desired bushy form. Stand well up to the glass, and afford enough room to prevent any inclination in the plants to become long-jointed. Shade is necessary in bright weather, though the foliage of all the *Begonias* is less impatient of the sun's direct rays than some things. Later on, when the plants are in the pots they are to flower in and the roots have got well hold of the soil, manure water should be given every week.

GREENHOUSE.—SPARMANNIA AFRICANA.—This distinct, free-growing plant is alike adapted for growing in a moderate-sized greenhouse or a large conservatory. In a structure of the latter description half-a-dozen good specimens are very effective when in bloom, the time of which depends much on the temperature the plants are kept at. Grown cool they will generally bloom in April or May. Plants that are now blooming may have their shoots cut well back as soon as the flowers are faded; but if the knife is not used further than to remove the old flower-stems, the plants may be expected to push growth that will bloom towards the end of summer. Cuttings should now be put in, or as soon after the flowering is over as suitable shoots can be obtained. They are best put singly into little pots. The plant is a strong, quick grower, rooting freely; consequently it requires to be liberally treated. When the cuttings are well rooted they may be placed in 5-inch or 6-inch pots; good turfy loam with a liberal addition of rotten manure and some sand answer well for them in every way. Keep in a genial-growing temperature until the young plants get well established; during the summer a pit that admits plenty of light with a little shade in bright weather, and a moderate amount of air in the daytime, shutting up early whilst the sun is on the glass, using the syringe freely every day at the time of closing, will get them on so that they will require moving into the pots in which they are to bloom early enough to admit of their roots getting fully hold of the soil before autumn, when a drier atmosphere, more air, and no shading will prepare them for winter. Through this season the soil should be kept somewhat drier. T. B.

ROSE GARDEN.

T. W. GIRDLESTONE.

HENRI JACOTOT, RAISER OF GLOIRE DE DIJON.

UNTIL Henri Jacotot delighted the Rose growing world with Gloire de Dijon, there was no hardy climbing Rose of anything approaching yellow in colour. That a chance seedling should suddenly supply this want in every particular ought by itself to be sufficient inducement to all Rose growers to sow the contents of every Rose hep that they can lay hands on: for the fact unfortunately remains that the pedigree of Gloire de Dijon was not preserved, and its parentage consequently is not certainly known. The appearance of the plant, however, can hardly fail to give an impression of a strong Bourbon influence, and the late Mr. H. B. Ellwanger, of New York, expressed his opinion

known: but as long as a variety has qualities that commend it to every lover of Roses the raiser's name will be cherished, and certainly the name of Jacotot, rosarians will not willingly let die. As for the qualities of Jacotot's great Rose, it seems absurd to attempt to say anything fresh about a Rose that is already classical, and it will be impossible to do better, in concluding this brief reference to the raiser of the most popular Rose the world has ever known, than to quote the description of the greatest classic of Rose literature, Canon Reynolds Hole, who says of Gloire de Dijon:—

Its flowers are the earliest and latest; it has symmetry, size, endurance, colour (five tints are given to it in the Rose catalogues—buff, yellow, orange, fawn, salmon, and it has them all), and perfume. It is what cricketers call an "all-rounder," good in every point for wall, arcade, pillar, standard, dwarf, *en masse*, or as a single tree. It is easy to cultivate out of doors and in. It forces admirably, and you may have it almost in its summer beauty when Christmas snows are on the ground. With half-a-dozen pots of it, carefully treated, and half-a-dozen trees in your garden you

in Burgundy, and died there not many years ago.—Ed.

ROSES AFTER THE WINTER.

It is only when the Roses are pruned in spring that the actual amount of damage done by a severe winter can be clearly estimated; although, of course, it does not follow that even then all the injuries that have been inflicted will be apparent. Some of these occasionally will not become obvious until late in the season; but, as a rule, it is possible at pruning-time to obtain a comparative estimate of the condition of a large majority of varieties. Considering the long spells of cold to which plants out of doors were exposed during the late winter, when on two successive nights there were registered 25° of frost, it was inevitable but that the Roses should suffer to a greater or less extent, and, on the whole, it may be said that they have passed through the ordeal fairly successfully.

Among the Hybrid Perpetuals the greatest damage seems to have been done among the light coloured varieties, the darks in many cases being very little injured; and taking those that were hardest hit more or less in order, the list is undoubtedly headed by Madame Prosper Laugier, which had the pith discoloured, or was killed to the ground-line in almost every instance. All the Baroness Rothschild group, including also Merveille de Lyon, White Baroness, and Mabel Morrison, suffered severely, as did all the most beautifully tinted rose colours, such as Marie Finger, Eugénie Verdier, Pride of Waltham, Countess of Rosebery, Lady Sheffield, and Constantin Petia-koff. The last-named, of course, one always expects to lose, but it is none the less to be regretted that these lovely coloured Roses are not more capable of withstanding a hard winter, and there is ample work for Rose-raisers for some time to come to produce a Countess of Rosebery as hardy and vigorous as Ulrich Brunner. La France and Duchesse de Valombrosa were both discoloured a very long way down, but are breaking strongly from the base, and the same may be said of Comtesse de Serenye and Madame Lacharme. Two Roses of widely differing types in Etienne Levet and François Michlon were desperately cut up, the latter especially, almost more so than Madame Charles Wood and Souvenir de Monsieur Boll, which seem to be Roses of a sluggish circulation, so to speak, and equally liable to disfigurement by frost in winter and drought in summer. Of the darker Roses the worst injured were Duke of Albany and Duchess of Bedford, then Alfred Colomb and Marie Baumann, but it was a pleasant surprise to find that Horace Vernet had come through far better than had been anticipated.

Of the Roses that were not seriously injured, first and foremost comes Ulrich Brunner, whose long shoots, grown on various stocks and in several situations, showed no sign of damage from base to tip, so that this sterling variety in addition to being immensely vigorous and not liable to mildew, and also producing flowers of the first rank with great freedom both in summer and autumn, and retaining its foliage till the very last, appears, moreover, with yet another claim to be considered everybody's Rose, as being perfectly hardy. Violette Bouyer was almost as little hurt, the shoots only being discoloured a very short way back from the tips, and this may now fairly claim the title of the best and hardiest white Hybrid Perpetual. Another Rose that seems perfectly hardy and shows no trace of the effects of the winter is Her Majesty, which was



HENRI JACOTOT. Engraved for THE GARDEN from a photograph lent by his family.

that the variety was raised from seed of a Tea that had been fertilised by some Bourbon Rose. From recent correspondence with Mons. F. Jamin, it appears probable that one of the parents of Gloire de Dijon was the Bourbon Madame Desprez, but no one seems to have any very definite idea as to what the Tea scented parent may have been.

Be its origin what it may, however, Gloire de Dijon remains the delight of Rose growers in every part of the world where Roses can be grown, and its raiser, the late H. Jacotot, whose portrait is engraved in this week's issue of THE GARDEN, will be thought of by all grateful rosarians as having been a benefactor of his race. An ingenious writer in a foreign contemporary has lately been endeavouring to show that no Rose can be of real value, or a true credit to its raiser, unless both its parents are

may enjoy it all the year round, and if ever, for some heinous crime, I were miserably sentenced for the rest of my life to possess but a single Rose tree, I should desire to be supplied, on leaving the dock, with a strong plant of Gloire de Dijon.

*** Admiring often the beauty of Gloire de Dijon, both in cottage and other gardens, we thought last year that it would be well to find out something of the raiser and give a portrait of him if possible. We found on inquiry that no portrait had been engraved; we succeeded in getting a photograph, through the kind aid in the first instance of M. F. Jamin, of Bourgl-Reine, and afterwards of Mr. Webber, of the Botanic Gardens at Dijon, who kindly communicated with the family of Henri Jacotot. We have the pleasure, therefore, of offering the first portrait engraved of a man who has added a great charm to our gardens. Jacotot lived and was a nurseryman in the town of Dijon,

left fully exposed and entirely unprotected. It is to be hoped that the unfavourable reports that have come from America will not prevent people from giving this Rose a fair trial out of doors before assuming that the faults there alleged against it must of necessity characterise it over here. Because American growers find themselves unable to force Her Majesty satisfactorily, that is no reason why it should not be admirably adapted to out-of-door culture in this country. It certainly does not appear to force readily, but when allowed time to develop, its magnificent qualities of size, form, finish, and purity of colour may unquestionably be seen under glass to advantage, as witness the plants recently finely flowered at Cheshnut, which, moreover, showed no trace of mildew, whereas the variety is said to have been overwhelmed in America, although it should be noted that Mr. Peter Henderson expressly stated that he saw no trace of this pest on the 10,000 plants growing at Shepperton in 1885. Although, therefore, it is a matter of the first interest to rosarians in England to obtain the earliest possible information about the behaviour of any novelty in America, yet it should be borne in mind that the conditions of Rose growing are so essentially different in many important particulars in the two countries that it does not at all follow that the experience of good growers with particular varieties in the one will be identical with that of fellow-workers in the other. Dupuy Jamain is, of course, well known as a hardy Rose, and was practically uninjured, and among the red Roses E. Y. Teas was remarkable for the soundness of its wood throughout. All the Duke of Edinburgh family stood well, including also Duke of Teck, Reynolds Hole, and Sultan of Zanzibar. Gloire Lyonnaise, with the exception of a slight discolouration here and there in the two-year-old wood, was unharmed, and the comparatively recent Alphonse Soupert, as well as Catherine Soupert and the fine dark Jean Soupert (all three seedlings, by the way, of Lacharme's), escaped well enough. It was a great relief to find several favourite varieties, commonly regarded as delicate, such as Louis Van Houtte, Duke of Wellington, Xavier Olibo, and Mons. Nomman, appearing quite fresh and healthy. Prince Arthur seemed even less hurt than General Jacqueminot, and Charles Lefebvre, though cut above, was sound enough below, the same remark applying to Lord Bacon. Beauty of Waltham, J. S. Mill, Thomas Mills, Duke of Connaught (Paul's), Annie Laxton, Heinrich Schultheis, and Marguerite de St. Amand were all right enough, and Captain Christy was certainly the best of the Victor Verdier race, while, though Mdme. Gabriel Luizet's two-year-old wood was done for, the young shoots were safe. Last, but not least, A. K. Williams, in spite of the discolouration of the tops of the shoots, did not show the stain further than half, or at most two thirds of the way down the stem, and suffered far less than either Alfred Colomb or Marie Baumann. Of these three, A. K. Williams is now breaking far the most evenly and strongly, and need not, therefore, where the other two can be grown, be considered too delicate or tender for general cultivation.

In localities where Marie Baumann gets very much injured in winter, it may be worth while to make special note of the total immunity from harm of E. Y. Teas, whose flower, if not always quite so large, makes a very fair substitute for Marie Baumann in point of colour; and to those who are given to bewailing the tenderness of modern Hybrid Perpetuals it may fairly be pointed out that the only variety of which plants have been killed outright by a winter,

including temperatures so low as 7° Fahr., was Mdme. Prosper Laugier.

Among the Teas also one variety made itself conspicuous by its tenderness; for, of all the sorts grown, Madame Bravy was the only one of which plants were entirely destroyed by the frost. Of all the Teas on the walls, Madame Bravy was the most hurt; of all the established plants of Teas in the open, whether on Brier cutting or seedling, whether covered with Fern or left entirely unprotected, plants of Madame Bravy alone succumbed altogether. Belle Lyonnaise, however, made a very good second, being killed to the ground, as it was last year: probably, owing to the late season, the wood was not well ripened and so suffered unduly, but there is no doubt that the variety is a tender one, though the plants are breaking strongly in most instances from the base. Both Lamarque and Ophiré were a good deal disfigured, especially the former, but they have survived. Catherine Mernet, Niphotos, Amazone, and Souvenir d'un Ami appeared cut up to about the same extent, their shoots being discoloured to within an inch or two of the collar. Rubens and Perle des Jardins were rather better, and Marie Van Houtte better still, but a good deal harder hit than had been anticipated. Maréchal Niel on its own roots or on Brier was badly hurt, fully four-fifths of each plant having to be removed at pruning time. But, on the other hand, plants of this variety worked on Rosa polyantha were less injured than examples of any of the numerous other Teas and Noisettes amongst which they were growing. Out of twenty plants there were only six of whose shoots it was found necessary to remove more than a few inches, and all are now breaking evenly throughout their length; whereas those on Brier have as yet hardly moved. Rosa polyantha seems to make a stock well adapted to the needs of Maréchal Niel and the climbing Teas at least, as it is very vigorous, grows early, and is nevertheless perfectly hardy. Of other climbers, William Allen Richardson was but little hurt, and Cloth of Gold on a south wall suffered surprisingly little, though on the same aspect as that on which Maréchal Niel was much damaged.

Of the non-climbing Teas, Grace Darling did not suffer in the least, hardly a shoot being discoloured more than 6 inches from the tip, so that another feast of its charming rosy tinted flowers may again be confidently expected this year. Caroline Kuster was the next best, little but the two-year-old wood being stained of the plants on the walls, and not much more in the open. Anna Ollivier, Francisca Krüger, and Souvenir de Thérèse Levet all got well through; and a pleasant surprise was afforded by the discovery that the loveliest of all Teas, Comtesse de Nadaillac, had not sustained serious injury. This variety, though it only as a rule makes small wood, gets it thoroughly ripened, and so, perhaps, is in a better position to withstand a hard winter than sorts which are liable to make a larger, but pithy plant, like Madame Bravy. Souvenir d'Elise Vardon is another dwarf-growing Tea which may be said to have weathered the storm in a satisfactory manner, the ripened shoots appearing quite sound at the base. Hon. Edith Gifford is breaking throughout, as if determined to maintain its character as the most useful white Tea out of doors, and Jean Ducher, Madame Lambert, Innocente Pirola, Etoile de Lyon, and Jean Pernet are starting strong and well, and are each and all looking a great deal better than a good many Hybrid Perpetuals in their immediate neighbourhood.

Of the single Roses, the bewitching little berberidifolia Hardyi has survived on the open rockery, where, though it was only slightly protected with a few fronds of Bracken, it is now looking exceedingly well, and the buds inserted last summer upon seedling Brier stocks are growing strongly. R. sinica, though it does well on a wall, has been much cut back where tried in the open unprotected; but all the others are quite unharmed, and, as far as can be seen at present, the Rose hall will again this year be opened by Rosa polyantha, which in a few weeks' time, in the absence of any unforeseen catastrophe, will be wreathed, or rather sheeted, with snowy blossom.

Rosa maerantha.—It was remarked lately by "Hortus" (p. 225) that he had not come across R. maerantha in perfection away from a wall. This beautiful single-Rose, however, has passed uninjured through the recent hard winter, both growing as a bush and also trained on a pillar in the open entirely unprotected, and appears perfectly hardy. It is already covered with young growth, and a few warm days and nights only are required to render the terminal buds visible in their leafy wrap.—T. W. G.

Gloire de Dijon.—Amongst Roses which have stood the test of time, and which still not only maintain their position, but are ever increasing in popularity, few can equal Gloire de Dijon, for, although Maréchal Niel appeared a few years ago as if it would carry all before it, it must be acknowledged that, as an outdoor Rose, it is as much inferior to Gloire de Dijon as it is superior to the latter under glass. I have grown Gloire de Dijon in all sorts of forms and positions out-of-doors, and it is always satisfactory; and as a wall climber I do not think that any Rose excels it, either as regards beauty when in bloom or the length of time during which it continues to produce its lovely blossoms. It is one of the earliest and latest of Roses. Who has not seen glorious examples of this popular Rose on the sunny sides of villa and suburban residences, with its strong shoots of the preceding year's growth, perfect wreaths of delicately-coloured flowers? We have a plant of it here covering a large space of south-west wall that is seldom seen without blooms or buds on it. Under a continuance of mild weather, this grand old Rose well deserves the title of perpetual-flowering, and it is no slight boon to have a variety on which one may depend to furnish even a few blooms to cheer the dark days of early winter without the aid of glass. Therefore, to anyone about to plant wall climbers, whether on mansion, villa, or cottage, I would say, if you have only room for one, let it be that well-tried Rose Gloire de Dijon.—HANTS.

SHORT NOTES.—ROSES.

Pruning Marechal Niel Rose.—I have a Maréchal Niel Rose on its own roots planted outside and trained inside an old-fashioned vinery, now used as a greenhouse. It was planted nearly three years ago, and has grown so vigorously that the whole roof is almost covered with it. It is now flowering abundantly, but the lower part of the plant is inclined to make wood, and there is not room in the house for the branches to make more long shoots. Under these circumstances what would you advise? Would it be well to cut the branches back very close, perhaps even cut away part of the woody stem? I trouble you with this question because I understand that it is not considered advisable to prune Maréchal Niel Roses very severely, but in this case I hardly see what else can be done. I am anxious not to injure the plant through ignorance, as it is a remarkably fine one, and is loaded with buds and blossoms.—V. M., *Dorchester.*

Marechal Niel Rose failing.—We have a house of Maréchal Niel Roses planted out. It is a large cold house used for Chrysanthemums, &c., and the Roses are trained against wires running by the side of the walks. There are 30 side lights, only ventilators which we have recently had nailed up. In spite of every attention and care these Roses are one after the other cankering off. The shoots grow freely and healthily to 5 feet and 6 feet and then gradually die away, first of all looking yellow and sickly. Can you suggest any cause for this? They are planted in good loam, and watered occasionally with farmyard manure water. They are not all affected, as some are growing and flowering splendidly. What we would especially ask you is, what is likely to produce canker under

the circumstances, and would you advise growing this Rose in such a frame under such conditions as those stated?—MARSHALL BROS. & CO.

FLOWER GARDEN.

DURABILITY OF THE ROOTS OF THE JONQUIL.

GROWING out of the turf in the pinetum overlooked from my bedroom window is a small clump of this charming little favourite. It numbers perhaps a score of roots, one-half of which flower every year, when in due course the tops die or are mown down. At the present time it is the exact counterpart of what it was nearly thirty years ago, and, judging from the fact that this spot formed the entrance to an old kitchen garden, which was done away with in 1812, there exists but little doubt that this handful of roots have played their interesting part every year since the battle of Waterloo. How much longer they will last it is impossible to say, as they are neither helped nor hindered by plucking, manuring, or digging, but manage matters entirely in their own way. This year the flowers are unusually late, but they will be none the less welcome.

LENT LILIES, of which we have scores of acres, also are late, Easter having passed before many of the flowers were ready. A few years ago these, combined with wood Anemones and Primroses, formed one of the most beautiful sights it is possible to imagine, but a change, I am sorry to have to say, has come over the scene. The mad craze for wild flowers set in; people fetched them by carriage-loads; the poor folks followed suit. Agents set up in Leebury, offering so much a dozen for small bunches for the northern markets. Our woods suffered; the young coppicing was trampled underfoot by hordes of women and children and a few lazy men, who, finding a pheasant's nest, knew what to do with the eggs. The craze grew; people in distant towns could not exist without a continuous supply of Lent Lilies; free fights between woodmen and the pilferers took place, and we were put to the expense of employing the police as well as private watchmen. Had a few of the depredators, especially the long-coated section, been served with summonses, the traffic might have been checked, but this course was objectionable; consequently we have had a yearly battle, not with, but for, the flowers. People said, why all this fuss about a few wild flowers? Why prevent ladies and their children from leading their carriages with these, and later on with branches of the beautiful crimson and white Hawthorn unmercifully torn from the trees? Why prevent the masses from devastating the beautiful woods they are allowed to drive or walk through free gratis for nothing? Simply because liberal owners, after allowing visitors to gratify the senses of sight and smell, do not wish their woods and fences ruthlessly trampled under foot. Whilst granting all reasonable latitude to pickers of a few handfuls, they do not wish the bulbs bled to death by the drawing of every flower as it opens, and future crops nipped in the bud by literally trampling to death every bit of young foliage at the most critical stage of its existence. This is what has happened here, and the same thing no doubt is going on in other parts of the country. The damage to the bulbs themselves the first few years does not show itself, but in course of time there is a sensible diminution in vigour, flowers and foliage are weaker, decidedly later, and less plentiful. If anyone doubt this let him draw all the blooms out of his best Hyacinth bed, and beat the door mat every morning for a fortnight on the foliage; he may then leave his poor wounded and bleeding plants to themselves, and, if not before, certainly next year he will agree with me in saying that the owners of beautiful woodlands must not lose any more time if they wish to preserve our flowery dales in their enchanting beauty. When well-dressed Goths and ragged Vandals get thoroughly used to the privilege of rambling over beautiful parks, they seem to overlook the fact that they should assist in protecting Nature's richest gifts for the enjoyment of the owners as well as the multitude. Here, they do nothing of the kind, but having stripped the hillsides of the choicest Ferns, and

filled the churches and their houses with Lent Lilies, they think themselves badly used because they may not send the remainder to market. This coercion they resent by carving their initials on the backs of garden seats, by stripping a favourite *Acacia* of a world-famed piece of Mistletoe, and tearing this parasite from our druidical Oak. When Enville, Witley, and other noted places are closed, the masses may sing "Rule, Britannia!" but they have only themselves to blame for the withdrawal of privileges which they cannot appreciate.

W. COLEMAN.

SELECTIONS OF DAHLIAS.

WHEN a selection of say twenty-four varieties of what are known as show Dahlias is given, and no descriptions are appended, those who are unacquainted with the flowers find it very difficult to get any definite idea of the character of leading varieties. Even when descriptions are given they are often somewhat misleading, and so I have thought it might be serviceable if, at the outset of the Dahlia season, I were to give the Dahlia-loving readers of THE GARDEN a classification differing from what is usually given, and at the same time one that will enable them to select types to their liking. I will commence with twelve dark Dahlias, comprising flowers of one shade of colour, or flowers in which two dark shades, one deeper than the other, are found in combination. My list is as follows: Harry Keith, Thomas Hobbs, Imperial, James Cocker, James Vick, John Henshaw, Joseph Ashby, Joseph Green, Lord Chelmsford, Prince Bismarck, Prince of Denmark, and William Bawlings. It may be remarked and it will apply to all the lists I intend to give, that the flowers named are all approved exhibition varieties. The best twelve light Dahlias—white, blush, delicate lilac, buff, mauve, or pink—will be found in Emily Edwards, Georgiana, Herbert Turner, Hope, Mrs. Gladstone, Mrs. Harris, Mrs. Dadds, Prince Arthur, Vice-President, Seraph, Ethel Britton, and Mrs. Stancomb. The best yellow self Dahlias are *Aeone of Perfection*, Cecilia, John N. Keynes, Leab, Mrs. G. R. Gifford, Muriel, and Tolson (For). The best twelve tipped and edged will include the following six from the show class, viz.: Mrs. Langtry, Henry Walton, T. J. Saltmarsh, Lady Gladys Herbert, Miss Cannell, and Harriet Tetterell; also the following six, which are classed among the fancy flowers: Jessie McIntosh, Maid of Athens, Miss Annie Milson, Mrs. Saunders, Peacock, and Fanny Sturt. A further list of striped flowers will comprise all fancies, because all striped blooms come under this heading; they are General Gordon, Gaiety, Henry Eckford, Rev. J. B. M. Camm, George Barnes, Rebecca, Pelican, Professor Fawcett, Henry Glasscock, Adventure, and Charles Wyatt.

On the occasion of the coming grand National Dahlia Show at the Crystal Palace on September 2, some Veitch memorial prizes are offered for Dahlias to be shown by amateurs, and there are two classes—one for nine self-coloured show Dahlias, and another for nine parti-coloured flowers. Into the former class can come almost all the dark Dahlias named above, the yellow selfs, and such flowers among the light Dahlias as can be regarded as self-coloured. The parti-coloured flowers will include all that are tipped and edged and also striped. This is introducing quite a new feature into Dahlia exhibitions, and it will be interesting to see what the result will be. I am decidedly of opinion that the change will be found acceptable to Dahlia exhibitors. And there are open classes also for dark, light, tipped, and striped Dahlias, and the lists I have given supply the names of the varieties that can come into each of these classes. In the nurserymen's classes, the old and arbitrary distinction between show and fancy flowers is got rid of, and they will be shown together. This is an innovation that breaks down a merely artificial distinction, and that with positive advantage to Dahlia exhibiting generally.

R. D.

Primroses in sun or shade.—I think if "A. D." (p. 314) had seen our bed of Primroses lying flat on the ground through being frozen, and

afterwards thawed by a bright sun, which spoiled both the foliage and the flowers, he would have felt, as I did, that they would have been all the better if they had been in a position sheltered by some overhanging branches. I shall not expose them again to such violent changes of cold and heat, because if they had been under the shade of a tree they would have been protected from frost. I think with Mr. Douglas that these coloured Primroses do not differ in any way from the common ones in their requirements as regards soil and shelter. The most satisfactory lot I ever grew was in a shrubby border, shaded by overhanging trees, and where spring frost did not reach them. I quite agree with "A. D." that very little can be done in dividing these Primroses, and if anyone wants a stock of plants they cannot do better than raise them from seed, the present time being suitable for raising plants to flower next year. J. C. C.

Primula Allioni. This gem among the European mountain Primroses has been for some time past one of the loveliest of the rich collection of alpine plants in the York Nurseries. It is in growth one of the most diminutive of all Primroses, but the flowers are large, absurdly large compared with the leaves at the time of flowering. The blooms are as large as those of the common Primrose, but are stalkless and of a splendid rose-purple, which is in contrast with the pure white centre. It is one of the rarest and choicest of all alpine Primulas, and anyone who has an alpine garden and does not possess it loses a great beauty. Like most Primroses of the mountains, it is regardless of cold, and the cold weather at York of late has in no way narrowed the beauty of its flowers. W. G.

Primula marginata. This is a very beautiful species, and I would like to add to Mr. Wood's remarks in THE GARDEN (p. 394) that there are many varieties of it. We grow the varieties grandiflora and caerulea obtained from Messrs. Backhouse. I exhibited the last named form well in flower at South Kensington at the Primula exhibition. I have grown it in pots for nearly twenty years, and find that it flowers well when liberally treated. I have not grown it in a sunny position either; the plants are usually placed with other alpine species during the summer on the north side of a low wall. To see this species in all its pristine beauty one must visit the York nurseries of Messrs. Backhouse in April; it is a sight never to be forgotten—the large masses of it in flower in various positions in the rock garden. How has this species been produced is a question which might seem superfluous, as we read in "Alpine Flowers" "that it is a native of the Alps of Tauria and Daphny and various ranges of the south of Europe, but not of the Pyrenees." I can also testify from practical experience that the cultural directions given on p. 323 of "Alpine Flowers" are correct. I have raised several plants which are undoubtedly *P. marginata* from seeds of *P. villosa* var. *niva* of the *Botanical Magazine*, tab. 1161, the *P. nivalis* of gardens. Has anyone else raised seedlings from this plant? and if so, it would be interesting to know what variations they have had. The largest proportion are pure white *P. nivalis*. J. DOUGLAS.

Erythrina crista-galli. Many years ago this curious, but beautiful flower was considered a fit subject for flower garden or even conservatory decoration, and although it has lost none of those good qualities, the plant is now seldom met with in any garden. Some years ago I saw it growing well and flowering profusely in large beds in front of the conservatory on the lawn at Panshanger Park, near Hertford. Mr. Ruffett, the gardener, thought much of the plant. He treated it as a hardy plant, leaving it out of doors all the winter. The treatment necessary to grow it well is very simple; it thrives in a moderately rich, but well drained soil, pressed firmly about its roots. Beyond stirring it up occasionally the soil should not otherwise be disturbed. It is a plant of rather strong growth, and about the beginning of May throws up its shoots, which will continue to grow fast until August, when it flowers for two months or more. The flowers are scarlet and somewhat resemble a parrot's beak. They are produced in racemes, and these with the glossy foliage make it one of the most noble and attractive plants in

the garden for two or three months. When it has done flowering, its shoots should be allowed to remain until they turn yellow, thereby ensuring the thorough ripening of the buds at the crown of the plant; cut them off down to within an inch of the crown and cover with rotten manure during the winter months. It can be propagated in two ways, one from young shoots starting from the collar of the plant 2 in. or 3 in. long, or by making cuttings of the old flower-stems when quite ripe, plunged in bottom heat in a close frame.—T. RECORD.

PANSIES V. VIOLAS.

A SERIES of dry, hot summers seem to have told against Violas as bedding plants and Pansies for ordinary border purposes. In southern districts heat and drought are far more antagonistic than are wet and cold, for Pansies and Violas are far hardier than many give them credit for, especially ordinarily grown as hardy plants. Small seedlings or newly-rooted cuttings may perhaps suffer if planted out into open ground in October, because they cannot become established ere frost comes. If such plants cannot be put out by the end of August or early in September, they will be better off in frames or seed-beds until the spring, when they can go out early with assured safety. But older plants seem

to be harmed by winter. During the past two winters I have seen many thousands tested by the weather, but they have braved it well. These, however, although comprising fancy, English, and self-bedding kinds, with Violas also, having always been planted out during the previous summer, have been so well established in the ground as to be enabled to defy snow, frost, or rain, and even our wretched metropolitan fogs, the worst tests of all for plants to pass through. Of course Pansies, however hardy, are not unconscious of the average nature of the season, and move slowly and show bloom only sparsely yet; still, there will be a rich abundance of bloom presently, especially should the rain (which seems imminent) come, and with it really soft, spring-like weather. Most people have their fancies amongst hardy flowers, but whilst actual fanciers of the Pansy are not so numerous as its exceeding beauty deserves, yet it is liked by all. That is due to its hardiness, accommodating nature, easy increase, and not least, its large, showy flowers. There is some tinge of sentiment hanging over the Pansy, due perhaps to its old cognomen of Heartsease, but sentiment weighs little with modern gardeners, of whatsoever section they may be. We are now so terribly utilitarian, and grow Pansies less for sentiment and more because they cheaply give us beautiful flowers in exceeding abundance. In reference to the distinction between Violas and Pansies, it is now hard to draw the line; constant interbreeding and selection have brought the two sections so close together, that no link is wanting between even *Viola cornuta* and the finest and most perfect of Pansies, although individually divided by most marked differences. Pansies have become in numerous cases bedding Violas, and Violas have developed into Pansies, so fine and effective are the flowers. Still, we find no difficulty for our own purposes in defining a *Viola* as a dwarf-habited, spreading, and profuse-blooming plant, hardy, early, and rapidly increased by cuttings or division. Ordinary Violas have small flowers or of moderate size, which are regarded less for their form and substance, and more for their abundance and effectiveness. A few years since Violas were in great request as spring bedding plants. Either spring bedding is gone out of fashion, or else some other plants have considerably displaced Violas; and yet it must be admitted that it would be hard to find any class or family of plants which give so readily, so early, and so profusely more bloom, or make better bedders.

We have whites, yellows, blues, and purples in abundance, and some diverse or mixed colours have not been wanting. It is hard to see how in any good spring garden Violas can be dispensed with, and yet there seems to be just now a great lack of interest in them of a most unreasonable kind. Perhaps the fecundity which marked Violas a few years since brought satiety, but a few years of rest

may be productive of renewed interest, and if so it is hoped that it will not be strangled by the rapid introduction of indifferent novelties, so many of which, whilst pretty, lack the very requirements which make a good bedding variety. If we find Pansies holding on to popular favour longer as bedding plants, it is chiefly because these latter have larger flowers, and there is always existent in the masses a taste for size in flowers, even though quantity may be lacking. The special feature of any good bedding *Viola* is, that if its blooms be much smaller than those of Pansies, yet they are far more abundantly produced, so that the loss of a few flowers makes little difference in the mass. Large-flowered Pansies, however, cannot afford to lose a few blooms in that way; still, with so many persons mere size is the one essential. This criticism applies chiefly to Pansies used for bedding purposes, those employed for ordinary decoration or grown for the production of exhibition flowers being regarded from a different standpoint, as with these, in the estimation of growers, size, combined with quality and rich colouring, are the chief requirements. Of these the Belgian or fancy kinds give the finest results, and in variety of form and colouring may vie with any other flower grown. If anything should tend to make Pansies once again popular, it certainly will be found in the exceeding beauty, combined with size, found in the flowers of the fancy section. The old Pansy fanciers, of whom hardly one now exists in the south, found their favoured subjects in the English or belted and self-coloured kinds. There was not very much variety found in a dozen of white ground belted or yellow ground belted flowers, some nice distinctions, as with *Carnations*, *Picotees*, &c., being essential to create differences. The same may be said of the self hues, chiefly white, yellow, and purple, these showing trifling diversity in shade, form of flower, or size of blotch.

No doubt the old Pansy florists found points of beauty in their favoured flowers not so discernible to ordinary observers, but the range of the florist, nevertheless, was a limited one. Fancy Pansies, on the other hand, refuse to lend themselves to nice distinctions. To meet the regard of exhibitors they should have size, form, substance, and broad dense blotches; but these are features which the most unlearned in Pansy lore can admire, and rightly. Still, there is no room for refinings, and no end to variations in colouring. A big bed of fancy Pansies affords bewildering beauty, although not producing the same striking effect that a mass of some single-coloured *Viola* does. In this latter case the whole mass of colour is absorbed at a glance. In the former case, every flower demands special notice, because each one is a picture in itself, and a picture which very often puzzles artists faithfully to copy. Whilst fancy Pansies have robust habits, they perhaps are less compact-habited than are those of the English strain, but older plants which give more growth show this tendency to straggle less than young ones. How easily they are raised from seed may be seen in many gardens, and not least in those places which supply the market trade; but further, they are propagated by division readily if lifted and transplanted early in the autumn. To this end the blooming wood should be sacrificed early in August, the result being that new growth is encouraged from the roots and a tuft of shoots is formed. Some may be removed and placed in pans or boxes of sandy soil under hand-lights in the form of cuttings, most of which will in a few weeks make excellent plants. The old plants, carefully lifted and divided, each tuft giving several rooted pieces, should be dibbled out into a bed of good soil and, if needed, be kept well watered for a few days. In about a month these will have become well established, and thus may be transplanted into other quarters if desired for the winter. Strong plants put out in the autumn give the finest heads of bloom in the spring, whilst weaker ones, or those put out in the spring, bloom only after the heat of summer is being felt. Tens of thousands of plants, apart from seedlings, are reared in this way around London, as the demand for them begins the moment a bloom is expanded, and flowers can hardly be got out too early. The hawkers and others interested

in the sale of Pansies give the preference to the fancy kinds, because of their colours, whilst all very big flowers are in considerable request. A. D.

BEDDING OUT.

THOUGH frequently quoted as an advocate of carpet bedding, I can honestly assert that never once have I made a bedding arrangement that the word "carpet" would fitly describe; not once, I repeat, have I had an arrangement of plants with a perfectly even surface (which a carpet must have) or of intricate design, nor one composed entirely of tender plants, and it is now extremely unlikely that I ever shall, for experience has taught me a more excellent way than using even half the tender plants I used to do. But still bedding out is demanded of me, but, very fortunately, I am left to my own will as to how and what plants to use, the only conditions required being effectiveness, with sufficient coloured foliage plants and flowers as to make it worthy the name of a flower garden. I am but a poor hand at descriptive writing, so cannot enter into details, and it must therefore suffice to give a general outline of the rules I adhere to in respect to bedding arrangements. Before proceeding further I ought to say that the garden with which I have to do is an elevated plateau of geometrical design, but not of the severest type, there being no fancy figures nor statuary, but merely a few vases of simple design. Such a garden must, therefore, be planted in something approaching uniformity of design and colouring, so that one is precluded from exercising that liberty in regard to variety of plants that would otherwise be an advantage. Necessity, however, though sometimes a hard taskmaster, is a good teacher. Restricted space, restricted designs, restricted diversity of plants, and yet there must be the grandest and at the same time a lasting effect. Such was the discipline I had to undergo, but from which I emerged with a fair amount of credit, and now long usage has made the once tedious task a pleasure. But to revert back to the rules of procedure I follow in planting such a garden. They are—uniformity of plants, not necessarily the same kinds, but of uniform height and habit; next, hardiness—plants that will last a long season, and that will withstand wind and rain without being seriously injured; next, colour—the brightest that it is possible to use, having due regard to the neutral tints of trees and shrubs with which the colours should harmonise; next, a true balance of colour over the entire garden, no one colour to predominate; next, the freest possible use of all kinds of hardy shrubs that do not seem out of place in flower-beds or arranged in what I call "sentinel" positions on the greensward, such as at the angles of beds and ends of vistas of turf. By adherence to these rules I have for many years managed to plant our parterre after the bedding-out fashion to the satisfaction of those most nearly concerned and to the pleasure of very many besides. The work, from being a task, has thus grown into a pleasure, and it is not the less so because I have been able to discard a great number of tender plants that took up much valuable time to prepare, not to mention the house room they required, and which now is at liberty for growing plants for room and conservatory decoration. To this last-named phase of the subject must be credited the reform and improvement that have taken place in summer bedding out. The great work of propagation of plants and house room required proved to be the "last straws," and they have, indeed, broken the back of gorgeous colouring and fleeting effectiveness, and created a longing that is rapidly being satisfied for hardy flowers, of which, despite my supposed predilection for carpet bedding, I grow extensively and in great variety, and some few are even pressed into service for the bedded-out parterre, though at one time I could not tolerate the idea that any of them could ever be made to appropriately intermix with ordinary bedding plants, such as *Pelargoniums*, *Fuchsias*, and *Heliotropes*. I have, however, lived to alter my opinion, and now practise that which I once deemed an error by using the following perennials in bedding arrangements, namely, *Japanese Anemones*, *Rudbeckias*, *Delphiniums*, double and single-flowered *Pyrethrums*, *Spiraeas*, *Pentstemons*, *Antir-*

hinums, Pinks, and Carnations; and when to these have to be added summer-flowering and annual Chrysanthemums, Gladioli, Tigridias, Hyacinthus caudicatus, and a few others that I cannot just now call to memory, it will be seen that the list of bedding plants, apart from the orthodox section, is a large one; whilst as to hardy foliage plants, the list is still greater, if we admit the two sections of tall standard and dwarf carpeting plants. The latter consists of many varieties of the mossy section of Sedums and Saxifrages, Herniarias, prostrate growing Veroniceas, variegated Thymes and Golden Feather Pyrethrums, and the best of the tall section are several varieties of Japanese shrubs—Retinosporas particularly—Acers, Aralias, Bamboos, and Phormiums, all of which commingle most appropriately with tender subtropicals such as Cannas, Ricinos, Solanums, and Palms. Arrangements and mixtures of the various sections I hope to allude to another time.

W. WILDSMITH.

Wallflowers, single and double. These are now loading the air with fragrance. They are, like

months, but those that have braved it are bursting into flower. The old golden yellow variety with its long heavy spikes of bloom is opening freely now. It does best in a dry soil, and is very popular here by the seaside, as it attains a good old age, the soil being stony. The German double, with its mixed coloured spikes, after the style of Stocks, appears fairly hardy, but mixed colours do not seem so popular as the selfs, and they are certainly not so effective. They are mostly grown like Stocks by sowing early in boxes, so as to flower during the current year.—J. G. H.

THE MYRTLE-LEAVED ORANGE.

(CITRUS MYRTIFOLIUS.)

As a pot plant this is one of the neatest and best of the Citron tribe, of rather erect habit, and with its branches more closely clothed with foliage than in the case of the kinds more usually grown. The ripe and unripe fruits, of a deep orange colour, and rich, dark green with a highly polished and rather deeply grained sur-



Citrus myrtifolius. Engraved for THE GARDEN from a photograph.

all other flowers in the open air, very late this year, but none the less welcome or beautiful. Amongst single varieties Bedfont Yellow is very bright and clear. It has large smooth leaves quite distinct from other kinds, the flowers of a beautiful pale yellow, without a blotch or stain. Next comes the dwarf Blood-red, a general favourite and excellent for bedding, as it grows so close to the ground. We have them in full bloom and not 1 foot high. Great care is necessary to keep these sorts true. As they cross so readily, the bees are sure to hybridise them, and then one gets the cottage garden strain with the dark and yellow streaks combined which is the glory of the little garden plots at this time of year. I frequently stop and admire them when passing by the cottage gardens, and I find that they are spreading to the allotment gardens of our town artisans, who, having no gardens attached to their house, take the next best step to rent an allotment, and they plant flowers by the pathway for an edging. The double Wallflowers have had a severe trial during the last six

face, are carried in a bold, strong fashion, that gives a well-to-do air to a little tree such as the one engraved, and is a pleasant variety to the more weakly hanging habit of other Oranges.

Narcissus bicolor maximus and N. major superbus (Backhouse). Has any lover of bicolor Daffodils—the most beautiful section of all—suspected the existence of two varieties, distinct in character, yet running so closely that unless to a most practised eye they are identical? I am very anxious to settle this point, and will be glad to exchange flowers with the members of the Daffodil committee or traders who may grow stocks of bicolor. Mr. Brockbank, at Manchester, wrote on the subject in THE GARDEN some two or three years since, at the same time bringing into controversy the identity of the lost major superbus. If he will kindly send some flowers to me I will be much obliged; also, if he will send me a bloom of his majus superbus, as I fancy I recognised the flower in an English garden within the last month. The bicolor sections

are really fine here this year. Emperor is nearly 3 feet in height, a noble flower in the lorifolius class. I think that anceps is a distinct plant from rugilobus. The true anceps I have got from Scotland; the trumpet is longer and narrower, and the foliage also narrower. Rugilobus is in appearance a small Emperor. Anceps in shape is like Haworth's bicolor, but earlier.—W. B. H., Cork.

Border Auriculas. What a gain to our gardens in the spring would be clumps of C. J. Pery with its rich purplish hue, or of Hermione with its reddish maroon colour, as shown at South Kensington last week. But these fine self Auriculas only exhibit their gaudy tints in perfection when grown with exceeding care under glass, and even if they would thrive outdoors the blooms would present but a washed-out, miserable aspect. But, whilst we may not hope to obtain the rich hues of show Auriculas from these choice sorts in our borders, we may well hope to approach to them through careful sowing and selection from our sturdy and hardy border kinds. Auriculas are wonderfully pretty when grown under glass, because every feature of the flower is clearly produced. Outdoors, however, we do not want mixed colours or greatly diverse markings. To be effective as border flowers, self colours are most desirable, and dark hues specially are needed. We have a perfect wealth of yellow and white tints in spring flowers, but blues, reds, maroons, and crimsons are comparatively scarce. Polyanthuses give us dark tints in good variety, but whites and yellows are earliest. However, we want Auriculas as well as Polyanthuses; hence, we must strive for colours, the which shall make them effective. To do this, plants should be isolated and seeded separately, but the chief aim should be to secure rich dark self hues, the flowers being bold and carried on tall, stout, erect stems. Border Auriculas are wonderfully hardy and enduring. Slow of growth even from seed, they are slow to decay. Sow seed at once under glass for autumn planting and next year's blooming.—A. D.

Tufted Pansies. I was much interested in your plate of tufted Pansies in THE GARDEN. I have raised many seedlings from selected plants, and succeeded in obtaining a beautiful white variety and also a fine mauve-coloured sort; both of these never grew more than 4 inches high, and formed solid blocks of colour. I also aimed at getting sorts that would flower early in the spring, in which I was fairly successful, for if the winter was not too severe they would be in flower early in March in the west of England. With my own seedlings I also used freely the old Cliveden Yellow Pansy, which flowers at the same time and about the same height, and very pretty they were in lines or masses. The designation of tufted Pansy is a happy one for the style of growth the varieties you illustrate, as many of the so-called Violas are too loose in growth to be pleasing. The easiest way of increasing the stock of existing kinds is to cut them over early in August, and by the end of September they will be bristling with young growth, and in that condition they are admirably suited for planting where they are to flower in the spring, and such as are wanted to increase stock can be pulled to pieces and the young side growths dibbled into pans to be kept in cold pits or frames through the winter. If these pieces are planted out in the spring they will flower nearly all the summer. When required for massing in the spring, one-year-old plants are better than small pieces, and there is no better way of obtaining them than cutting back all the flowering shoots in August and planting them where they are to flower early in October.—J. C. C.

The Auricula rules.—I have long wondered why the alpine class of Auriculas should be so interesting and so poor in colour, but at the late show Mr. Douglas told me there was a rule that the margin must be shaded, which explains the matter. I always thought that having indulged their fancies to the full in requiring florists' flowers

to follow set forms, the alpine class was to lead to the presence of plants more like the natural form of the common Auricula; but it is not so. Therefore any tendency of the plants to turn, to show the naturally self-coloured characteristic of the Primulas, is stopped. It is a pity, because it is the pure self colours one sees upon the mountains where Primroses are so beautiful. What a pity the society will not permit changes which will allow of Auriculas being shown in a beautiful way!—R.

NOTES FROM BADEN-BADEN.

PRIMULA DENTICULATA ALBA, a snow-white variety, finished bloomingsome time ago, but an indigo-coloured variety of this Primrose is still in beauty. I have not yet been able to produce a really blue sport, but hope to do so if I live long enough. My work among Aubrietias is slowly progressing; the crimson Leichtlini is very conspicuous, but I am now working out a very different strain. *Anemone nemorosa grandiflora*, larger and better-shaped than the type, is a decided acquisition, and *A. fulgens Aldboroughensis*, raised by the Rev. J. G. Nelson, and for the possession of which I am indebted to Miss G. Jekyll, is also a first-rate plant. It is different from fulgens in its leafage, and the flowers are deeper in colour, very rich and full, and often nearly 4 inches across. A clump of *Muscari atlanticum*, with brilliant cobalt-blue flowers, contrasts well with the sombre slate-black spikes of *M. paradoxum*, and *Bellevalia leucophaea*, with sky-blue broad spikelets, is quite as showy as the rare true *Muscari Heldreichii*; this latter has the largest bells of the whole genus, and each of these is ornamented by a conspicuous white rim. *M. Szovitzianum* is of a pale cobalt colour, and its spikes are very large, sometimes 2½ inches. A new *Fritillaria*, from Cashmere, has showy orange blooms; it resembles *F. inodora*, but the colour is much better. *F. Schliemannii* has green flowers, yet they have a beauty of their own, and *Korolkowia Sewerzowii* discolor well deserves cultivation, and will be appreciated by all who admire less gaudy, though harmonious colours. *Iris orchoides* and its variety *splendens* in their shining yellow attire are also very desirable, being quite hardy. *I. prae-cox* and *pumila macrocarpa* are quite a mass of showy grey and blue. *I. Bludowi*, also of the dwarf bearded section, has large, shining, deep yellow flowers, which show off to advantage a neighbouring clump of the velvety violet-black-flowered *I. paradoxa*. *Podophyllum Emodi* strives hard to extend its beautifully marbled leaves to protect a number of its large flowers, which later on are succeeded by showy, scarlet, egg-shaped fruits. *Milla uniflora blanda* is a pure white sport, a gain of my garden. *Farsotia triquetra* is but a Crucifer, but a very showy one, bearing bright yellow flowers in compact heads. Among shrubs, *Pyrus Maulei superba*, a variety raised by me some years ago, is simply magnificent; its flowers are twice as large as the type and are deep blood-red, superseding in profusion of bloom all existent varieties of *japonica*. In a frame, some superb varieties of *Pyrus Tropeolum tricolorum* attract the attention of all visitors, especially one very long-spurred variety with orange-scarlet, emerald-green, and yellow flowers; these lovely climbers were frozen several times during this winter, and have not suffered in the least, and *T. edule* has even been tested, and found quite hardy.

MAX LEICHTLIN.

Baden-Baden.

SHORT NOTES.—FLOWER.

Magnolia Campbellei.—A handsome specimen of this, fully 18 feet high, is now in flower in the gardens of Mr. Crawford, Lakelands, Cork, and presents a magnificent appearance. Owing to the severe weather we have lately experienced, I did not expect to see it in flower.—W. H. B., Cork.

Delphinium Prince of Wales.—This variety is an excellent addition to the list given by "R. D." in THE GARDEN (p. 367). The flowers, thickly set upon the flower-spikes, which are freely produced, are light blue with an almost white eye. A strong, vigorous habit of growth renders this one of the best of the class.—E. M.

Trentalis europaea.—I have collected this plant for many years on the open moors of Perthshire, but had difficulty in establishing it at Oakwood till I made a bed of thin, poor peat near enough to our pond to give a little dampness. It

then grew freely and seeded itself. It is well worth taking a little trouble with for its own sake as well as for the pleasant memories it recalls.—GEORGE F. WILSON.

SOME USEFUL PLANTS FOR THE FLOWER GARDEN.

ALL who take an interest in the summer decoration of the flower garden must observe that Pelargoniums are not so commonly used as they were twenty years ago, yet there is plenty of room for a still greater decrease, as they are far outdistanced in beauty and interest by many of the hardy perennials. Some of the best of them are the following:—

SEDUM SPECTABILE.—This is a plant that is attractive alike in leaf and bloom. It is perfectly hardy, and about the month of July, when it will be 18 inches or 20 inches high, each stem will be terminated by a huge cluster of flowers of a warm purple or rose colour, and will remain in good condition for over two months. It is exceedingly effective as a mass or row in beds or borders, and is increased by division of the old roots. This should be done before the season is too far advanced.

PHLOXES. These are all useful in the highest degree, and although they are often seen planted in out-of-the-way corners, as if their owners were ashamed to see them, they form excellent flower garden subjects. A prominent mass of Phloxes here and there amongst the dwarfier plants is a relief, and I consider that they are not half so much used in flower gardens as they merit. I have grown a very fine collection, and although new varieties appear annually, they do not cease to be more massive in form and gorgeous in colour than their predecessors. I am delighted with them. As a rule we plant them and leave them, as I do not approve of annual transplanting and shifting them about from place to place. Plenty of manure when first planted and close attention to staking and tying while growing invariably produce satisfactory results.

TUBEROUS BEGONIAS. I hear from the superintendent of a London park as well as from a noted flower gardener in Scotland that these are the coming plants for flower garden decoration, and they are most excellent subjects, but it would be a pity if they ever became as common as Pelargoniums have been. Tuberosus Begonias might be grown in thousands of instances where they are still unknown before they would predominate, and no harm can result from advocating their culture in every garden, as they can be kept from year to year. This is greatly in their favour, and although they are somewhat late in the summer in becoming effective, yet they are exceedingly showy and very attractive during the autumn months. As they are generally regarded as greenhouse plants, some people may think that they would soon wither in the autumn, but this is not the case, as they are amongst the last plants in the flower garden to cease blooming. Bulbs are somewhat expensive to buy, but from a small packet of seed a good stock may soon be raised. Seed sown this season will produce bulbs that will make a fine display next year.

HERBACEOUS LOBELIAS.—Lobelias in the flower garden are almost wholly confined to those of the speciosa and pumila types, very pretty plants in their way, but not half so attractive as the herbaceous varieties, of which *L. cardinalis* and *L. fulgens* are the best sorts. They are quite hardy, and remain in the open ground all winter, like Phloxes. The first batch of them I ever received was from Mr. Coleman, of Eastnor Castle, and I shall always feel grateful to him for providing me with such a valuable subject for the flower garden. They attain a height of 2 feet and 3 feet, and produce spikes of rich scarlet flowers. We frequently mass them in the centre of large beds, and we have made short rows of them in ribbon borders, and in all cases they never failed to give satisfaction. Large plants may be divided at this season, and if planted in good soil will be effective by July or August.

SUMMER-FLOWERING CHRYSANTHEMUMS.—Many are apt to think that Chrysanthemums are best suited for an autumn or early winter display,

and that their charms of form and colour would be lost at a time when all kinds of choice flowers are plentiful, but the summer-flowering Chrysanthemums do not verify this, as although their flowers are smaller, yet they attract attention in the flower garden, and during September and October are very conspicuous. They flower very freely and continuously for weeks and months together. They are particularly hardy in growth and habit of blooming, as extremes of weather are less injurious to them than almost any plant I could name. Sunshine does not tarnish the blooms, and rain only makes them glow more brightly. They continue to bloom in late autumn when no flowers are visible on Pelargoniums, and they may justly be regarded as one of the most useful classes anyone can deal with. We never take any of our summer-flowering Chrysanthemums indoors or under glass, as they remain in the beds all winter, and when we wish to increase the stock we allow them to throw up a number of shoots at this time of the year, then the plant is wholly dug up, each of the young shoots is cut off with a few roots attached, and at once re-planted where it is to grow. They are very useful plants in the hands of those who have no glass houses or pits, as their successful culture may be carried on continually in the open air.

PYRETHRUMS.—It is only within recent years that these have become popular, as their huge double and single Daisy-like flowers charm all who see them, presenting as they do such a variety of soft and telling colours. It is no use to plant them singly, but an entire bed or beds of them will prove satisfactory in all gardens. They delight in a rich deep soil, and the flowers bear cutting admirably; indeed, it is a mistake to allow any old flowers to remain on the plants, as these impede the formation and development of fresh ones. They are easily raised from seed sown in the open at this time, and useful plants which may be used for immediate effect may be purchased at a cheap rate.

LANTANAS. These vie with Verbenas in the form of their flowers and gorgeous colours, and they do not possess that objectionable habit of dying off prematurely so often experienced in Verbenas. The flowers have a rather disagreeable smell, but this does not prevent them from making a grand display in the flower garden. They are not so hardy as the preceding plants, and must be reared under glass, but a few of them are a fine addition to the flower beds.

VERBENA VENOSA. This is by no means a new plant, but it is not so much or so often used as it ought to be. If raised from seed it will flower the same season, and the roots last many years. They may either be lifted in the autumn and stored in boxes during winter, or they may be left in the ground all the year round. It attains a height of 15 inches or 18 inches, branches very freely, and produces its little clusters of purple flowers in great profusion from June until November.

J. MUIR.

Narcissus Little Nell.—The severe criticism on this very distinct, though small Narcissus which was submitted to the committee on April 12 for registration is hardly fair. It is most desirable to avoid the indiscriminate naming of small forms of well-known varieties, and this was laid down as a general rule for the guidance of the committee, but in this instance the flower under consideration was acknowledged to be quite distinct from previously named varieties, and thus did not come under that rule. "D. W." cannot make out what it is an improvement on. Nor can I, for it is unlike any other in cultivation. He compares it with *N. pallidus prae-cox*, and suggests it may be a small form of that variety. Had "D. W." placed the blooms alongside those of *N. pallidus prae-cox*, he would have observed that in growth, form, size, and notably in colour they were distinct from it. Were we to give up growing varieties or species of Narcissus simply because they are small, we should forego some of the gems of this family, such as *triandrus*, *juncifolius*, *monophyllus*, *cyclamineus*, *minimus*, &c., which are most interesting to a florist and desirable for culture in pots, though of

little value as market plants or as ornaments in our gardens. As yet the stock of Little Nell is so limited that many who desire to possess it will have to wait some time before it can be procured.—J. T. Poë, *Riverston*.

DOUBLE PRIMROSES.

IN THE GARDEN of April 23 (p. 369) "A. D." says that he has not heard of any instance of a wood Primrose being found with even semi-double flowers. It may therefore interest him to know that I found a root of the common wild Primrose in a double (or semi-double) form, about four years ago, in Stone Wood, near Greenhithe, and removed it to my garden. Being then unfavourably situated for flower culture, it merely existed, bearing, however, a few flowers each spring, until I removed to my present residence last autumn, when I put it into a loamy border shaded by espaliers, and it now forms a handsome little clump, about 10 inches across, and has at the present time about fifty-one blossoms and opening buds. I enclose some of the flowers, and will be glad to learn whether they should properly be termed double or semi-double.

A neighbour of mine also tells me that, two or three years since, he had some double wild Primroses sent him, which were gathered in a wood near Cuxton, in our county. Referring back to your own columns, too, a correspondent in your issue of 22nd January last (p. 65) says that a double form of the wild Primrose has been found in a Cornish hedge-row, and I daresay many other instances have occurred.

With me this form blossoms somewhat later than the ordinary single Primrose.

In connection with this subject, I remember, as a youth, finding a *red* Primrose (single) in a Sussex hedge, far removed from any garden, but did not at the time give more than a passing thought to its singularity.

I am happy to say that with me neither Primroses, Violets, Wallflowers, nor Forget-me-nots—all of which grow in profusion among the Roses and bush fruits here—have been at all injured by the frost and snow this winter. Probably the bushes and fruit trees protected them. I expect that the frequent partial thawing and freezing again which occurred in most open places while the last snow lay on the ground caused the havoc of which "D. T. F." complains (p. 368).

Allow me most earnestly to second "W. G. M.'s" request for localities. Many interesting communications from your correspondents are practically valueless, as one cannot tell whether they are from north, south, east, or west, and so cannot know whether it is worth while to pursue similar methods or institute comparisons with one's own work.

North-ct, Kent.

RITMAN.

. The flowers sent are not really double in the proper sense of the word, but are what are generally known as semi-double forms. Ed.

Montbretias.—Since the appearance of *M. crocosmiaeflora* there have been several new varieties put into commerce; indeed, there is now a long list of names, but as the range in colour is not great it is difficult to find any marked difference existing between some of them. At the same time I flowered three varieties sent out last season by M. Lemoine, of Nancy, and found them all very desirable, and, what is more, quite distinct from *M. crocosmiaeflora*. The varieties were Bouquet Parfait, yellow centre, with the edges and tips of the petals orange-red; Gerbe d'Or, a plain rich golden yellow; and Etoile de Fen, bright orange-red, with small yellowish centre. Not only are these Montbretias very pretty when allowed to form clumps in the open ground, for here, in the suburbs of London, they are quite hardy if a little manure is spread over the crowns, but they can be easily grown in pots and flowered in that way. In any case they will need a liberal supply of water during the growing season, and should not be placed in a position fully exposed to the sun, otherwise the foliage is very apt to turn yellow and thus disfigure the

whole plant. *M. Pottsi*, which for many years stood out as the only representative of the genus in our gardens, is now almost ousted by the newer *M. crocosmiaeflora*, though I see this season *M. Lemoine* announces a form of *M. Pottsi* under the name of *grandiflora*, which he claims to be a very superior variety.—H. P.

Heildreich's Grape Hyacinth.—I notice in last week's GARDEN a reference to the Grape Hyacinth, blue and white. I send you three spikes of Heildreich's variety, which I think you will admit is far in advance of the ordinary variety.—M. SMITH, *Roselen, Prestwich*.

. The spikes are much larger in every way than the form botryoides. Another advantage is that it flowers later. Ed.

Primula Sieboldi.—In the show of *Primula* species at South Kensington last week sadly were the fine exhibits which Mr. Llewellyn has hitherto brought found wanting. Although that gentleman brought his plants from far Wales, yet he invariably brought plants, and not pieces; hence he always gave us in *Primula* species something to look at. Specially missing were the Penllergare clumps of *Primula Sieboldi*, with their luxuriant foliage and fine heads of elegant and various-coloured flowers: of the three dozen or so of *Primulas* shown not more than one or two were varieties of *Sieboldi*. In one case a huge *P. japonica*, with large leaves and a few poor flowers, made the most prominent feature, but small specimens, more interesting than striking, seemed the rule. Even the Kew collection, exceedingly interesting, no doubt, to botanists, contained barely one striking or effective plant, and certainly nothing so good as a fine bunch of any of the *Sieboldi* forms. Punny rock varieties, needing the aid of microscopes to discover their floral charms, hardly command respect from those accustomed to the size and gaiety of garden flowers. Perhaps the culture of *Primula Sieboldi* varieties has been neglected because the family is somewhat lacking in bright colours; and yet, with the exception of *P. rosea*, there are few species which give brighter hues. But in the matter of productiveness of bloom specially suitable for cutting if needed, no *Primulas* excel the *Sieboldi* section. Good clumps of from twelve to fifteen stout rhizomes, in 8-inch pots, form heads of bloom and leafage which no other hardy *Primula* suitable for pot culture can excel. It is very probable that crowding of crowns in the pots has been largely productive of barrenness—hence indifference. A. D.

PROPAGATING.

LAPAGERIAS. These beautiful greenhouse climbers cannot be struck from cuttings, or, at all events, if they are occasionally rooted in this way the occurrence is too rare to allow of this mode of propagation being generally followed. On this account they are usually increased by means of layers, and this operation can be carried out at almost any season, except when the plants are in full growth. Whether planted out or in pots the mode of procedure is the same, but as the *Lapageria* grows far more freely when the roots can run in an open border, the best shoots for layering are, as a rule, produced by those that are planted out. The branches can be layered either in an open border or in pots, the first method giving the least trouble, but if rooted in pots there is this advantage that they can be separated from the parent plant without disturbing their roots. For layering, good clean shoots of not too hard a texture should be chosen, and the portion to be covered with soil should be partly cut through about a couple of inches below a joint, the knife being then brought upwards till the joint is almost reached. The mutilated portion of the shoot must then be covered with soil to a depth of a couple of inches, sprinkling some sand around the joint at the same time. A long shoot may in this way be layered in half a dozen or more places, each held securely in position by a peg or two. As the *Lapageria* branches are very flexible, the shoots, if layered in pots, can be twisted round

in such a manner that the pots may be stood close together, and in this way can be better attended to than if scattered here and there. These layers must be allowed to remain undisturbed for a couple of years, and by that time, if reasonably successful, will have formed a base, from whence a shoot or shoots are pushed up, which will grow away and thus form the future plant. When these layers are lifted and potted, good fibrous peat with a liberal admixture of sand must be employed, and, after potting, the plants had better be kept close and shaded till root action recommences, which can be at once seen by the shoots commencing to grow. Some charcoal broken up to the size of horse beans and mixed with the soil will greatly assist the formation of roots, not only in the case of *Lapagerias*, but with most other plants. *Lapagerias* when once established will frequently ripen seed, and in this way great numbers of plants can be raised, but the progeny is very frequently inferior in flower to the parents, but, of course, there is, as is usual in the case of seedlings, a great difference amongst them. The pods should be gathered when ripe, and the seeds being extracted are better if sown without delay. For the purpose, well drained pots or pans may be used, the most suitable soil being sandy peat, sifted moderately fine, and pressed down firmly about an inch below the rim of the pot.

The seed being sown must be covered with about a quarter of an inch of soil and then watered, when a pane of glass may be laid over the top, and if plunged in a gentle bottom-heat germination quickly takes place. They will also come up as well, but slower in a greenhouse temperature. In any case a sharp look-out must be kept for slugs, as they are very partial to the young growing shoots, and a few aphides will injure the plants greatly in a day or two.

Attention need be now directed to *Conifer* seed that was sown early in the season in a slightly heated structure, which conditions are the best for raising the scarcer kinds, as if properly attended to the loss amongst them will be very small. The young plants are rather liable to damp off during their earlier stages, more especially if sown rather thickly, and as soon as any decay sets in the young plants should be pricked off. Soil of a loamy nature with an admixture of sand is very suitable for the purpose, and the young plants should have their naked stems buried at such a depth that the seed leaves are just clear of the surface of the soil. A free circulation of air should be maintained around the young plants, as by these means decay is to a great extent prevented, and they grow up stout and sturdy. When grown in frames the same rule will apply, viz., to maintain a constant circulation of air, and to prick off the young plants on the least signs of decay appearing. In the case of the larger kinds whose roots are too long to allow of their being dibbled in without injuring them, they may be potted into small pots, using the same soil as for the others. One great point to bear in mind is that the plants must not be left too long in pots, as they acquire a cramped character, which is likely to tell greatly against their success afterwards. To prevent this in planting the roots should be spread out in as far as possible a natural position, and the soil pressed firmly around.

EURYA LATIFOLIA VARIEGATA. This Camellia-like shrub, so much valued for its beautiful variegated foliage, is not an easy subject to propagate; indeed, failures are frequent, but it can be struck fairly well from cuttings, though this operation often takes considerable time. The cuttings should be taken about this time of the year, or a little later, according to the conditions under which they have been grown, and must consist of shoots of the current season's growth in a half-ripened condition. The weaker shoots strike root more readily than the very stout and succulent ones, and as, generally speaking, the entire growth of these is from 1 inch to 6 inches long, the whole shoot forms a very suitable cutting. It should be separated just at the point of union with the older wood without leaving a heel of the harder growth at the base. The bottom leaf or leaves being cut off, all is ready

for insertion. As it is very necessary to keep the cuttings close after putting them in, if there are no propagating cases at hand suitable for the purpose they may be covered with a bell-glass, and in that case the size of the pots employed will depend upon the glasses that are at hand, but where it is intended to put them in a close case, pots of 4 inches in diameter are very suitable for the purpose, as half-a-dozen cuttings can be very well put around the edge, and in this position they strike root more readily than elsewhere. A soil largely composed of sandy peat with a little loam sifted fine is very suitable for the purpose, and they must be well attended to in the matter of shading, as if they are allowed to flag the chances of success are small. On this account they should be put in as soon as possible after being separated from the parent plant.

COLLETIAS.—These peculiar spiny shrubs appear at first sight to be rather unlikely subjects to strike from cuttings, but such is not the case, for they root very well if pieces of the branches are put into pots of sandy soil and stood in a cold frame. The formidable *C. cruciata* is not at all difficult to root; indeed, of a number of cuttings put in last year nearly all have formed roots. T.

CHRYSANTHEMUMS.

E. MOLYNEUX.

I NEVER saw the plants improve so much as they have done during the last three weeks, owing possibly to the fact that, until recently, they were in a backward state, being weakly and having small leaves, and these not of a particularly good colour or texture. The long-continued severe wintry weather, when the plants had to be covered up more than was good for them, combined with an almost entire absence of sun for many days and biting cold east winds, all detrimental to the proper consolidating of the growth of such a succulent plant as the *Chrysanthemum* in its youthful stages of growth, have affected them very much. All *Chrysanthemum* plants ought now to stand upon a dry bottom of coarse ashes or cinders, where all superfluous moisture can quickly pass away, and ought to have ample space between each, so that a sturdy growth is maintained in all stages. This item is not nearly so much taken into consideration by many would-be growers as it ought to be, for it makes in a great measure all the difference between success and failure. It often happens that space is limited; hence the crowding together of the plants. My advice is then, under such circumstances, not to attempt to grow more plants than can conveniently be managed; far better to grow only half the number and attend to them properly. The plants are now assuming that gross character both in the stems and foliage which denotes vigorous health, and is a good foundation towards future success. Mildew often makes its appearance upon the leaves of the young plants, generally in damp, sunless weather, and this pest is much aggravated by a too confined atmosphere. The moment it makes its appearance dust the plants affected with flowers of sulphur; that of a brown hue is the best, for the reason that it is not so objectionable in appearance as the ordinary colour. Green fly is a troublesome pest which infests the points of the young plants, and if allowed to remain for ever so short a time quickly spoils the tender leaves, which disfigure the plants in time, and at the same time cripple that free growth which is so essential. Tobacco powder, applied by means of a distributor, is by far the best method of exterminating this pest, and within twenty-four hours syringe the parts affected; this leaves all clean and free from both powder and fly. After several successive warm, sunny days a gentle dewing over the leaves of the plants with the

syringe with tepid water about 3 p.m. will be beneficial towards promoting a healthy growth. Any spare plants not required for growing in pots may, after a time, be used to fill up gaps in either the shrubberies or at the backs of the herbaceous borders. Such plants should now be placed out of doors at the foot of a south wall, if possible, where they will become gradually hardened off preparatory to being finally transferred to their permanent quarters, which should be done about the second week in May.

DWARF PLANTS.—Where much furnishing has to be done in the autumn either indoors or in the conservatory, it often happens that suitable dwarf plants for the fronts of the stages or for filling jardinières or vases in the house are scarce; unfortunately, there is not an over-abundant supply of kinds adapted for the purpose named unless special means are taken to grow the plants properly and as circumstances require. Plants 1 foot to 1 foot 6 inches high are always welcome for this purpose. The best variety to achieve this object that I am acquainted with is *Seur Melanie*. It is naturally dwarf in habit and also retains its foliage in good condition for a long time. It is very floriferous, and, what is of great importance, all its blooms expand at the same time, thus making it very effective as a pot plant. At the end of April or early in May divide the old stools or plants of last year's growth and plant them out in good soil, allowing ample space between them. Failing these old plants, young ones of the current year's growth may be used; should the summer be very hot and dry give a thorough soaking of water to the roots occasionally. Secure the growth as it advances to stakes in any kind of a rough manner, and about the 20th of July take off the tops 5 inches long and insert them rather thickly in 4-inch or 6-inch pots, using sandy soil enriched with some Mushroom bed manure. Place the pots in a propagating case in a cool house in the same way as for cuttings early in the year. Shade them from the sun for a few days till roots are emitted, gradually harden them off, and remove them outside to a bed of ashes in the full sun. When they are growing freely supply them liberally with liquid manure, and when the bloom buds show colour allow all to remain; support the branches either by placing one stake in the centre and tying the shoots to it in the same way as *Mignonette* or *Bouvardias*, or place a neat stick to each plant; indeed, this is much the best way, as owing to the weakness of its peduncles the flowers of this variety have a tendency to droop. Another way of treating this excellent kind so that larger plants are available more resembles the bush method of growing other varieties, excepting that the cuttings are not inserted till a month later, thus rendering the plants smaller, and consequently more dwarf, which is the aim when cultivating these plants for the purpose named. Some cuttings should be struck in February and more in March, and by these means a succession of flowers can be maintained. As soon as rooted pot them singly into 3-inch pots, placing them in a frame close to the glass, keeping the frame close for a few days until new roots are made, and at the same time pinching out the points of the shoots. Keep the plants sturdy by free ventilation in favourable weather. Continue to top the shoots when from 3 inches to 4 inches long of those rooted in February until the middle of June. During the last week in that month transfer them into pots 6 inches or 7 inches in diameter, and by this time the shoots will have broken from their last topping. Those rooted in March should be topped when from 3 inches to 4 inches long, continuing the operation till the first week in July, and when

they have broken into growth again transfer them into their flowering pots, using the same sized pots as for the earlier struck ones.

Another method of producing useful little plants in small pots is as follows: At the end of June peg a few shoots down to the ground from the plants put out in the open for supplying tops for the system previously described in *THE GARDEN* (p. 402). When roots are formed pinch out their points, and when the first break occurs after this topping cut them off and pot singly, placing them in a cold frame for a few days till new roots are formed. If small plants of the incurved kinds are wished for, the *Rundle* family, such as *George Glenny*, pale primrose, *Mrs. Dixon*, orange-yellow, are the best kinds. Young plants are placed out of doors, as in the case of *Seur Melanie*, and frequently pinched until the middle of June. About the first week in August take off the points of the branches about 6 inches long, placing six or seven in a 5-inch pot, treating them in a similar way to the others, with this exception, that the buds should be reduced to one on a shoot; these will then produce neat, little incurved flowers on plants about 1 foot high. In the Japanese section, *Dr. Macary*, lilac, is a variety well suited for this treatment, as it has stout, deep green foliage, and is of a stiff habit of growth requiring no support for plants of the height named. *Peter the Great*, pale lemon, is another sort well suited to this style of cultivation, its habit of growth being erect and of a stiff character.

GARDEN FLORA.

PLATE 595.

NEW HARDY PASSION-FLOWER.

(*PASSIFLORA CÆRULEA* CONSTANCE ELLIOTT. *)

AN addition to the list of climbing plants suitable for open-air culture in this country is such an uncommon occurrence, that peculiar interest attaches to the appearance of a new white-flowered variety of such a popular old favourite as the hardy blue *Passion-flower*, which, in favourable localities for its growth, is one of the most beautiful wall-climbers in cultivation. When this white-flowered variety, *Constance Elliott*, was first announced, many were induced to think that an albino of *Passiflora cærulea* belonged to that large family of mythical plants that exist only in the imagination of nurserymen, and certainly the first flowers that were seen of it did not go far to refute the idea, as they were decidedly too green to be termed white. Since, however, the plant has become widely distributed and grown under various conditions it has quite answered to the description given of it at the outset. Its flowers, as our plate shows, are not snow-white, but ivory-white, both in the sepals and the fringe, which in the original blue *Passion-flower* is of a bluish shade. The *Constance Elliott* variety, moreover, is a vigorous grower and exceptionally floriferous, much more so, in fact, than its parent, but why such is the case is unexplainable. In every place where the common *Passion-flower* succeeds, this new white variety will no doubt supplant it, on account of its being more attractive in flower, and a more delightful garniture for a verandah, alcove, pergola, or wall could not be chosen from the long list of open-air climbers. I have seen the *Constance Elliott* *Passion-flower* several times growing and flowering in the greatest luxuriance, but I have never been more struck with its elegance and beauty

* Drawn for *THE GARDEN* in the Hale Farm Nursery by H. G. Moon, July 10, 1886, and printed by G. Sovereyns.



CASSIPLURA COCCIFERA "CONSTANCE ELLIOTT"

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than when I saw it festooning a verandah, last September, in M. Herbst's garden at Richmond. It was getting dusk at the time, and the flowers seemed to stand out in bold relief from deep green foliage in a charming way, and I at once saw what a valuable open-air climber it was.

The variety, I believe, originated in a Devonshire garden, and was distributed by Messrs. Lucombe and Pince, of the Exeter Nurseries, and few among the many beautiful plants sent out by that firm surpass this one in value. It has now become tolerably common, for as soon as it was known to be "a good thing" no further recommendation was needed.

The original *Passiflora cerulea*, represented in the annexed woodcut, is one of our oldest garden plants, having been in cultivation since 1699. It is a native of Brazil and Peru, in the mountainous districts where the climate

and white, becomes rosy in autumn, and the plant when covered with flowers and fruit is really splendid. — E. FORGOTT BY ONE.

*. The plant received is variegated with blotches of white, but is not sufficiently developed for us to pass an opinion as to its merits. We will grow it and report later on. — Ed.

FRUIT GARDEN.

W. COLEMAN.

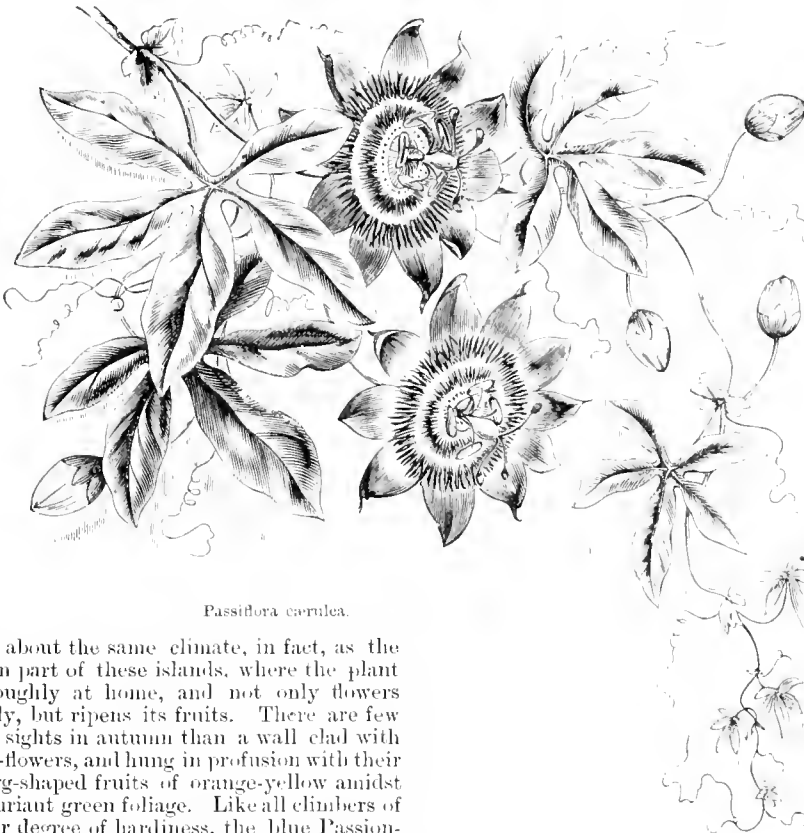
ORNAMENTAL APPLES.

It is more than gratifying to find all classes of readers and planters constantly inquiring for the best Apples for special purposes. The first and foremost consideration no doubt is profit, and quite right too, as there exists but little doubt that our Apple culture has a grand future before it. Many difficulties no doubt have to be overcome. Legislators and landowners have their parts to perform; practical gardeners and

fruit in the autumn. But these do not answer our purpose; we want free, hardy, handsome growing varieties for planting on the home estate and in the pleasure ground. These in the first few years of their life must have protection from hares, rabbits, and cattle. Once established, they must be hardy enough to take care of themselves in one sense, and they must be good enough to be worth looking after when they arrive at years of maturity. We want varieties whose pure white or bright crimson flowers render them especially handsome in the spring, whose rich golden or crimson fruit repeat the picture in the autumn; and last, but not least, we want and must have sorts that will stand against all comers for culinary or dessert purposes in their respective seasons. The hedgerow system of planting ornamental or timber trees is bad; therefore sites in the open park, the Grass field, or in the grounds of sloping banks where the soil is good, naturally drained, and shelter from cutting winds can be secured; moreover, if possible, they should be arranged in groups above the line of fog and spring frosts. Many strong-growing trees hold their own and do well when introduced near the margins of young plantations. Weaker growers form charming groups when thrown out well in front of masses of Conifers. Dot planting as much as possible should be avoided, and instead of mixing the sorts each group should consist of one variety, as they will then blend and throw each other up, not only when in flower, but also when the fruit is ripening. If the work is to be really well done, I see no reason why the ground for these groups should not be trenched and, the better to save future labour, sown or planted with some dwarf kinds of Evergreens. I say this advisedly, having some years ago planted the beautiful *Pyrus spectabilis* and the old Norfolk Beaufin on deeply trenched loam, previously sown with the common Gorse and white Broom. Here the first is a sheet of crimson flowers, and this excellent Apple which I am now sending to market produces good crops whenever orchards are not a total failure. Next, as to

VARIETIES, which should not be too numerous, I would take the cream of the sorts that do well in the neighbourhood, and as these within the next six weeks will be in full bloom, planters with an eye to effect, with catalogue in hand, may mark down a few whose habit and bloom suit them best. If strong trees that will attain the dimensions of forest trees are wanted, I would go in heavily for that grand late Apple *Hambledon Deux Ans*, *Blenheim Orange*, *Northern Greening*, *Flower of Kent*, *Beauty of Kent*, *Tower of Glannis*, and the improved *Bess-pool*. Other groups might be formed of *Alexander*, *Lord Suffield*, *Lane's Prince Albert*, *Norfolk*, *Hereford*, and *Striped Beaufins*. The latter do not make large trees, but they are marvels of fertility, and the fruit hangs very late in the autumn. Some might choose the *Kentish Goff*, a telling tree in the spring, but being of second quality I should not plant it. In warm, sheltered situations I should give preference to *Claygate Pearmain*, *Worcester Pearmain*, with its pure white flowers and crimson fruit; *Irish Peach*, the *Old* and *New Hawthorn-dens*, and *Cox's Orange Pippin*.

Many more might be selected, but here we have sufficient for a start, and, provided readers of THE GARDEN wish it, I will extend the list before planting time comes round in the autumn. One delicious Apple for very select spots within sight of home I have omitted, and that is the old *Ribston-flavoured Margil*. Half-a-dozen



Passiflora cerulea.

is mild, about the same climate, in fact, as the southern part of these islands, where the plant is thoroughly at home, and not only flowers profusely, but ripens its fruits. There are few prettier sights in autumn than a wall clad with *Passion-flowers*, and hung in profusion with their great egg-shaped fruits of orange-yellow amidst the luxuriant green foliage. Like all climbers of a similar degree of hardiness, the blue *Passion-flower* thrives best against a warm southerly exposed wall, though on other aspects it flowers well, and may even be grown on open bushes in some favoured parts, but under such conditions it rarely fruits well. In very severe winters, such as that we experienced in 1879-80, the *Passion-flower* is killed, unless protected; but the plant is so rapid in growth, that if a large plant is killed it may be replaced in a season or two if the young plant is treated liberally. There is nothing to say with respect to its culture, as it grows well in any good garden soil, the better if light and rich.

There is no other *Passion-flower* that can be grown successfully in the open air in this country, the majority of the species being natives of tropical and subtropical regions.

W. G.

Phytolacca albo-variegata.—We send to-day a small specimen of our new *Phytolacca albo-variegata*, which we hope will be a good addition to plants for grouping on lawns in summer. The foliage, which is now only green

fruit growers have theirs. All, in fact, who know anything about Apple culture or fruit markets should lend a hand, not only in the diffusion of knowledge as cultivators, but also in sweeping away the abominable tolls and vested interests which tell so heavily on the consumer as well as the producer. Further, they must educate the masses in large towns into the true belief that English Apples, although possibly less showy, as an article of food are equal to the finest in the world. We have repeated inquiries for the best selections of Apples for private use, for market, and especially for late use, and now within the past year or two there has gone forth a cry for ornamental Apples. Strictly speaking, all Apples are ornamental; all have their special use; the common *Crab* even, or the wilding in the hedgerow, are beautiful; indeed, from an artist's point of view it is questionable if many of our choice Apples can beat them when in flower in May or carrying their bright crimson

trees on the free stock would make a choice group.

PEACHES OUT OF DOORS.

MUCH has been written lately about the success and failure of outdoor Peach crops. Many failures might be traced to neglect of some of the details or methods of cultivation practised; one of these—a very important one—is the disbudding of the trees. In some cases it is not done sufficiently, thereby allowing the growths to become so much crowded that proper development of neither leaves nor branches can take place. Disbudding of the shoots which are not required for the proper development of the tree should be commenced directly the leaves are visible. By these means more time is allowed to take off what shoots can be dispensed with, at various times, so that a check is not given to the tree by allowing all to remain until a growth of several inches has been made and then removing all at once. To preserve an evenly balanced tree much depends upon disbudding properly. In the case of young trees the operation should commence at the top of each; this checks somewhat the flow of sap into the stronger parts and assists the lower and consequently weaker parts. All shoots intended for permanent use should be retained on the upper side of the branches.

FORM OF TRAINING.—This to a careful cultivator is an important item, as a well-trained tree will produce as much good fruit as one slovenly trained. As growth progresses the shoots should be laid in either by nailing or tying to wires as fast as is required. Some persons allow the branches to make a foot of growth before they think of fixing them to the wall. When they are laid in as soon as long enough to handle they receive in a far greater degree the benefit of the sun's rays on the wall. The growth as it progresses is solidified, and consequently is much better ripened in the autumn, a point absolutely essential to ensure success in the season following. The leaves of one shoot should not overlap those of its neighbour. As soon as the crop is gathered, whatever pruning the trees are likely to require in the winter ought to be done at this time, as by so doing, the remaining branches which are depended upon to produce the next season's crop of fruit have a much better opportunity to become thoroughly ripened. This has been our practice, and has resulted satisfactorily. We do not only remove some of the shoots of the current year's growth, but any weak or worn-out older branches are cut away where desirable to make room for others of more promising appearance, as it is upon the healthy young branches that the best crops of fruit are procured. We pay strict attention to preserving the foliage in a clean, healthy condition during the summer months. This, I consider, one of the most important matters. It is difficult to lay down a stated time when the trees should be syringed, as much depends upon the weather and earliness or lateness of the seasons, but as a guide, it is safe to begin when the fruit is taking its first swelling and when the nights are warm. From four to five o'clock in the afternoon we thoroughly wash the foliage of the trees with the garden engine, using tepid water; if the weather be very hot and dry the syringing is done every night, but if wet and cold it is varied according to circumstances. After a very hot day it is surprising what an amount of water the bricks will absorb. By these means the wall is made cool, which prevents in a large degree the spread of red spider upon the foliage, and this, coupled with the thorough washings we give to the trees, prevents spider from obtaining a footing at all. I find that gentle dewings upon the upper side of the leaves is not of much service, as it is on the under part of the leaves where the enemy lurks. I consider a tree infested with red spider while the fruit is making its second swelling in a very bad state, and not calculated to ripen the fruit thoroughly, or to lay upon a good foundation for the succeeding year's crop, because the preservation of healthy foliage is the only way in which to ensure success. We do not syringe the trees in the morning, because the night dews, coupled with the syringing the previous

evening, are generally sufficient to maintain a moist atmosphere about the foliage. Seldom it is that we are troubled with green or black fly since we made a practice of thoroughly washing the walls during the winter with soapsuds from the laundry. If the former should appear we use tobacco powder dusted on the points of the affected shoots, and to destroy the latter we use strong tobacco water, placing the liquid in a saucer and dipping the points of the shoots overhead in it. Some of our trees, particularly those upon an east wall, suffer a good deal in the early spring from blistering of the leaves, owing to their being exposed to keen east winds, which are prevalent in this part of the country. The only remedy for this is to pick off the affected parts as fast as they appear, and with warmer weather the trees outgrow this evil. As our trees are planted high we water very freely during active growth, and after the fruit is gathered we give copious supplies; a lack of water at the roots at any season if the trees are in good health is very detrimental to them. Often non-success with the trees outside may be traced to neglect in this one detail, especially when we consider what a quantity of moisture a brick wall will absorb. Whatever moisture is absorbed by the wall below the ground line is taken from the roots of the tree.

If the trees are well supplied with surface roots, we give occasional heavy soakings with liquid manure after the fruit has completed its stoning process. The quantity of water, both clear and liquid manure, to be given to each tree depends entirely upon local circumstances, such as the size of the trees, number of roots, whether they are deep or shallow, whether the soil is heavy or light in character; if the former, much less will be required. I have not mentioned what is perhaps the most important point of all to be observed, namely, the roots, because without these in proper condition success cannot be obtained. It often happens that when new walls are built, new borders made, and fresh trees planted, the soil round about and under the trees settles down considerably; while the borders, which are generally devoted to a crop of some sort or another, by the addition of annual manurings, soon get much higher than the tree-line; consequently, unless extra care be observed, the roots are buried to a great extent. To obviate this they should be lifted entirely. The best time is in September or early in October, bringing the roots close to the surface, covering them sparingly with soil; over this place a layer of fresh manure from the stables if the land is at all inclined to be of a heavy nature, but where the soil is more of a sandy character a mixture of cow and horse manure will be an advantage. Our trees always have a covering of one of these manures over their roots, laid on thinly twice a year at least. As the manure rots down the roots seem to revel in it. After the crop of fruit is gathered, if the trees do not require lifting, the roots are examined, and if at all bare a thin covering of loam is added with which has been mixed some old mortar. This is firmly trodden down and the mulching of manure applied, then follows a good soaking of clean water.

A firm soil for Peaches and Nectarines is essential to success. Keeping the roots in a proper manner by lifting them to the surface prevents the formation of those gross growths which are useless as fruit-bearers. Of course, all these details of culture which I have endeavoured to point out, were they carried out, would be futile in their object if means were not taken to protect the trees when in blossom. Many are the schemes adopted, such as placing fishing-nets and evergreen branches over the trees, but the most effective plan of protection is properly-constructed roller-blinds. These, with care, last a long time if they are made with what is called No. 3 serim canvas. Where rollers cannot be fixed, owing to low walls or other circumstances, a strong wire fastened under the wall-coping will support the blinds upon rings; these can be pushed to one end in the morning and drawn along again in the evening.

No doubt there are localities where Peaches will not flourish outside owing to atmospheric or soil influences; but the fact of their not succeeding in

many places is not owing to the fault of locality, but in a great measure to cultural details. A selection of early sorts is all in favour of out-door Peach culture; but I may say that I had last year a capital crop, which ripened well, of Walburton Late Admirable, and if this late variety will do well here (South Hunts) other early kinds will do in other districts not so favourably situated.—S.

It is years since Peach trees on open walls presented such a promising look as at present. They are not only wreathed with bloom, but, what is more important, the leaves are unfolding bright and clean, for it is just in the first flush of growth that they usually get crippled with fly, and once the leaves get curled and blistered, it takes half the season before they start kindly into growth. From where I am now writing a young tree is growing that has been admired by everyone that has seen it for its large showy blossoms, one side of the tree being in full bloom, while the other side was only in bud, and now the leaves on the one side and fruit thickly set are more forward than other trees in unheated glass houses. The reason of this is that a flue from a neighbour's house keeps the wall constantly warm, and although I never expect to see heated walls come into general use, I can testify in this instance to the Peach tree being evidently benefited by it, as we had very severe frost while it was in bloom, and although no covering was applied, I should say that 90 per cent. of the bloom is set. This tree affords yet another instance of the wonderful recuperative power of young trees. During three years it was a miserable-looking specimen with hardly a vestige of leaf left on it, but I persevered with giving frequent washings of soapsuds, and it grew away so vigorously that it is now as handsome a tree as anyone might wish for. It is surprising what wood a Peach will make in one season, and although Peaches on open walls were certainly deteriorating a few years back, I observe a decided improvement in them in gardens generally during the last year or two. J. G. Hunts.

NOTES ON VINES.

WISHING to renew the plants in our Muscat house with as little loss of time as possible, I decided to do half of the house at a time. The Vines have been planted twenty years in an outside border and brought through the wall into the inside border, in which they soon made roots. When I decided to renew them I cut off the stem just outside the wall and destroyed the roots, and made a new outside border, leaving the inside stem and roots untouched. This was done by way of an experiment, as I was uncertain whether or not there were enough roots inside the house to sustain the growth or mature the crop. I had not long to wait for the result, as they broke as strong as at any previous time, and showed more bunches than were wanted to furnish a crop. I allowed them to remain, and the fruit ripened as well as ever I knew it, thus showing that the loss of half of the roots had no effect on the crop. The Vines are equally as promising this season. When the old rods have finished off this year's crop they will be destroyed, as the young ones, planted last June in the outside border, will be strong enough to bear a few bunches of Grapes next year. The inside border can then be re-made, so that the actual loss of fruit during the renewal of the Vines is reduced to the lowest minimum.

Another Vine, which had been trained in a horizontal direction up one end of the house and down the other, and had a set of roots at each end, two years ago I cut in two, leaving about 1 foot of bearing rod on the end furthest from the old roots. This is growing and bearing as good a crop as the other, in which the sap flows in a natural direction. These two cases show that the Vine is an accommodating plant; but there is certainly a limit to its endurance, of which I have evidence in the case of a pot Vine that I had the curiosity to attempt to grow in peat Moss alone without any soil. The Vine was potted three years ago when dormant in a pot 14 inches in diameter in Moss, mixed with about half a pound of Clay's fertiliser. The subsequent treatment was the same as that given to other Vines. I did not expect to see it show fruit

(the first year, and to encourage it to make good wood I applied a small quantity of the fertiliser during the growing season. Each season it made satisfactory growth, but has never showed any fruit, thus proving that the Vine requires something more substantial than decayed Moss and concentrated manure to ensure its fruitfulness. J. C. C.

AMERICAN CRANBERRIES AND OTHER FRUITS.

I READ in THE GARDEN, Jan. 22 (p. 66) that the American Cranberry, "when cooked, is said to be very palatable." This statement sounds odd to us in America, where the Cranberry has come to be one of the staple fruit products. It is not only picked from the native swamps in many parts of the country, but it is also grown on a large scale. The leading Cranberry-growing States are Massachusetts (at Cape Cod and vicinity), New Jersey, Wisconsin, and Connecticut. Michigan, which leads in most fruit industries at the north, is also growing Cranberries to a considerable extent.

In New Jersey alone there are some 5200 acres under Cranberry culture. The entire crop in the United States last year from cultivated vines was probably not far from 600,000 bushels.

From these figures you will understand that the Cranberry is a very popular fruit in America. Especially will you appreciate this when you take into consideration the fact that thousands of acres of wild Cranberry marsh are annually picked over and the products sold or used for home consumption. Of course, we never eat the Cranberry raw. Its principal use is for sauces and pies. Its aromatic, rich acid is refreshing and wholesome. A considerable portion of the crop is now exported to England.

It is surprising how independent we Americans are in this matter of fruit. Nature has dealt liberally with us. It is only thirty years ago that the Cranberry was known only in a wild state; now it is much improved, and several good varieties have been produced and are now in cultivation. Fifty years ago our wild Strawberry was scarcely known to cultivation; now every valuable variety of our gardens is a product of our wild species, *Fragaria virginiana* and its var. *illinoensis*. It is only the amateur who now grows *Juncunda* and *Triomphe de Gand*, of European origin. Along our northern borders the European *Fragaria vesca* grows wild, but it attracts no attention from the horticulturist. All our Grapes of out-door culture—and that is the almost universal culture in this country—are products of our wild species. A few varieties, as the Rogers hybrids, are crosses between our own species and the European. Only three of our wild varieties have yet been ameliorated to any extent; while nine or ten more species are waiting to be taken in hand by the cultivator. Two species of Raspberry, the black and the red (*Rubus occidentalis* and *R. strigosus*), wild in all our woods, have given us the numerous varieties of our gardens and markets. The European sorts are grown only by amateurs. Our Blackberries and Dewberries, fruits of bright promise, are offspring of the *Rubus villosus* of all our coasts. Our best Gooseberries are also of American origin. Of course, these Gooseberries are by no means equal to the great, luscious fruits of your English gardens, but they are the only ones which can be profitably grown here. At the present time our native Plums are receiving much attention, and already a score of varieties are in the market. Twenty distinct wild species of *Prunus* are found in the United States.

Nor is this all. Many more species await the cultivator than have already responded to his care. America, of all countries, is the place where even the most studious can see the wonderful influences of cultivation and selection upon wild products. The originals of our garden plants still linger in our fields, and the progress of development has been so rapid, that men who are still active remember when the garden offspring did not exist. C. M. Hovey, who gave us the first good Strawberry, still lives and works.

I read with amazement the statement of De Candolle, in his "Origin of Cultivated Plants," that "the United States, in spite of their vast territory, which will soon support hundreds of millions of inhabitants, only yields, as nutritious plants worth cultivating, the Jerusalem Artichoke and the Gourds!" L. H. BAILEY, JR.

Michigan Agricultural College.

GRAPES MRS. PEARSON AND GOLDEN QUEEN.

MY experience in regard to Grape Mrs. Pearson is fully confirmatory of that recorded in THE GARDEN (p. 363) by Mr. Coleman. We have never kept it beyond the month of March—never attempted in fact—but on many occasions we have had it in first-class condition throughout that month. The high character given it by Mr. Coleman as well as by Mr. Barron in his book on Vines, more particularly in regard to quality, is hardly high enough, for whilst the flavour is more piquant than the Muscat, the rich, aromatic taste is as pronounced as is that quality in Chasselas Musque, and in these respects there is no difference between the Vines growing on the parent stock and grafted on the stock of Buckland Sweetwater, in both of which forms it is grown here. It crops prodigiously on both stocks, but, curiously enough, the Vine grafted on Buckland Sweetwater bears the more freely of the two, yet this variety (Buckland) has always proved a shy fruiter here. The only other difference that a foreign stock seems to have made is in the form of the bunch, the natural contour of which is more after the form of Chasselas Musque, namely, long, with added shoulders; on the Buckland stock the bunches run larger, the shoulders generally being of a size disproportionate too large for the length of the bunch. I have sometimes fancied that the colour was brighter on this stock, but several have said they could not discern it, and it may have been that "the wish was father to the thought," as at least, we have never been able to colour it beyond a pale yellow. Now for a word of commendation of a more unpopular variety, namely, Golden Queen. We bought both this and Mrs. Pearson from the raiser, the late Mr. Pearson, as soon as they were sent out, some ten or twelve years ago, and have grown them ever since, sufficient proof surely that they have turned out satisfactorily. As regards Golden Queen, the mistake the raiser made was to send it out as an early variety, as it is a Grape that takes quite as long to ripen as does Alicante, and is explicable only on the supposition that he had not thoroughly tested it. However, this was done, and it has no doubt tended somewhat to bring the variety into disrepute, because being planted in early houses growers found that at the time their Hamburgh, Foster's Seedling, and Buckland Sweetwater were ripe this Grape was still green and as sour as a Gooseberry; no wonder, therefore, that hard words were spoken concerning it, and summary judgment pronounced in the form of its exclusion from many vineries almost before the plants had got into full bearing. In this instance, however, impulse did not gain the mastery, and the variety was kept, and being grafted on Buckland Sweetwater stocks in an intermediate house it has now become an established favourite, the quality being so totally different to that of any other kind of Grape, for whilst the flesh is firm, crackling, and full of juice, the flavour is sweet with a faint smack of the Muscat in it. On the Buckland stock the colour is always a clear golden, and the berries longer than are those from the parent stock. There is no appreciable difference in the size or form of bunch, but the colour of fruit from Vines growing on their own roots is less bright, and sometimes from bad management in ventilation it is quite a dingy brown. The variety will not keep quite so long as Mrs. Pearson, but it has the desirable property of being just as sprightly and refreshing to the palate when shrivelled as it is when in a plump condition. W. WILDSMITH.

Strawberry plants in spring.—The following sorts of Strawberry plants planted on a border

facing east have stood the winter well, not a plant being dead or apparently in the least injured: King of the Earlies, The Captain, Loxford Hall Seedling, Goldfinder, Countess, Bletton Pine, Helena Gloode, Anguste Desaisne, Eleanor, Elton Pine, Frogmore Pine, President, Sir Joseph Paxton, and Comtesse Hericant de Thury. I cannot report so favourably on one lot of British Queen, for the plants at present appear to be injured past recovery. I may mention that when I was making up a selection of Strawberries two years ago, I received plants from various sources, and amongst them two different lots of British Queen, one from Kent and the other from the west of England. The Kent plants are the ones which are suffering from the effects of the severe winter, and seeing that both lots came from well-known sources, it appears to me that there are two different sorts sent out under the same name, and if so, it will account for the British Queen thriving in one place and failing in another. As the plants did not bear much fruit last season, having been planted late, I had no opportunity of comparing them, as I hope to do this year. Lucas is another sort which has suffered a good deal, only about a half of the plants being alive.—J. C. C.

SEASONABLE WORK AMONG FRUITS.

ORCHARD HOUSES.

ALTHOUGH the season is very late, forcing gardeners have little cause for complaint, as I find houses started on certain dates are decidedly in advance of the stage they had reached on this 1st day of May last year. Orchard houses are no exception to the rule, and, provided May flowers can grow without the assistance of April showers, of which we have had but one, and that was a heavy snowstorm, pot Peaches and other fruits will be well up to the mark, and probably more plentiful than usual. Until within the past few years the orchard house was looked upon as an expensive luxury, but now we find it doing duty for the early Peach house which is retarded for a month or more, and where the most suitable early varieties are selected for forcing, the result is a considerable gain in point of time, whatever may be thought of the quality. To those who must, and will, have ripe Peaches early in May, Ansden's June, Alexander, Early Louise, and other semi-clingstones answer very well, but fair quality ever being the test of merit, trees from a better section should be selected. Hale's Early is highly praised, I suppose because it forces and colours well; certainly not for its quality, as fruit from the most favoured spot under glass or against a wall can never compare with the A. B. C., the Mignonnes, Early Silver, and others with Noblesse blood in their veins. Although I have never tried the experiment, it has often occurred to me that a most interesting early houseful of trees might be made by potting up a given number of all the Mignonnes, including the new large Early, the Early Grosse and the old G. Mignonne, Royal Kensington, a very fine old member of the family, and Belle Beauce, not only the brightest Peach grown, but the parent of the large Early Mignonne, the cream of the cream of Rivers' best seedlings. All of these are of the highest quality, very handsome, and travel well when gathered and packed before they are quite ripe. I have often stated that shortening back the shoots of the past year may be deferred until the fruit is swelling. These remarks apply specially to the Mignonnes, which sometimes cast their intermediate wood-buds when kept too dry at the root through the winter. Once a good lead, with plenty of fruit behind it, has been secured, the summer pinching must have regular attention, otherwise there will be a rush of sap into a few shoots near the tops of the trees, whilst those near the rims of the pots as well as the fruit will suffer. When early houses have been thinned for the last time and the fruit shows signs of colouring, a little more heat with plenty of air may be given, as trees in pots placed in a warm medium will stand sharp forcing; but it must be borne in mind that the quality will be good in proportion to the length of time and the amount of sun and fresh air to which the fruit is exposed. Good mulching or top-dressing and feeding must, of course, be freely plied, and vigorous

syringing twice a day until the Peaches show signs of transparency, may be continued. When this stage is reached, a dry, warm atmosphere will favour ripening, and bring out the delicious aroma by which good fruit can always be distinguished.

Gathering the fruit.—When to the practised eye the most forward trees have reached the changing point the syringe must be withheld and the heavy root waterings reduced, but not discontinued, otherwise all the fruit will be ripened off in a few days. This slight check will soon cause some of the fruit on each tree to soften at the apex, but being hard near the stalk a few hours longer will do no harm. Still, every Peach should be gathered before it is dead ripe, as this process can always be completed in the warm fruit room, where they can remain until wanted for use. In this half-ripe state, however, the most delicate handling is necessary, as every finger mark leaves a bruise, and a bruise means premature decay; therefore, the better to avoid this, with a pad of cotton wool in the left hand and a pair of Grape scissors in the right, each Peach should be dexterously detached and placed on a square of silver paper in a well-padded, flat-bottomed basket. If daily gatherings are made and the Peaches are never handled, they will keep for a long time in good condition, and there will be no loss of fruit or flavour, as so often happens when people persist in allowing their Peaches to hang until they are dead ripe, the point at which fermentation and decay set in. Slightly under-ripe is the proper gathering state for home use, but when the Peaches are intended for travelling or market purposes they must be gathered as soon as they are full size, well coloured, and inclining to transparency. Each fruit should then be folded in a piece of silver paper and firmly packed one layer deep in dry, elastic Moss placed in shallow boxes. Being so tender many people approach the packing table under the impression that this operation must be tenderly performed, but this is a very great mistake, as tender fruits of all kinds should be made firm in the boxes, otherwise the packing gives way, when the finest samples are ruined by friction.

General houses.—The fruit in these, even without the aid of fire-heat, will now be set and swelling freely; indeed, many of the most advanced trees will have been disbudded and partially thinned. The management of a mixed orchard house from this time forward may be divided into a few simple operations, but simple as they are, they must be performed at the right time; they must be performed well, and the person in charge must be well up in details. Fire heat more or less may be given where time is an object, otherwise solar heat with early closing in fairly good summers will bring the finest fruit to maturity. Air, good food, and plenty of water are imperative. If we go back to the early days, we find the pioneer, Rivers, advising his readers to syringe well soon after six o'clock in the morning. To open the ventilators so soon as the temperature commenced rising, more air, as a matter of course, being given until the maximum was reached. Reduction step by step in due course took place when finally the afternoon bath with plenty of solar heat made all safe for the day. Our orchard houses have been greatly improved in appearance, but for all practical purposes the original is as good as the ornate, as we then as now had an abundance of light, and ventilation, if anything, has been rather cribbed by the modern builder; consequently, for hardy trees that must have room to expand and breathe plenty of fresh air, our progress from a cultural point has possibly gone a step backward. The most impatient fruits are Plums and Cherries. Pears were considered so, but once established in pots and well ripened they are quite as manageable as Peaches, and should occupy a good section in the mixed orchard house. So far, although morning frosts have been sharp, they have been dry; consequently the coldest, the most dilapidated houses are safe, and will continue so, provided we give insects the quietus on their first arrival; feed freely with top-dressing and liquid from the time the fruit commences swelling, and syringe the trees twice daily on fine days, especially during the continuance of this dry, harsh weather.

MELONS.

Under the false impression that Melons are swamp plants, many people make provision for giving them any amount of water and stagnant vapour, but they do not always lay good plans for producing the dry roasting surface so antagonistic to canker and essential to flavour when the fruit is ripening. The pot system offers many facilities for drenching, flooding, and feeding when the plants are growing and the fruit is swelling, and provided the stems are elevated up to or a little above the level of the rims of the pots, the change from moist to dry heat can be graduated to a nicety. In very early houses this state will now be necessary, and when the fruit shows signs of changing colour the supply of water poured in round the insides of the pots must be neither more nor less than sufficient to prevent the foliage from flagging. The afternoon closing with the atmosphere in a state of saturation must also be discontinued; but not so the heat, as a high temperature with a circulation of dry air is the main factor in securing flavour. If all the fruits on a given plant commence ripening together water may be entirely withheld, especially if any of the roots have found their way through the apertures into the sods of turf below, and cutting must be deferred until the aroma is strong, and the stalks, by cracking freely, show that their work is nearly finished. Sound Melons will keep for a long time after they are cut—some varieties longer than others, always provided they are kept in a warm room, from which fresh air is not excluded. It is, however, possible to keep them in a sound condition until their fine piquant flavour has passed away; therefore, growers should make themselves thoroughly acquainted with their capabilities before they try long keeping, as one good Melon is worth a dozen bad ones.

Where the pot system is regularly followed up there should always be a reserve or manufacturing pit for producing stock, one of the main points being quick growth from the seed to the finish. Immediately after the removal of the fruit from the first set of plants the pit should be thoroughly cleansed to free it from filth and insects, and the better to secure a sharp fermentation a portion of the old may be taken out and replaced with fresh plunging material. Leaves cannot be surpassed, as they give heat and vapour at the outset and food at the finish. When the bottom-heat ranges from 80° to 90°, strong plants established in their fruiting pots may be drawn from the nursing pit. Plunged to the rims at once, and provided all goes well, they will reach the flowering stage in a few days.

Succession plants now swelling off heavy crops of fruit will take copious supplies of diluted liquid at a temperature of 80° to 85°, according to the strength of the bottom heat. Ventilation should be liberal through the early part of the day, and shutting up with good syringing in time to raise the temperature to 90° must follow on fine afternoons. Melons under high pressure after the beginning of May swell very fast; consequently their feeding-time is short; but by top-dressing with rich turfy loam, very fine bone-dust, and other highly concentrated stimulants, fruit of the largest size consistent with quality can be secured. It is, of course, possible to over-swell Melons, as we sometimes see them coarse and as hollow as Pumpkins, but they are never good. Moderate feeding, therefore, is best, and the better to enable the plants to assimilate their food, all laterals should be judiciously pinched and trained over vacant parts of the trellis, as quality and flavour so greatly depend upon a profusion of clean, healthy leaves.

Melons in frames. If it be true that fortune attends those who know how to wait, those who have not yet turned out their plants are sure to be right, as May is undoubtedly the best month for commencing their growth in pits and frames. The hills for frame plants should be high, narrow, and solid; the plants not deeply buried should be placed on the very apex, as they should neither be earthed up nor open to flooding with water. Necessarily they need not be less than 2 feet from the glass, as short stems can be raised to the trellis, which, by the way, should be made to settle with the bed,

otherwise there will be danger of strangling. We do not hear much about the strangling or drawing of the stems of Melons to the cracking tension, but it is very common and the unsuspected cause of canker and collapse where large fruit and leaves cannot obtain supplies of moisture fast enough. Once fairly started, these frame plants, carefully guarded from checks, will make rapid progress and soon fill the space allotted to them. Quantity of vine is not, however, all we want; we must have quality, and this—a short-jointed, wiry growth—can only be secured by training thinly in a brisk temperature that will admit of liberal ventilation. If all the plants start well together, the pinching of the main shoots will induce a flush of female flowers, from which the crop of fruit should be secured, and these should be carefully fertilised from day to day, each shoot being drawn up to the influence of the sun, as moisture is an impediment. Modern growers sometimes pinch these shoots close to the fruit before they open, but the old school, no doubt including the veteran grower, the late Mr. Bailey, allowed their fruit to set first, and then pinched back to the first joint in advance. Whichever plan is adopted, the secret of success consists in thinning back to a given number of fruits of uniform size and age, that will be likely to run well together. Frame Melons should be very carefully watered until they attain the size of hen's eggs, when flooding with good liquid will help them; and the old-fashioned overhead watering with clear water at a temperature of 85°, about 3 p.m. once or twice a week, may precede shutting up on the hottest afternoons. On other days the syringe may be plied right freely, but the lights must be shut at once, otherwise scalding will follow. External management will include the linings, which must be renovated back and front alternately, and covering with good, dry mats, canvas, or other materials, throughout the season.

HOUSE CUCUMBERS,

either in pots or beds over hot-water pipes, will now take enormous quantities of water, and the roots will well repay liberal top-dressing. If their removal is anticipated, a good covering of rotten manure may be applied, otherwise it must be avoided, as strong, moist heat and manure soon fill the beds with worms. The syringe, too, must be vigorously plied, not only from within, but on fine evenings from without, as filth, spider, and millew soon take a firm hold on the stoutest foliage. Clear sulphur or soot water, and occasionally a solution of sulphide of potassium, may be used with great advantage, always provided the plants are thoroughly syringed with clear water and shaded the following morning. Next to cleanliness, light cropping must be constantly observed, as it is of no use trying to renovate beds, or resuscitate old plants, where they are heavily handicapped by a quantity of useless fruit. A good Cucumber-grower cuts off every unpromising fruit as soon as it shows, and by this means husband the vigour of his plants; he also ventilates freely on fine mild forenoons, and closes early with a strong heat and abundance of moisture. Treated in this way, systematic shading can always be avoided, especially where the trellises are movable, and can be lowered in summer to admit of a continuous circulation of air between the foliage and the glass.

Spring-sown plants, still clean and healthy, will now be giving plenty of fine fruit at the cost of very little trouble. The great rock to be avoided is overcropping; in all other respects treatment that will keep old plants in health will produce the most satisfactory results amongst young ones.

Frame plants.—These will now be very useful, as they will keep many families supplied during the time the winter house, heated with hot water, is producing its quota of Melons. The great secret in the culture of these, as of frame Melons, is quick growth, with plenty of side and bottom-heat, ventilation, the reverse of coddling, and early closing, with the overhead shower-bath. The best compost, as I have so often stated, is a sound fibry loam that will grow a good Pelargonium without the aid of rotten manure, old lime rubble, or rough charred garden refuse. When these are thoroughly incor-

porated and added as required, fruit of the finest quality and flavour may be depended upon. Frame Cucumbers should now be manipulated three times a week, otherwise a great deal of vigour will be lost, and independently of checks from the removal of arms full of vines, where points only should be taken, the plants will soon become infested by insects, when frame plants may as well be consigned to the limbo already prepared by "W." for frame Potatoes and cap-glass Cauliflowers.

Yet another very useful section of the family I must draw attention to, and that is the batches of plants intended for following these frame Cucumbers and other unprofitably forced vegetables. Good, hardy black or white-spined varieties are best adapted for this purpose, and they should be once pinched to induce side shoots, and well hardened to fit them for future treatment, which may be considered intermediate between the heated frame and the cap-glassed ridge. W. C.

FIG GROWING AND KITCHEN GARDENING.

THE reference made to my "jeremiad" on the prospects of kitchen gardening by Mr. Coleman last week shows that he, at least, did not appreciate my observations, which he says he had read, but which he could not have read carefully, or he would have seen that I still advocated the home culture of those crops that could not be had as good or good enough from the market, and among these I would include Figs, because they cannot be bought in this country, for I do not class fresh Figs from the tree and dried Figs "from Smyrna" together, as Mr. Coleman does. I know Figs can be grown out of doors, too, not only in his favoured county, but 500 miles farther north, and between these points. As to Mr. Coleman's remark that "surely the more a man grows of all kinds of fruit and vegetables the better his services will be appreciated," I would not endorse it. With those who take a pride in growing crops regardless of expense, outsiders have nothing to do, and it was not for them so much that I wrote. The only comment I would offer on such persons is that no credit attaches to their feats. Speaking generally, however, I say that crops that do not pay the cost of production do not represent useful services or energy, but only waste and extravagance, and are not commendable from any point of view. This, at all events, seems to be the universal opinion of those engaged in other productive industries, and perhaps Mr. Coleman will tell us why gardening should be an exception? When I see "able men having the charge of large gardens" growing poor, flavourless early Peas, for example, that never do anything like pay the cost of stakes and staking, let alone other culture, and when as many Peas as will supply the need and of better quality can be had cheaper in the market, I put him down as a man who is not doing much good in his generation. Late Marrows might be better grown at home. I fancy it would battle Mr. Coleman or anyone in a similar position to account for the use of a large portion of their kitchen garden produce. What becomes of all the acres of Cabbages, greens, Brussels Sprouts, Broccoli, Cauliflowers, Savoys, &c., to name only one class of vegetables? When we find in a moderate-sized kitchen garden perhaps 1000 or 2000 Broccoli grown, a proportionate quantity of summer Cauliflowers, and thousands of others of the Brassica tribe, and only a few people to consume such things at the rate of a spoonful or two each per day, and many days during the absence of the family when perhaps none are used at all, one wonders where it all goes. Can Mr. Coleman tell us? I think I can guess. Quantities go to seed or to waste in various ways unless sold, and there is as a rule no market for such stuff in season. On the other hand, where such things are bought at the market, even at a good price, it is surprising how few serve the purpose and yet leave enough for everybody without any waste. Supposing these things to be true to any extent, what good gardener can defend them? The truth is, the conditions of private gardening are greatly altered, and we shall be obliged to conform

to them, and those who realise the fact soonest will be regarded as the best men. W.

KITCHEN GARDEN.

W. WILDSMITH.

CAPSICUMS AND CHILLIES.

IF these are required in quantity for pickling in a green state, there is no more economical method than growing them in the open air. I do not mean by this that they must simply be planted in any position and in the manner common to most vegetable crops, for, though probably they would do well treated in this way in the most southern parts of our island, they will not do so here. Although favoured with a good climate and a light, warm soil, we have to assist these by giving over to them the warmest sunny aspect and a slight hotbed to start the plants into growth. Given these two conditions, we have never yet encountered the least difficulty in getting abundant supplies, ripe and unripe, from the open air. Our usual place for growing them is a raised border facing due south, and the heat to ensure a good start into growth is obtained by digging out a trench from 15 inches to 18 inches deep, and of such width and length as the plants are expected to require; the trench is then filled with the short Grass from the lawn, intermixed with any spare stable litter we may have; the soil dug out from the trench is then levelled over the bed, the bulk of fermenting material being limited; it is seldom that the heat ever reaches too high a figure, but planting should always be deferred till there is a certainty that it will not do so. A bottom heat of 80° is the highest at which planting may be done with safety, and when this temperature is not likely to be exceeded, planting out should be done as soon as the bed is made. The distance apart of plants will, of course, vary according to the varieties to be planted. For large-fruited and strong-growing varieties, such as Long Red, Long Yellow, Bell, and the handsome yellow-fruited kind, Prince of Wales, 20 inches or 24 inches is none too much; whilst 18 inches is ample for all kinds of small-fruited Chillies.

TIME TO SOW.—As with everything else, success is to a large extent dependent on a good start, and therefore good plants are indispensable; hence it is necessary that the seeds be sown and raised in heat early in March, that they may be ready for planting out by the middle of May. We sow thinly in pans, and place in a hotbed to germinate, pot off as soon as they can be handled, and grow them on in light, airy positions in early and second early Peach houses. Greenfly is sometimes very troublesome in the early stages of growth, and the most effectual way to destroy the same is to dip the plants in tobacco-water, a precaution that we always take immediately prior to planting out of doors, then syringing and heavy rain keep them free of insects. In the way of general cultivation there is really very little to be done other than keeping the plants well supplied with water, the bed clear of weeds, and the surface soil loose, that sunshine and air may the more readily exercise their beneficial influences. The more robust varieties require staking; in fact, it is safest to put sticks to all, and thus prevent breakage from high winds and heavy rains.

POT PLANTS.—We always grow a few in this way for house decoration, and on more than one occasion the plants so grown have been so poor in comparison with the open-air plants, that we have had a few of the best of them potted up

and that have done so well that the others were discarded, a proof of the superiority of open-air over indoor cultivation. On another occasion, late in the season, when an unexpected call was made on us for a quantity of ripe fruit, a manure frame was prepared, and a number of the best fruited plants transferred thereto, where they ripened off their fruit in an incredibly short time, due, I think, to the check of lifting, which arrested growth and promoted rapid maturity. Hence it will be seen that the open-air method of growth possesses other advantages besides the production of large quantities of fruit for pickling.

TOMATO CULTIVATION.

To those who have the requisite convenience, and require a regular and prolonged supply of Tomatoes, I would recommend them to grow them on the extension system. Its principal merits consist in producing a much larger quantity of fruit for a lengthened period with a deal less trouble than on the restrictive plan. The only drawback to its general adoption that I know of is that it cannot be so well practised outdoors on account of our seasons being too short, but in any moderately heated structure, with space for root action and a command of ordinary soil mixed with well rotted manure, the plan will be found very advantageous. It is, no doubt, well known that the Tomato will grow up the roof of a house or on a back wall with the vigour of a Grape Vine, and when once established will throw out a number of side shoots and fruit at every joint. These, if properly thinned and stopped at a joint or two beyond, will become ripe in regular order, and that, too, after the fruit on the main stem has come to perfection. After the plants have reached their allotted space in height they will become bare at the bottom, but they invariably throw up shoots from the base equally as fruitful as the others. The best of these should be selected and trained up in a regular way with a view to fill up all vacant space which will eventually arise, so that in time the main stem will have perfected its crop and can be cut away to make room for those to follow on. The Tomato is very liable to produce an abundance of shoots as well as a great quantity of foliage, but the former should be judiciously thinned and stopped, leaving only sufficient to maintain the vigour and health of the plants, as well as assist in the swelling of the fruit. This operation should be performed when the bulk of the fruit is set. The Tomato at this time will require liberal supplies of water and manure water twice a week. In my case I am compelled to syringe the plants twice or three times a day, as I have a span-roofed house with Vines on one side and Tomatoes on the other, and dwarf Beans underneath, an arrangement I should not recommend for general adoption, as the Beans are pretty certain to leave the houses well stocked with red spider. I wish it to be understood that I do not despise the restrictive system of growing Tomatoes, because it has its merits, and recommend it to those who have a limited space, and who require fruit in a shorter time and perhaps of finer quality.—THOMAS RECORD, *Folkington Manor*.

—I read in one of the calendars the other week that in training Tomatoes we are to take care to "pinch the shoots" beyond each truss of flowers, in order to encourage fertility. It is astonishing how gardeners stick to this hereditary practice of starving and pinching everything into fruit. This pinching of the Tomato is simply suicidal, and impairs the plant's fertility by one half at least. Yet you see the system in practice constantly—purely rule-of-thumb. An answer to the question, "How does a Tomato grow?" will show the absurdity of pinching. The plant naturally grows in a free, branching manner, and produces a truss of flowers at or near the end of every shoot. These flowers will set, and the shoot pushes beyond if not meddled with, produces another truss of flowers which sets also, goes on growing, and flowering, and fruiting again, and so on till the end of the season if the fruit are gathered as fast as they ripen, and the

plant is well fed at the roots, the plant carrying fruit in all stages of progress to the last produced flowers. If any pruning is wanted, it consists in removing altogether such shoots as room cannot be found for, but a shoot should never be pinched or shortened. It will be apparent from this description of the plant's habit that the pinching beyond the fruit, so often recommended, can have no other effect than reducing the size of the plant and the quantity of fruit. Stopping does not even augment the size of the fruit left on. Our plants, struck early in October, have never been topped, are in 12-inch or 14-inch pots, and have been once top-dressed with horse droppings already, a system about as far removed from Mr. Gilbert's small pot culture as could well be, yet all these plants are now generally about 5 feet high, and so heavily laden with fruit in all stages as almost to pull the wires from the stays. The fruit is of great size too, and we began gathering at the middle of April, and the supply now exceeds the home demand greatly. Plants sown in January now in 10-inch pots have large clusters of fruit on them, and individual fruits the size of one's fist that they will also soon colour. Plants from cuttings are a little earlier, but for carrying a heavy crop give me seedlings of the common red, which, under the same treatment, begins coming in in May and bears till December, or longer if the temperature is maintained.

Some time ago there was a discussion among your correspondents on the subject of fertility *v.* vigour. I would here just recommend those interested in the subject to test the matter with a Tomato plant. Starve one on Mr. Gilbert's principle, and feed the other. Gather and weigh the fruit in a given time, and note the result. The vigorous plants will win in a contest, only they must never be pinched back. — J. S.

NOTES ON BROCCOLI.

BROCCOLI will always form an important crop in all gardens where a constant supply of good vegetables is desired. The autumn or early winter kinds are always sure to prove highly useful, and so are the late spring and early summer ones, but there is no certainty of the mid-winter ones, as the supply of Broccoli in January, February, and March depends entirely on the weather. Those who assert there is no hardy winter Broccoli are quite right, as I have tried dozens of varieties, but I have never yet found one that would form heads in the months named when frost and snow occurred, and I have noticed that if winter varieties are kept back for a long time, and prevented from heading, in anything like season, they are apt to decay without becoming of use. Two of the best winter Broccoli I am acquainted with are Backhouse's and Osborn's, and in a favourable winter they invariably form heads from January to March, but if they are prevented from doing so during the time named, they rarely prove useful afterwards. It cannot, therefore, be said of them if they are of no use at the time they ought to be ready for table they will come by-and-by, as they do not with any satisfaction. Apart from this, however, spring Broccoli and those which are heading now, of which Sutton's Late Queen and Veitch's Late Model are excellent types, are absolutely hardy, as I never knew of a dozen plants of them to be killed, or indeed injured, by severe weather, and these may be counted hardy in growth of stem and leaves; but were they heading in 15° or 18° of frost, they would, no doubt, prove as tender in the flower as any of the winter sorts. But I do not regret very much that the frost may prevent us from having winter Broccoli, as Savoys and Brussels Sprouts are in their prime at that time, and no frost will injure them, but in April and May these are past their best, or over altogether, and were it not for the Broccoli there would be a great scarcity of open-air vegetables at the present time, as spring Cabbages are not quite ready yet everywhere in quantity. It must not be understood from this that I am against growing winter Broccoli, as I would always grow some of them and chance their coming in; but I must say that those who grow them year after year, and continually lose the greater part of them, soon get tired

of this futile labour, and I am inclined to recommend a good quantity of autumn and spring Broccoli being grown, but fewer winter ones, and more Brussels Sprouts and Savoys. If this was generally practised there would be fewer complaints about the loss of winter Broccoli and the scarcity of winter greens. There is nothing gained by sowing Broccoli too early. In many cases the seed is sown in March or early in April, and the plants are not put into their permanent quarters until June or July, but long before that time they are suffering in the seed bed from overcrowding, and by the time they are planted many of them have long spindly stems and never likely to make dwarf compact plants; whereas, if sowing was deferred until later the plants would be dwarf and stubby when transplanted, and they would retain this character always. I would rather deal with Broccoli sown at the end of April or early in May than with those sown a month or six weeks earlier, and those who are inclined to think they are late in sowing their Broccoli now will find that they are still in good season. By this time many of the best quarters in the vegetable garden are occupied, and Broccoli seed may be consigned to some inferior back corner, but nothing will be gained by this, and as some hundreds of plants may be grown while mere seedlings on a few square yards of ground, an attempt should always be made to sow in a good position. It makes little difference whether they are sown in rows or broadcast; good plants are produced both ways, but less space is required to raise a given number of plants when sown broadcast than in rows, and where ground is limited preference should be given to this plan of sowing. Excessively rich soil is not the best to sow in, as it causes the young plants to become too luxuriant, but soil of medium richness and very firm produces robust plants with close-grown roots, and these can always be planted out with much success. It is a great mistake to sow too thick, as the plants are then crowded from the first, and they become long and spindly before there is any chance of giving them more room. In cases of this kind we have known the plants to be thinned out when quite small, part of them thrown away, and only those left growing retained for use; but this is a great waste of seed and plants, and the best way is to sow thinly at first and thus ensure good sturdy plants. The seed should not be placed more than 1 inch below the surface. The best time to plant them out is when they are from 4 inches to 6 inches high. Should they be inclined to become much taller than this before the ground is ready for them, the largest of them should be drawn out and dibbled in about 3 inches apart in some open piece of ground. They can then be very conveniently transplanted from this to their permanent quarters. This is a good way of securing bushy, well-rooted plants. We have planted Broccoli in all parts of the garden, and for several years we put them out between the Potato rows before the Potatoes were dug up, but they were either so smothered up with the haulm or drawn up weakly by having so much vegetation around them that we discontinued this plan, and we have come to the conclusion that good Broccoli can only be grown when it has a clear piece of ground to itself. I do not, however, approve of making it the only crop of the year, and I am much in favour of taking an early crop of Potatoes, Peas, or something else before the Broccoli is put out. CAMBRIAN.

SHORT NOTES.—KITCHEN.

Herbs from seed—I find the most expeditious way of treating these is to sow in heat in 3-inch pots a few seeds in the centre of each pot. As soon as the seedlings are strong enough thin out the weakest and gradually harden off before planting out; this operation can be performed much quicker and with less injury to the plants if an when they have been grown in boxes.—C. R.

Hardy Broccoli.—In support of Mr. Gilbert it is only fair to say, though I too was of opinion there was not a Hardy Broccoli, that I find there is. They looked so bad after the frost I was almost afraid to go near them, but on ordering them to be dug in I learned with surprise many of them were going to give us a head. A Broccoli that survives a winter and spring such as the past should be one of the hardiest.—J. H.

KITCHEN GARDEN NOTES.

ASPARAGUS.—We cut the first dish on the 28th ult., being fully three weeks later than in the average of seasons, but now that we have had the long-desired rain, we only require brilliant sunshine, and by the end of May the season will have retrieved its character, and vegetation be just as advanced as at that date in other years. At any rate, by mid-summer there is seldom any observable difference in the average of seasons, a fact that those who have still to plant or sow Asparagus should bear in mind, and get the work off hand whilst the ground is in good condition. We did this kind of work a fortnight ago, and now we have applied a last sprinkling of salt, which whilst it manures will also keep weeds in check.

LETTUCE.—The rain started these into kindly growth, and has been favourable to our planting out good plants that were sown in frames with Carrots and Potatoes. The inevitable shallow drills are again used, the plants being put in them at from 6 inches to 9 inches apart, and all have a good watering as soon as planted. The soil is not filled into the ground line till the plants are well established, and before filling in is done a dressing of burnt ashes is scattered throughout the entire length of the drills. This is better than several soakings of manure water, even if we had time to water the plants, which we have not. The principal sowings for late summer use ought now to be made. We care for no variety for summer use other than the best stocks of Paris White Cos.

BRUSSELS SPROUTS.—We have just made our first, and main, planting on ground that has been well prepared by deep trenching and manuring. The lines—drills—are a yard apart, and the plants in the row 30 inches, and they will more than fill out the space, but we cannot afford more, and so, in order to make amends for this, we shall clear off all large leaves as soon as they manifest any tendency to decay from overcrowding; this work is necessary in any case to let in light and air. Late sowings of these I consider very unprofitable, because the plants do not grow to more than half the height of those now planted; and, therefore, it is obvious that there can only be half the quantity of sprouts; as to size of sprouts there is little to choose between those from early and those from late sowings, though, of the two, I am ready to admit the superiority, because small, of the sprouts from late sowings. But the question arises, Does the slight advantage balance that of much greater bulk from early sowing? to which I unhesitatingly answer, No. Of the two, the later sown stand severe weather best, but as the taller and earlier sowings rarely get seriously injured, it is not worth taking this view of the matter into consideration; I therefore stand by early sowing, with a view to getting the plants as tall as possible, and consequently a greater quantity of sprouts.

PARSLEY.—For three seasons prior to last we had no end of difficulty with this, as the plants died off in a most mysterious manner. Many others had, and still have, the same difficulty to contend with. After trying many remedies, as a last resource we sowed patches in various parts of the garden and in every aspect, and that sown on a north border was all that could be desired; not a plant died off, but a partial failure resulted to the sowings in all other aspects. Of course, therefore, except a very small patch on a south border, the plant will this year be confined to a north border; the ground is in preparation, and sowing will take place within a day or two. As up to four years ago we never experienced any difficulty, sow wherever we would, the cause of failure is now only explicable as being due to some insect that does not relish a northern and shaded position, and which we may, therefore, expect to get rid of by continuing to grow the plant only on this aspect.

CELERY.—The earliest plants are nearly ready for putting out, and as they have been virtually outside the lights drawn off, except when frosty for about three weeks, they will, if planted with care, scarcely feel the removal. The trenches are on the point of completion, and down the centre of the

ridges will be sown Lettuce, Radish, or Spinach. When lifting the plants we are particular to pull every weed out of the ball, as well as the small leaves or offsets that may be forming round the bottom of the plant. We thus prevent the growth of weeds and offsets, and save much time that must otherwise be given up to their removal but a very short time hence. Should the plants not move with the mass of soil we expect them to do, they will, in the absence of rain, be given artificial waterings till established. We have no fear, however, of this being necessary, as we took special care to have in the soil in which they were pricked out a large quantity of roughish leaf soil, and this never fails to attract and hold the roots.

GENERAL WORK. Staking Peas; covering up Potatoes to protect them from frost; thinning out first sowing of Turnips and doing the same to Spinach; to plant out seedling Globe Artichokes and another row or two of Cauliflowers between the rows of Peas. When the weather is suitable, to hoe between the rows of Onions, Parsnips, early Carrots, and Spinach, the seeds of which have all come up well; as Broccoli is cleared, to prepare the ground by trenching for planting on it the Strawberry plants that have been forced; to prick out in a sheltered spot Coleworts and later sowings of Cauliflower that have never been raised in heat; to guard against an attack of fly on Turnips by dusting over them wood ashes, soot, or lime. W. W.

TREES AND SHRUBS.

W. GOLDRING.

RHODODENDRONS VERSUS LAURELS.

JUST when the common Laurels were well recovered from the effects of the severe frost experienced during the winter of 1880-81, the exceptionally cold March of this year again disfigured them. In the grounds here thousands of Laurels recently appeared as if scorched, while near the lake hundreds of large bushes and trees are killed down to the snow line. The Colechian Laurel, and which with good reason was expected to be much more hardy than the common form, was five years since extensively planted on an island, but even these have been badly disfigured by the frosts. Very few, if any, Laurels, however, are killed outright, and we shall have to repeat our old method of restoring them to a presentable condition. Whole rows and breadths of strong plants are being cut off to within 1 foot of the ground, the saw being principally used, as this severs the wood without leaving a jagged surface. Thus treated, they soon break strongly, and will make good progress during the summer. Unfortunately, this young growth is of a very suppy nature, and only a moderately severe frost damages it. In every case the plant ought to be gone over next spring, and have all straggling or slightly injured shoots freely cut back, thereby ensuring a more regular growth.

As our experience is by no means singular, the question, What substitute have we for the Laurels? naturally arises, and in our case the answer is not easily forthcoming. In very many instances, however, Rhododendrons will be found much hardier, will afford equally as good cover for game, and are really more ornamental. Only a few miles from here they grow and increase very rapidly, hundreds of thousands of seedlings being annually sold to nurserymen, who buy them principally for grafting purposes. On this estate they are with difficulty established in either the woods or pleasure grounds, this being due to the clayey nature of the soil, lime also being too abundant to suit Rhododendrons. Given a fresh compost of turfy loam, and either plenty of peat or leaf soil, and they will grow well for a time, but if they do not form large bushes they are never disfigured by frosts, and usually flower abundantly. Although classed as a peat-loving or bog plant, there are at the present time many thousands of plants in this country growing healthily in nothing but loam, and they are quite at home in loam in which there is no lime. Sometimes it may be necessary to mix either peat or leaf-soil with the ordinary loam in order to give the

plants a good start, this being especially the case when they were previously growing in a peaty soil. It is the neglect of this precaution that frequently leads to the loss of strong plants of choice varieties. They are supplied by the nurserymen with close balls of fibre and soil, these serving to keep them alive for a time, but unless they can be induced to root into the surrounding soil they are sure to disappoint. Not only should they be given a good compost, such as just described, but this ought to be packed firmly about the roots, loose planting being also another sure way of killing Rhododendrons. If at all dry at the roots when received, it is advisable to soak them in a tub of water prior to planting, and in any case they ought not to be raised above the surface, or it will be almost impossible to keep them moist during the summer. Experts will transplant Rhododendrons at almost any time in the year, or even when in full flower, but they attend closely to the roots, and this I should advise less experienced persons to do, never allowing them to suffer for want of water. Doubtless the bulk of the planting is now completed, but in any instance where it has not been well done I should suggest re-planting, more regard being then paid to the requirements of the plants. The old pontium and varieties are the most easily grown, but the hybrids are far more beautiful, and it is very annoying to flower and then lose them. All cost more than Laurels, but they give much more pleasure, are perfectly hardy, and ought therefore to be most extensively planted. 1.

Somerset.

Prunus divaricata.—This is one of the earliest of all the beautiful trees and shrubs of the Plum tribe that flower in spring. Quite a fortnight ago it was in full bloom and is so now accompanied by Almonds, Peaches, and a few other species of Prunus. It is a beautiful lawn tree because of its elegant growth, the branches growing in such a way as to make a regular spreading head. There is an old tree at Kew, near the Cactus house, which every season is a great attraction on account of the profusion of its white blossoms, the more noticeable because at the time no other hardy tree is in flower. It is a Caucasian tree introduced many years ago, is perfectly hardy, and never requires attention when once planted well. There should be no difficulty in obtaining this tree at a nursery, but the fact is not one nurserymen in a dozen knows it. W. G.

The Laurel and its management. I can endorse the words of "A. D. W." on this subject (p. 378), but not only does the Laurel get neglected, but in some places it is clipped and cut to such an extreme that really it looks ridiculous, and grieves the eye of anyone having the slightest regard for the natural appearance of things. A judicious cutting back of the longest shoots, as advocated by "A. D. W.," will keep this shrub low and well furnished with foliage. I think some of the Laurel hedges would be just as effective barriers if treated in this manner, while in appearance they would certainly be a great improvement upon the close-clipped ones. If "A. D. W." was here, I am sure he would be grieved to see the Laurels at a certain place not far from where I write. It may be the owner of the place has a fancy for Laurels, for along every road leading to the house they are to be found, and are all clipped after the manner of a hedge. One road runs along the side of a hill, and would command a pretty view of the valley beneath, but all is excluded by an unnecessary Laurel barrier. The climax is reached, however, in one place, where a bank with a nice, easy slope, that might be rendered very attractive if planted in a proper way, is absolutely covered with Laurels. They might not look bad if growing naturally, but, although one cannot see an obvious reason, they are clipped into a formal, unmeaningless mass, which can be seen for a long distance, and mars the effect of an otherwise pretty landscape.—A. HERRINGTON.

Variiegated Negundo under glass.—Most hardy shrubs that are forced for indoor decoration in spring are so treated for the sake of their blossoms, but in the case of this Negundo the recommendation is the beautifully variegated foliage, which

renders it a bright and cheerful object at all times, and for greenhouse or conservatory decoration it differs so widely from the subjects usually employed as to at once arrest attention, more especially if associated with deep green-foliated plants. This Negundo is generally propagated by budding on the green-leaved form, and as the roots of this are strong and vigorous, it is often no easy matter to get the plants in reasonable sized pots without mutilating the roots in such a way as to interfere with the leafage of the plant. Of course, this simply refers to nurseries and such places where plants are largely grown for outdoor planting, as if grown for potting purposes alone the roots may be curtailed during their earlier stages in such a way that they form a compact mass, which will not be the case if they are allowed to grow freely in rich soil. On this account when purchasing it should be stated whether needed for pot culture or for outdoor planting. Those required for forcing should be potted up by November and plunged in some sheltered spot, where they may be allowed to remain till the middle of February, and if then introduced into a cool part of the forcing house and syringed occasionally, will be in leaf by the latter part of March. After they are no longer required they may be either planted out or kept in pots for another season, but in this case care must be taken that the plants do not suffer at all from want of water, and that their vigour is maintained by occasional stimulants. T.

Transplanting Evergreens. The question has often arisen, are we right in transplanting Evergreens in winter? The nurseryman must, of course, go on transplanting from September to May; he cannot stop because it is winter, on account of the extent of his work, the number of labourers being in all cases more or less limited. But in planting or improving the pleasure grounds of a large estate, it is surely worth while to ascertain the season at which Evergreens can be removed with most advantage. All my experience points strongly to two seasons—the beginning of autumn (September and October) and the end of spring (April and May). As to the former season, I would say choose that period when the new growth ceases and the young shoots begin to ripen and solidify; as to the latter, take the trees just before the new growth commences. A difficulty, however, presents itself here which it is not easy to grapple with unless the place for every tree is previously marked out. In ordinary planting the subjects required for the plantations are very various, and do not all begin nor complete their growth at the same time. Some begin and finish early, growing rapidly for a short time; others begin late, and drag on a slow growth for a lengthened period. But these do not constitute the majority; most Evergreens begin and finish their growth about the same time. But how to deal with the exceptional cases is the question we wish to settle, and in such a manner that there shall be no losses by removal, and no miserable-looking plants to mar the pleasure one has a right to look for in contemplating the results of an expenditure of money and labour. The only way out of the difficulty appears to be to mark the place for every tree, making the first move, whether in autumn or spring, when the earliest trees are in the best state for planting, filling in the spaces left afterwards as the different trees arrive at the best condition for removal. There is no doubt that many Evergreens may be transplanted in autumn, even before growth ceases, and in spring after growth commences, in such a manner as to preserve a better appearance in the immediate future than they would do if removed in midwinter. Of course, in such cases, if dry, hot weather should set in at the time or shortly after transplanting, water should be brought into free use.—W. P.

SHORT NOTES.—TREES AND SHRUBS.

Pyrus japonica.—As a shrub in an open border in the west of England, this *Pyrus* is very attractive. It flowers every year with the greatest freedom, and the blossoms remain fresh for a considerable time. The colour being of the brightest crimson makes it still more conspicuous. As our plants are confined for room, we have to cut back a good deal of the growth they make. This is done late in the autumn, but there is no doubt but that this hard pruning

increases the quantity of flowers on the spurs. I may mention that the same plants also fruit freely every season — J. C. C.

A noble drooping Horse Chestnut.—In last week's GARDEN there was a picture of a group of old Horse Chestnuts. I thought it might be interesting to you to see a photograph, taken by my daughter, of a very old Horse Chestnut tree in our garden, which, you will observe, is completely furnished down to the ground all round, and has an entire carpet of Aconites underneath it. I do not know if these drooping Chestnuts are common, but this one is the only example I know.—M. P. B.

A very pale and too small photograph of a noble spreading and weeping tree — Ed.

FERNS.

W. H. GOWER.

MICROLEPIA.

THIS family is included by some authors with the Hare's-foot Ferns (Davallias). They are characterised by their creeping rhizomes, simple

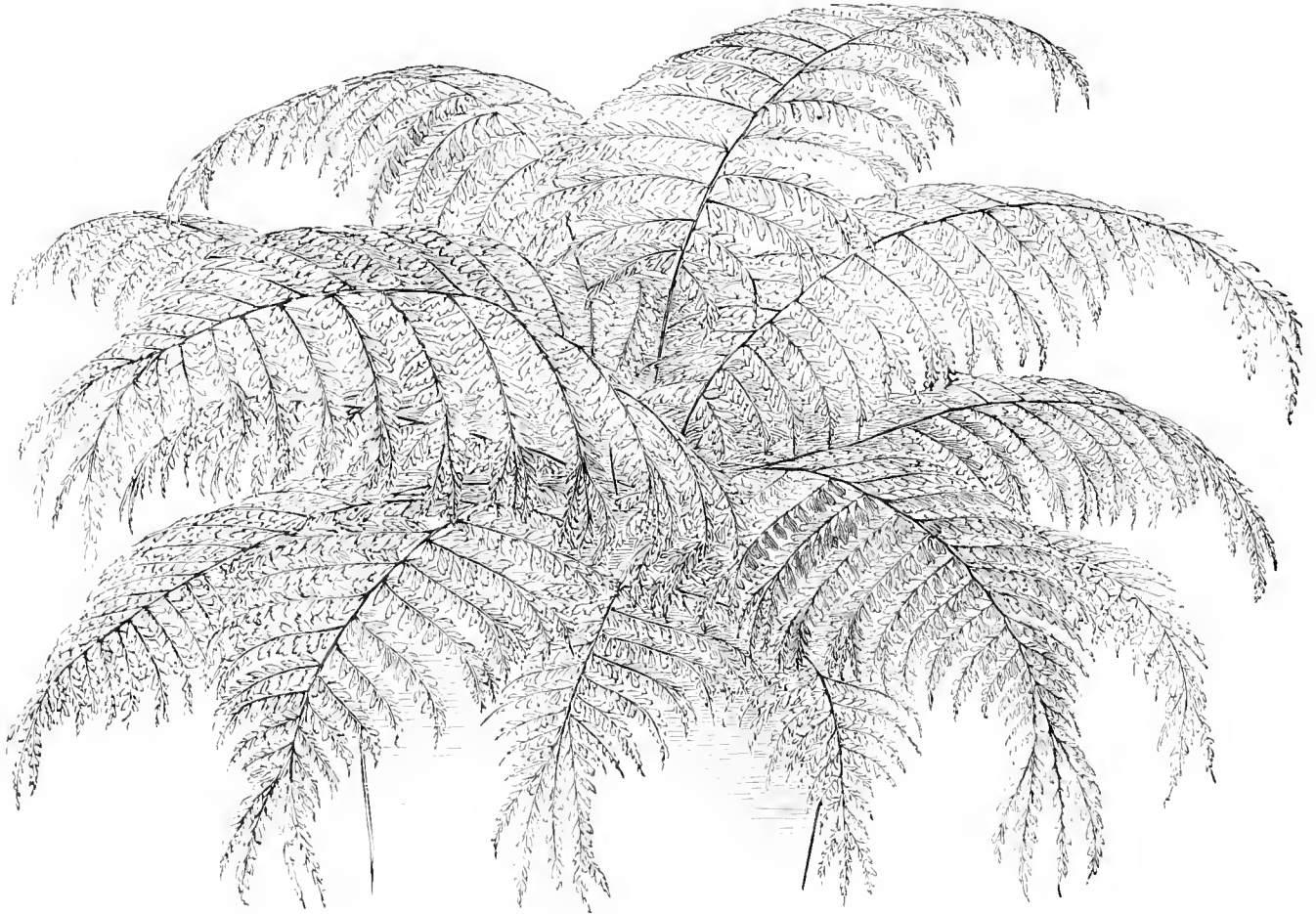
mens when grown in suspended baskets; others are more suitable for pot culture; but all of them are exceedingly graceful when planted on overhanging ledges of rockwork in a naturally constructed fernery. They grow freely in a mixture of peat, loam, and sand, in about equal proportions, a moist atmosphere, and with an abundance of water to their roots. On this account the drainage must be kept open and free; indeed, perfect drainage is essential for all Ferns, saving the few aquatic species. The following are all charming plants, deserving the attention of lovers of Ferns.

M. NOVE-ZELANDIE is the smallest kind in the family; its fronds are seldom more than 6 inches or 8 inches long; they are three times divided, ovate, acuminate in outline, and dark shining green in colour; the ramifications of the fronds are very delicate, but they are very per-

to 12 inches in length, whilst the pinnules are long and broad, tapering to a point, of a light green colour, and ornamented near the margins with a profusion of its bright red sori. This plant is one of the most ornamental Ferns in cultivation, and should not be overlooked when large-growing kinds are required. It is somewhat extensively distributed in India and Ceylon.

M. TRICHOSTICHA.—This is a warm house species, being a native of Java and various islands of the Philippine group; it forms a handsome plant, its fronds being dense, 2 feet to 3 feet in length, and about 18 inches across; the ultimate divisions are broad sessile, pubescent on the under side, and light green in colour.

M. STRIGOSA is a native of Japan, and is a most desirable species for a cool fernery; the fronds



Microlepia hirta cristata.

or pinnately-forked veins, and by their half cup-shaped involucre, which are situated on or near the margin of the pinnule, and attached by their broad bases only. The genus comprises a dozen or so species, the majority of which are to be found in cultivation, and although they are for the most part natives of tropical countries, they are found growing wild at considerable elevations; this, combined with the fact that their fronds are coriaceous or leathery in texture, enables them to be utilised in the cool fernery, although it cannot be denied that most of them attain greater proportions and form more handsome specimens in the temperature of the stove. Microlepias are readily increased by division of the rhizomes just at the time when growth commences in spring, and more sparingly from spores. Several species form handsome speci-

sistent, and last a long time when cut and placed in water; therefore they are extremely useful for button-holes, mixing with cut flowers in vases for the embellishment of the dwelling-house, bouquet-making, &c. In the naturally constructed fernery it forms an elegant object, and is seen to the best advantage when planted on a jutting rocky boulder, although it also forms a pretty specimen when treated as a pot plant, whilst no more elegant Fern can be found for the Wardian case. It is a cool-house plant, and enjoys an abundant supply of water. Native of New Zealand.

M. PLATYPHYLLA is a plant directly opposite to the preceding, having fronds some 3 feet or 4 feet in length, and proportionally broad; the fronds are three times divided, the second division being ovate-lanceolate in shape, from 6 inches

are about twice-divided, from 2 feet to 3 feet in length, and nearly a foot wide; the segments beautifully crenate on the edges, and the colour bright green.

M. POLYPODIOIDES.—This is a very delicate and handsome plant, which in its wild state is found widely distributed in India, also in the Philippine and Polynesian Islands. Its fronds are some 3 feet high, three times divided, the first division being alternate and distant; the segments are deeply divided and obtuse. It grows very robust in the warm house, but thrives well in a cool fernery, especially the forms of the species which come from Northern India.

M. HIRTA, from Ceylon and Northern India, is a variable plant, producing fronds from 3 feet

to 6 feet long, three or four times divided, coriaceous in texture, densely pubescent on the under side. The variety *cristata*, which we here illustrate, is an extremely graceful plant, its drooping habit and tasselled fronds rendering it specially useful for basket purposes. It is a native of the South Sea Islands.

The Killarney Fern. I see your correspondent "R. D.," in *THE GARDEN* (p. 382), speaks of the difficulty some have in growing the Killarney Fern well. We have it doing uncommonly well here. It is growing in a glass case, at the cool end of an ordinary rock fernery, planted in ordinary peat, and kept moist by syringing two or three times a day.—HENRY BRASIER, *Ely.*

ORCHIDS.

W. H. COWER.

SELECT FORMS OF CATTLEYA TRIANÆ.

THIS gorgeous winter-flowering *Cattleya* is extremely variable, and although the ordinary forms are very beautiful, they are too numerous, and not sufficiently distinct to receive varietal names. Those, however, which are specially remarkable for their size and intensity of their markings have deservedly received names by which they may be identified in gardens and distributed commercially. A few of the most distinct are *Osmani*, in which the sepals and petals are of a uniform rich purplish mauve, lip large, bright purple, with a broad frilled border of pale mauve, the whole of the throat being golden yellow. *Ernesti* is a very large form; the broad sepals and petals are lilac-mauve, tipped with magenta, the same colour running in a slightly flaked stripe down the centre of the petals, the front lobe of lip very large, rich crimson-lake, becoming more intense towards the base, where it meets the deep orange yellow, which suffuses the whole throat. *Dodgsoni* is a chaste and beautiful flower with pure white sepals and petals, lip deep violet-crimson margined with pink, and an orange-yellow throat. *Russelliana* is one of Baron S Schröder's gems; its flowers are, in the sepals and petals, white, suffused with a beautiful tinge of rose; the lip is beautifully fringed, front lobe intense crimson-magenta with orange throat. *Symeana*—sepals and petals deep blush, lip intense velvety crimson with deep orange-yellow throat. *Backhouseana* produces very large flowers with pink, or blush-pink, sepals and petals, the front portion of the lip being suffused with bright magenta, whilst the throat is pale yellow. *Leeana* is one of the giants of its race, the flowers measuring 7 inches and upwards in diameter; the sepals and petals are rosy lilac, front lobe of lip large, magenta-mauve, margined with the same colour as the petals; the throat is open and streaked with orange. *Alba*, as its name implies, is pure white, the whole of the flower being devoid of the slightest tinge of colour, saving a stain of yellow in the throat. Many forms of a white flower in which the lip is tinged with lilac have the name of *alba* erroneously attached to them; these forms are not scarce; the true plant, however, is by no means plentiful. *Corningi* is another chaste variety, the sepals and petals being white, slightly flushed with pale rose, lip white blotched in front with orange. *Formosa* has a large bold flower, sepals and petals soft flesh colour, the large fringed lip being magenta-rose, with orange throat veined with a much deeper shade of orange. *Williamsi*, blush-pink in the sepals and petals, the latter being veined along the centre with pale magenta; the frilled lip is crimson-purple—this

colour passes far into the throat and over the side lobes; the throat is only slightly blotched with yellow.

Cattleya Skinneri at Beckenham.—One of the finest displays of this rosy purple-flowered *Cattleya* perhaps ever seen in this country is now to be seen in the garden of Mr. J. Goddard, Elmer Lodge, Beckenham. On the occasion of our visit some 600 or 700 flowers were expanded, one plant bearing upwards of sixty, whilst some of the single trusses bore a dozen blooms. These plants were imported a few years back by Mr. Goddard, and were then small pieces. Mr. Reed, his gardener, attributes his success with *Cattleya Skinneri* to the fact that the plants have been exposed to the full light on all sides all the year round. The temperature during the growing season has been allowed to run up high with sun-heat, shading the plants slightly from the direct influence of the sun, and allowing them a free circulation of air; at this time they have a moderately free supply of water to their roots, but when growth ceases the water supply is gradually decreased until just sufficient only is given through the winter to keep the pseudo-bulbs and leaves from shrivelling. During the resting season the temperature is allowed to fall as low as 15°. Those who have hitherto been unsuccessful with this beautiful species cannot do better than subject their plants to the cultivation here given, by which Mr. Reed has attained such remarkable results.—G.

Orchid prices. On Tuesday and Wednesday, May 3 and 4, Messrs. Protheroe and Morris disposed of some of the duplicate specimens from the celebrated collection of Mr. Lee, Downside, Leatherhead. Buyers were numerous and competition was keen. The following are a few of the most notable prices realised: *Cattleya Trianae Atalanta*, £23 2s.; *C. lobata Boothiana*, £14 11s.; *C. Trianae Percivaliana*, £25 5s.; *Masdevallia Demoussiana*, £32 11s.; *Cattleya Trianae Dayana*, £56 11s.; *C. Trianae Thomsoni*, £23 2s.; *C. Trianae Emperor*, £16 18s.; *C. Trianae alba*, £12 12s.; *C. Trianae Colemani*, £21 3s.; *C. Trianae Backhouseana*, £13 13s.; *Lælia elegans Wolstenholmei*, £12; *Cattleya Skinneri oculata*, £73 10s.; *C. Amesiana*, £94 10s. and £68 5s.; *C. calumnata*, £17 17s.; *Cypripedium acanthum*, £16 16s.; *C. microchilum*, £25 18s.; *C. Wallisi*, £31 10s.; *Dendrobium Phalænopsis*, £52 10s.; *Cypripedium Morganii*, £178 10s.; *Cattleya Fausta*, £11 11s.; *C. labiata*, £37 16s. and £26 5s.; *C. Trianae Emiliae*, £32 11s.; *Coleogyne cristata alba*, £57 15s.; *Vanda tricolor*, £13 13s.; *V. planilabris*, £11 11s.; *Cattleya Trianae Osmani*, £105, £94 10s., and £63; *C. Trianae Leeana*, £139 10s. and £105; *Oncidium superbiens*, £23 2s.; *Cypripedium acanthum superbum*, £28 7s.; *Odontoglossum crispum delto-glossum*, £13 13s.; *O. macrospilum*, £22; *Cattleya Trianae Dodgsoni*, £73 10s.; *Cymbidium giganteum*, £23 2s.; *Maxillaria Sanderiana*, £18 18s.; *Saccolabium Harrisonianum*, £162 15s.; *Lælia bella*, £189; *Cypripedium vexillarium*, £33 12s.; *C. grande*, £68 5s.; *C. tessellatum porphyreum*, £78 15s.; *Cattleya Skinneri alba*, £33 12s.; *Cymbidium Lowianum*, £21; *Angraecum caudatum*, £37 16s.; *Lælia elegans Turneri*, £31 10s.; *Odontoglossum Hrubyanum*, £29 8s.; *Masdevallia Harryana rugosa*, £18 6s.; *Cypripedium selligerum majus*, £41 2s.; *C. Arthurianum*, £23 2s.; *Vanda suavis*, £21; *Saccolabium Heathii*, £137 10s.; *Cattleya exoniensis*, £105; *Cypripedium Stonei platytenium*, £325 10s.; *C. Leeanum superbum*, £32 11s.; *Lælia purpurata Williamsi*, £67 18s.; *Lælia grandis*, £94 10s.; *Cattleya Mardeli*, £41 2s.; *Lælia Veitchiana*, £36 15s.

SHORT NOTES.—ORCHIDS.

Trichocentrum orthoplectron—This is a small-growing plant, which requires to be grown on a block of wood. It is a rare plant; the leaves are thick and fleshy, and the short drooping spikes bear a single large flower; the sepals and petals are cinnamon-brown, and the large flat lip is rich crimson-lake with a yellow disc. It blooms in the month of October, and should be grown in the *Cattleya* house.—G.

Odontoglossum luteo-purpureum.—From the garden of Mr. De B. Crawshaw, Rosefield, Sevenoaks, have come blooms of the above Orchid, a handsome species

found with *O. crispum*; with it also came a small form of the latter, named *cuspidatum*, described by Reichenb. et in "Xenia." This is one of the most variable of *Odontoglossums*, as we have in our own collection a dozen varieties, selected from 300 imported plants of *O. crispum*.—J. B.

GARDEN DESTROYERS.

REPORTS ON INSECTS INJURIOUS TO ROOT AND CERTAIN OTHER CROPS.*

ANOTHER of Mr. Whitehead's reports on injurious insects has just been published by the Agricultural Department of the Privy Council Office. These pamphlets, though called reports, are really a series of monographs on injurious insects, and not, as is the case with Miss Ormerod's reports, on what has been noticed in connection with certain insects during the past year. Mr. Whitehead has already written reports on insects injurious to Hops; to Corn, Grass, Pea, Bean, and Clover crops; to fruit crops; and this fourth report deals with insects injurious to root and certain other crops, namely, Mustard, Rape, Cabbages, Onions, Carrots, and Celery. These reports are models of clearness and conciseness, and their very moderate price brings them within the reach of everyone in a position to make use of them; they are printed in clear type on good paper. At the beginning of a monograph, as the account of each insect is called, is a figure of the insect in its various stages, most of which are very good. Many of them are taken from Curtis's "Farm Insects." Then follows some remarks on the habits of the insect; then an account of its life history, the best methods of preventing its attacks, and the best remedies to be used when an attack has commenced. These items of information are given under different headings, so that they can be found immediately they are wanted. It is curious that in the present report all mention of millipedes should be omitted. It is true these reports only purport to deal with insects, but red spider, the Black Currant mite, and the ear coekle worm, which are no more insects than millipedes, have already been commented on. Millipedes are such injurious creatures to many crops, that they certainly should not have been left out. The first insect mentioned is a beetle (the night-feeding ground beetle, *Steropus malidus*), which until comparatively recently has always been considered as a carnivorous insect; but there seems no doubt now that it attacks young Mangold plants. It is a very common insect, and during the day may generally be found under stones, rubbish, &c. The grubs or larvae are said not to injure plants, and from the formation of their jaws one would certainly imagine that they are carnivorous. If it is, it must be of great service in destroying smaller grubs, &c. As regards the effect of frost on insects, Mr. Whitehead very truly says (p. 11):—

One hears frequently, "Splendid frost! it has got deep into the ground—will kill the insects." It is a common error to imagine that frost invariably kills insects either in the perfect, the egg, the larval, or the pupa states. Very many insects are so constituted as to be frost-proof. This is a provision of Nature. Many are overtaken and killed by abnormally early or abnormally later frosts before they can assume the form in which they can naturally resist them, but, as a rule, insects are unharmed by ordinary winter frosts. As a fact, chrysalides which have been exposed to sharp frosts, and frozen so hard that they would snap asunder like pieces of stick, nevertheless have preserved vitality.

It is, I think, being proved more clearly every year that great care should be taken when about to distribute stable or farmyard manure over land that various insects should not be sown broadcast at the same time. Manure heaps should not be allowed to remain in fields until all the goodness has been washed out of them into the nearest ditch, as is commonly the case. Manure when thus impoverished is more likely to harbour insects of all kinds which could not exist in the greater heat and pungency of a heap in proper condition. The proper rotation of crops is a great safeguard against the too rapid increase of some insects. If the same crop is grown year after year on the same land, or a certain piece of ground is used season

* "Reports on Insects Injurious to Root and certain other Crops in Great Britain." Prepared for the Agricultural Department, Privy Council Office, by Chas. Whitehead, Esq., F.L.S.

after season as a seed bed for the same plant, insects which attack such crops have a much better chance of establishing themselves in the soil. Twenty-two insects in this report are fully described with their life history, &c. These descriptions, as I have already mentioned, are given in a particularly clear and terse manner. I can recommend this pamphlet most warmly to all cultivators of plants either in gardens or fields as a most useful publication; its very moderate price (5^d.) places it within the reach of all. G. S. S.

Vine roots diseased.—I send you a few Vine roots for your opinion. I am told they are infested with *Phylloxera vastatrix*.—J. L.

* I can find no trace of *Phylloxera* on the Vine roots, but they are attacked by the bull mite (*Rhizoglyphus echinopus*), which is a more frequent pest on Vine roots than most persons are aware of. These mites are most difficult to eradicate. I know of no other means than cutting out the injured roots and washing the others with a strong solution of sulphate of potassium—3 ozs. in half a pint of water—and taking care to remove any earth which might possibly contain any of the mites. It is easy enough to write this, but very difficult to carry out effectually.—G. S. S.

Grubs on roots of Strawberry plants.—We send you samples of Strawberry plants infested with grubs, and would thank you to give us information about it, its name, and best means of removing the plague. W. L. & SON.

* The grubs attacking the Strawberry roots are those of the black Vine weevil (*Otiorhynchus sulcatus*). This is a most troublesome insect, both as a grub and beetle. I do not think anything can be done when once the plants are attacked, except pick the grubs out from the roots. The best mode of keeping this insect in check is to kill the parent beetles, which are black, stout, and about half an inch long. They are somewhat sluggish in their movements, generally remaining hidden during the day, coming out after dark to feed, which they do voraciously on the leaves of Vines and many other plants, gnawing great notches in them. If you can find the plants they are feeding on, place them on a white sheet, and when dark suddenly throw a bright light on them; this startles them, and they fall, feigning to be dead. A sharp shake to the plant often helps matters.—G. S. S.

Eucharis mite.—I enclose three *Eucharis* bulbs which I fear are affected with mites. I should be pleased to know your opinion of them.—A. J. HUNNARD.

* Yes; your bulbs are affected with the *Eucharis* mite. The only way to get rid of the pest will be to burn all the stock you have, and start afresh with clean bulbs.—ED.

BOOKS.

HORTICULTURAL BUILDINGS.*

THE author of this volume says: "Up to the present date no book has existed from which a gentleman could obtain, in a complete concise form, reliable information to assist him in deciding what garden structures would best suit his requirements, nor one in which an architect could see just those constructional and mechanical points which should be decided by the horticulturist, or in which a gardener could find details beyond his province, but with which he should be acquainted." And the author, we are to infer, has aimed at supplying this want. If so, we can only say, after having carefully, though interruptedly, perused the book from beginning to end, that he seems to have succeeded very well in his endeavour, and even to have done considerably more than the title implies. We should read his book more comfortably if the clerk and printer had been more sparing of their errors, but in other respects we can cordially recommend it to anyone who contemplates erecting, or is likely to be called on to design, horticultural glasshouses. Certainly if we were to examine it in detail, it would be necessary to dissent from the author's conclusions on various points, but none of them are of supreme

* "Horticultural Buildings: their Construction, Heating, Interior Fittings, &c., with remarks on some of the principles involved and their application." By F. A. FAWKES. London: Swan, Sonnenschein & Co.

importance, and altogether they are but few, considering the scope of the book. W. SIMMONS.

The Lindley library.—Owing to the death of Mr. Thomas Moore, the number of trustees (other than the official ones connected with the Royal Horticultural Society) had become reduced to two, viz., Dr. Hogg and Dr. Masters, the only survivors of the original seven. Under these circumstances it became, in the words of the trust deed, "a moral obligation" to fill up the vacancies. This has accordingly been done, by the election of three new trustees, in the persons of Mr. William Carruthers, President of the Linnean Society, Keeper of the Botanical Department, British Museum; Mr. George Maw, F.L.S., of Kenley, Surrey; and Mr. Harry J. Veitch, F.L.S., of Chelsea. The official trustees are the treasurer and secretary of the Royal Horticultural Society for the time being. Though connected in a measure with the fortunes of the Royal Horticultural Society, the library is essentially an independent institution, and is open to the general public as well as to Fellows of the Society, under proper regulations, and under certain conditions books are allowed to be borrowed. The funds at the disposal of the trustees are, unfortunately, too small to allow of much more than the purchase of periodicals, while the room in which it is lodged is so inconvenient of access, that the utility of the library is seriously impeded. In any change of site or other circumstances connected with the Royal Horticultural Society, the question of adequate accommodation for the library and its proper maintenance must have earnest consideration. In the meantime, donations of books or of funds will be thankfully welcomed by the trustees.

SOCIETIES AND EXHIBITIONS.

MANCHESTER ROYAL BOTANICAL AND HORTICULTURAL.

THE second of the society's spring flower shows was held on Friday, April 29, in the Town Hall. In connection with it was the annual exhibition of the northern section of the National Auricula Society. Better examples of the Auricula were never staged in Manchester. The chief honours fell to the energetic secretary of the society, the Rev. F. D. Horner, who carried off first honours in every class. Close upon Mr. Horner's followed admirable collections from Mr. William Bolton, Warrington; Mr. Arthur Potts, Hoole House, Chester; Mr. Henry Wilson, Halifax; Mr. Pohlman, Halifax; Mr. Brockbank, Didsbury. Groups of alpine were also noteworthy from Mr. Stelfox and Mr. Buckley, Stalybridge; Mr. Heys, Northen; and Mr. Shaw, Moston. In Primulas, the premier honours were taken by Mr. S. Barlow, of Stakehill. The most delightful circumstance connected with the display made on the present occasion is, that while the fancy kinds have had protection from the weather, the plainer and hardier ones were all dug up out of their surroundings of green Grass in Mr. Barlow's garden at Llandudno. Mr. William Brockbank also made an exceedingly beautiful show. Mr. Thomas Walkden, of Sale, sent a beautiful group of Primulas, conspicuous being the old dark crimson double, now becoming so rare near Manchester. Next to the Primulas in importance and effect on the present occasion were the Daffodils. Two magnificent displays of Narcissi were made, the first, comprising about fifty large clusters, from Messrs. Dickson, Brown, and Tait; the other, constituted of about a hundred varieties, from Messrs. James Dickson and Sons, Chester. The Chester lot included some capital examples of the variety Sir Watkin. There were some admirable displays of stove and greenhouse plants, the entire space beneath the organ being occupied by the grand collection from Mr. Joseph Broome. So brilliant a contribution could not possibly go unrewarded, and the society's jubilee gold medal was worthily awarded. Excellent miscellaneous groups were staged by Mr. B. S. Williams, Holloway; Messrs. F. W. and H. Stansfield, Sale (these chiefly hardy plants); and Mr. John Hooley, of Edgeley. A little lot of curiosi-

ties and rarities from the society's gardens at Old Trafford was very interesting. The following awards were made by the committee. First-class cultural certificates—*Polyanthuses* and *Primroses*, Mr. H. Walkden, Sale; *Narcissi*, Messrs. Dickson and Sons, Chester. *Miscellaneous stove and greenhouse plants*, Mr. B. S. Williams, Holloway. *Herbaceous and alpine plants*, Messrs. F. and H. Stansfield, Sale. *Miscellaneous stove and greenhouse plants*, Mr. John Hooley, Edgeley. *Cut blooms of Hyacinths and Narcissi*, Messrs. Dickson, Brown, and Tait.

LEEK AURICULA SHOW.

THE second exhibition of Auriculas and other spring flowers, held at the Town Hall on Saturday last, showed a vast improvement upon its predecessor. Not only were the exhibits more numerous and better grown, but the interest was distinctly greater, and promises well for the future of the society. Amongst the grey-edged, Col. Champneys was the winning variety, and those staged by Mr. H. W. Nixon were very much superior to any others in the class, although Apollo was greatly admired. In green edges, Prince of Greens, Duke of Cambridge, and Duke of Wellington were to the fore in the order named, the winning plants being really well-grown specimens. The white-edged varieties, though not so numerous, were also meritorious, Acme, shown by Mr. B. Flanagan, being very fine, and deserved the premier position accorded to it. Self formed a strong class and keen competition, the first prize going to Negro and the second to C. J. Perry, shown by Messrs. H. W. Nixon and M. Carding respectively—undoubtedly the best of the eighty shown. The prize for the best seedling was awarded to Mr. W. Barnfather for a very fine dark purple self. Mr. Nixon was first in the alpine class with Mercury, the same grower also taking second and third with Mrs. Llewellyn and Mrs. Meiklejohn. Mr. M. Carding staged about twenty varieties of garden alpine, which were greatly admired. Cheshire Favonite bore down all opposition in *Polyanthuses*, Messrs. J. Brunt, J. Garner, and T. Lea being the successful exhibitors. *Primroses* in pots were also well shown. The feature, however, of the show was a magnificent collection of fifty-five varieties of Daffodils staged by Messrs. Barr and Son, of King Street, Covent Garden, and throughout the day a crowd surrounded their stand, amazed by the dissimilarity and splendid growth—"a host of golden Daffodils," truly. Messrs. Dickson, Brown, and Tait (Manchester), Mr. T. S. Ware (Tottenham), Messrs. James Dickson and Sons (Chester) also exhibited excellent collections, as did Mr. M. Mellor, of Leek. The arrangements were admirably conceived and well carried out by Mr. H. W. Nixon, the honorary secretary. The profits of the show, which amounted to about £10, will be given to the Leek Cottage Hospital Jubilee Fund.

BOOKS RECEIVED.

"Nitrate of Soda; its importance and use as a manure." By A. Stutzer. Whittaker and Co., London.

"Vill's Gardening." By E. Hobday. Macmillan and Co., London.

"The Chrysanthemum Annual." L. Castle.

"Tobacco Culture." By a Cultivator in the United States. Howeroft and Watkins, Covent Garden.

Basic slag.—Can any of your correspondents inform me where this can be obtained nearest to the port of Liverpool?—F. H.

Rowstring Hemp.—We have received from the Director of the Royal Gardens, Kew, the May number of the Bulletin of Miscellaneous Information. This part treats in an exhaustive manner of the extraction of fibres from the varieties of *Sansevieria*. The fibre from these plants it is proposed to call *Rowstring Hemp*.

Names of plants.—II. D.—*Edwardsia grandiflora*.—K. T. W.—1, *Asplenium Mammillarium*; 2, *A. brachypteris*; 3, *A. Hookeri*; 4, *Adiantum fulvum*; 5, *Cheilanthes fragrans*.—W. B.—1, *Odontoglossum gloriosum*; 2, *O. Cervantesi*; 3, *O. Cervantesi decorum*; 4, *Dendrobium Jekhusi*.—V. J.—1, *Pinguicula rosea*; 2, *Sarracenia variolaris*; 3, *Anemone Pulsatilla*; 4, *Draha verna*.—R. P. G., *Blackburn*.—*Miltonia spectabilis rosea*.—O. P., *Molton*.—*Crinum speciosum*—*Snowflake*.—1, *Leucocymon verum*; 2, *L. astivum*; 3, *Scilla verna*.—*Orchidist*.—1, *Epipendrum aurantiacum*; 2, *Ada aurantiacum*; 3, *Odontoglossum gloriosum*; 4, *O. triumphans*; 5, *O. Pescatorei*.—G. W.—1, *Pilumna fragrans*; 2, *Maxillaria picta grandiflora*.

WOODS & FORESTS.

"YORKSHIREMAN."

FORESTRY NOTES.

MISMANAGED PLANTING.—I am convinced that much of the ill success that attends the formation of young plantations, especially of such ticklish subjects as the Corsican Fir and its like, is due to mismanagement and want of forethought and preparation. A Scotch Fir even, no matter how young and vigorous it may be, will die if not taken up at the right time with sufficient roots, or if it be kept long out of the ground between lifting and planting again. Now is the time to take measures for planting, so far as setting out and preparing the ground are concerned, after which it will be almost time to take out the holes so as to be able to begin in September and October. The dilly-dallying noticeable on some estates is fatal to successful planting. Sometimes the delay is the fault of the forester, and sometimes of his employer. On one large estate I was told not long since that as late as March the proprietor had just decided what he would do, and at once ordered about one hundred thousand trees, of all sorts, to be forwarded at once, and which his forester was at his wit's-end to get in in anything like a safe and reasonable time with the means at his disposal. As he observed to the writer, what can the woodman do under such circumstances? That lot was planted in a dry time, and as the trees have not had sufficient rain to moisten the roots since, the consequences may be surmised; they will perish by the acre. The severe frosts in March, followed by the late scathing east wind, have had a most disastrous effect on all late planted trees; whereas October planted stock of all descriptions is in good condition. I never saw more promising Corsican Firs than those planted early last autumn; hardly any have gone back. I was told not long since of the "forest-tree" man in a noted nursery in the north declaring in emphatic language that he wished "the Corsican Fir had never been born," as the half of them at least died after transplanting, subjected to the same treatment as others. This tree is much sought after now, and nurseries are hurrying up stock of it, but their losses, I hear, are appalling. It will grow, however, if lifted with reasonable care in September or October and planted at once. If allowed to be kicked about in bundles like fagots, as is too often the case in nurseries, it may almost as well be burnt at once.

We know of cases where 18-inch plants of the Corsican, put out last October on a moor direct from a strange nursery, not one hardly of which have failed. They look green at this date, at least, and have not that browned appearance so common at this time of the year in those that are going wrong. Trees put out in former years look equally well, and promise a grand lead this season. All these trees were lifted and loaded off from the nursery under the supervision of our own men, and I will venture to say the roots they had with them were twice as long and as numerous as those lifted by the nursery employés by themselves. The head men in a large nursery cannot look after the execution of every order sent to them, and the result is that the work is left to labourers, who know little, and care less, as to what becomes of the trees after they leave their hands. Firs of all kinds suffer worst; hence the importance of buying these when small and cheap, and growing them on in the home-nursery, and buying the deciduous trees that are not so sensitive. Reputed frequent transplanting is not worth anything if the roots are not there. I would give more for

one Corsican Fir lifted from the home-nursery, although it might not have been transplanted for several years, than I would for a dozen sent from a distance, lifted and despatched in the ordinary way. And the same holds good with Larch.

Then as to planting. The slit method of putting the trees just under the soil may answer under favourable circumstances, but all young forest trees have naturally a tap root, and whether they may have lost it or not, I would, if I could, plant all on the dibber principle, just as Cabbages are planted. One deep, narrow hole, and the roots let straight down into it and wedged tightly up to one side is the way to do. The tree, come drought or come frost, has its main roots then beyond the reach of either, and is sure to do well. A long, narrow spade put straight and deeply down, lifting out just as much earth as will let the roots readily in, is the plan in pit planting. I hate to see a gaping, shallow hole, and always feel inclined to fall foul of the man who makes it, because he is sure to drop the plant in the centre, filling in on all sides, and treading round the plant with his feet like a baker. I do not regard what foresters call the notch system of planting as having anything to recommend it but its cheapness. Very small trees on good, clean land may succeed well enough so planted, as they have few roots, but with good plants it is different, and the more carefully they are fixed in the soil with their leading roots well below the surface, the better. The advantages of spreading the roots out evenly under the notch are imaginary. In plants from the nursery there are few or none to spread, and what prongs and roots there are are better wedged in vertically and firmly. They will be near enough to the surface under any circumstances, and are better spread vertically than horizontally.

THE CONIFERE.—The list of these, like the fruit tree, Rose, and vegetable lists, is encumbered with varieties, sub-varieties, and synonyms, and I believe I am quite within the mark in stating that if four-fifths of the lot were consigned to one good bonfire, they "never would be missed" from the garden or wood. According to the latest manual on the Conifere, there are some 300 or 400 species and varieties known or grown. How many of these have been established in our woods and found worth keeping could probably be counted on the fingers of both hands, or a little more. These consist of the Scotch Fir, the common and Silver Spruce, the Corsican and Austrian Firs, the Wellingtonia, Pinus excelsa, Deodar, Cedar, Douglas Fir, Nordman's Pine, and a few others, and if the really best timber-producers of these were selected the list would probably be reduced by a half. I do not know that the gross results of our Conifere knowledge and experience could be more accurately stated. If we had planted woods instead of carriage drives and garden plots with the so called new varieties, our experience might have been different, but the above is about the sum total at present. The hardest Conifere only will endure the "single specimen" system of culture in this country, because our cold winds and fitful thaws and frosts kill them standing alone; but the real way to test any Pine or Fir planted either for timber or landscape effect, or both together, is to plant them in masses, and the bigger the better. I have no doubt in my own mind that if the Wellingtonia, for example, had been originally planted in good-sized groups and pretty closely together, it would have produced good useful timber by this time of such a bulk and quality that the Larch could not approach. I think the same in regard

to the Deodar, Pinus excelsa, Austrian Fir, and, above all, the Corsican Fir. Bad as the Wellingtonia is for standing cold winds in inland situations, I notice that it never "loses its head," i.e., its top. It continues to grow taller fast, but the side branches dwindle and die. In isolated positions the common Spruce, Nordman's Fir, and others behave in the same manner, suggesting plainly that they like the shelter of each other, and should be planted in masses. In future, therefore, instead of forming Conifere grounds of single trees, I would recommend gentlemen to plant good groups of such sorts as they feel disposed to try, to make their plantations their Conifere gardens, and to plant glens and ravines instead of mountain tops. In all landscapes I have seen, painted or real, I notice that it is almost invariably the precipitous sides of the valleys on which the Pine forests grow, and that the best timber is at the bottom. A traveller, who has been much abroad collecting seeds of the Conifere tribe, tells me that in Japan, where such fine forests of the Cryptomeria and other Pines exist, the trees look as if they had begun at the bottom of the valleys first and extended upwards, and that all the finest timber was produced in such situations; the narrower and steeper the gorge the finer and straighter the timber.

LORD ABERDEEN'S PINE.

(PINUS PINASTER HAMILTONI.)

THIS is one of the best and most desirable of the many varieties of Pinus Pinaster. That it is both a distinct and pretty tree, and one that is well fitted for planting extensively in almost any part of the British Isles, I am fully convinced. I have seen trees of this variety growing on a sandy hill where gravel for road-making is oft procured, and more than one of our 'cute nurserymen have been led thither only to express astonishment at the finely rounded heads, bright healthy appearance, and well developed stems of this by-no-means common, yet beautiful member of the Pine family. In my own opinion Lord Aberdeen's Pine is a most ornamental tree—a decided advance in this way over the normal form—with a conspicuously rounded head, a well branched stem, and an abundance of pale green, but very desirable foliage. Combined with this we have its great hardihood, its love for breezy situations, even putting on its best form in the teeth of the blast, and its capability of thriving even in the poorest of soils—sand and gravel.

For the introduction of this Pine we are indebted to Lord Aberdeen, who in 1825 sent it from the neighbourhood of Nice, where it had been found by M. Risso, but sparingly, and at no great distance from the town. The principal points of difference observable in this variety are the shorter leaves, smaller cones, and better furnished stem, the branches having a greater inclination to remain in a healthy condition on the stem than is the case in the typical Pinaster. In most works treating on Pines the leaves of Lord Aberdeen's variety are said to be of a paler green than in the normal form, but this I quite failed to see, probably from the specimens I examined being in the most luxuriant health and fully exposed in every way. They are, it is true, and this is very observable, both broader and shorter, and thus impart to the tree generally a more compact and massive appearance than is noticeable in the majority of specimens of P. Pinaster. The cones are much shorter than in the typical Pinaster, of a lighter colour, and differently shaped, being nearly ovate instead of truly conical.

Little hesitation have we in recommending this variety as fully superior to the ordinary form for ornamental purposes, and as it is of free growth and perfectly hardy may be planted for shelter even in very exposed parts of the lawn or park. The branches grow thick and strong, like those of an Austrian Pine, while the great abundance of foliage renders the rounded head compact and firm,

and well fitted for doing battle with even the fiercest storms. It is, in truth, a much refined Pinaster, the massive, easy appearance of the latter being substituted by a somewhat dressy and formal style of growth in Lord Aberdeen's tree.

Sir Charles Lemon's Pine (*P. Pinaster Lemoniana*) is another very distinct form of the Pinaster in which the cones are only about 2 inches long, produced singly and, in contra-distinction to those of the typical tree, at the ends of the shoots. It is questionable, however, if this variety will retain its characteristics under the best method of cultivation, for in a specimen supplied by Sir Charles himself to the Royal Horticultural Society's garden, at Chiswick, the cones had in a few years increased to nearly twice the size of those described and figured by its finder, although they were still produced singly and at the termination of the branches.

The appearance of a medium-sized tree of this variety is that of a dwarfed, ill-grown Pinaster with a crooked stem, the branches thickly arranged and twiggy, and the leaves short, or usually about 3 inches in length. The cones are fully 2 inches long by 1½ inches in diameter at the thickest part, and have unarmed scales. So far as I can find out, this variety originated, or was, at least, first noticed at Carelew, in Cornwall, by Sir Charles Lemon, and who contributed to the Horticultural Society (1835) an account of it, and which, at the time, attracted a considerable amount of attention and discussion. There is, likewise, a variegated form of the Pinaster, but in the specimen brought under my own notice this did not appear to be either constant or regular.

A. D. WEBSTER.

TRADE RINGS.

ARE growers themselves altogether free from blame in this matter? I do not mean that the bulk of producers go intentionally wrong, but it is certainly open to question whether combinations are not fostered by the manner in which sales are effected. Does it not often occur in this way? A considerable felling has taken place or has been decided upon. This is of a similar character and suited for a similar purpose, and the price based upon its value at the point of consumption is nearly as easily ascertained as that of consols. To work this out at the least possible cost it is clear that one individual or one firm should have the handling of it in preference to half-a-dozen, and my experience has been that an individual or firm, when treating for a lot of this sort, will touch the highest market figure in order to command the whole lot. In such a case a combination could not occur, and would be unnecessary if it could. On the other hand, the owner elects to submit his timber by public auction or tender. This brings a number of merchants together from considerable distances and at a considerable expense. It is perfectly clear that all cannot be buyers, and the hope of the seller is that competition will thus be induced and the price be run up. When this happens, the owner of course rubs his hands with glee, and the would-be buyers return sadder, but wiser men; and from this, in course of time, they learn to protect themselves by means of combinations or rings. I will not go so far as to assert that in every case as good a reason as this could be given for combined action, but it cannot be denied that it is largely a means of self-defence. The best method of destroying trade rings is to remove the cause of them, and this, in the majority of instances, can be done by selling privately to a reliable firm and making the interests mutual. If the seller elects to bring ten times as many men together as is necessary to buy a given lot of timber, he, of course, must stand his chance of being out-manoeuvred. It may be objected that in selling privately there is no competition, and the merchant has it all his own way. This, however, is not so, as if one merchant insists upon taking an unfair advantage, there are always plenty who are ready to meet a seller on fair terms. In sales of a miscellaneous character the conditions are different, and an auction often brings the best results, and for the simple reason that the lots are generally small, and consumers can buy direct without the intermediate

merchant. At sales of this kind it is very seldom that rings do much damage to the vendor's interests. As I have said, my recipe shortly is—sell large lots which consumers cannot touch to merchants by private treaty, and small miscellaneous lots by auction if you like.

D. J. YEO.

PRUNING AND POLLARDING TREES.

POLLARDING, or severely cutting in the branches of trees, is not a practice to be generally recommended; still there are instances in which it is found to be absolutely necessary. In many small places the originally planted hardwood trees, such as Oak, Ash, Elm, Beech, Lime, Horse Chestnut, &c., have been allowed to go on increasing for a series of years, frequently interfering with each other, and often rendering such gardens close and unpleasant; nevertheless, no reason, however urgent, will induce the proprietor to allow any of them to be removed, perhaps owing to all of them being finely developed specimens. This is a feeling with which I fully sympathise; but for the consolation of those who, from dire necessity, have to part with such specimens, I would offer the following observations. A case came under my notice two or three years ago where some large hardwood trees standing near a boundary wall, with their tops overhanging a public road, had from necessity to be reduced or removed altogether; reduction was finally resolved on, and carried out during the winter. The chief trees operated on were Ash, Beech, Wych Elm, and Horse Chestnut. All were wide-spreading trees, and between 10 feet and 50 feet in height. The largest specimens, at 3 feet above the ground, measured in circumference as follows: Ash, 6 feet; Beech, 5 feet 1 inch; Elm, 8 feet 5 inches; and the Horse Chestnut, 5 feet 5 inches. All were cut down to within 18 feet or 20 feet from the ground, and portions of the main branches, averaging in length from 3 feet to 4 feet, were left in such a manner as to give the denuded trees a regular outline; they were then carefully operated upon according to the strictest rules of forestry as regards ornamental trees, all sloping cuts smoothed and darkened over. During the first year after the operation, standing as they do side by side, they certainly presented, as might be expected, a somewhat bare appearance, which would not have been so much the case if only alternate specimens could have been operated on. After the first year, however, they annually improved, so that now their appearance is really pleasing to the eye, the stumps of the branches left being clothed with numerous young and healthy twigs.

During the first year the Ash made growths 4 feet long, during the second 3 feet to 4 feet, and during the third about 2 feet. The Elm made from 2 feet to 3 feet during the first year, 3 feet to 4 feet during the second, and from 4 feet to 5 feet during the third. In the case of the Wych Elm it is necessary, in order to secure a tree with a good outline, occasionally to prune in a little the strongest of the newly made branches, without which it is apt to have a few of its leaders taking a somewhat horizontal direction, to the detriment of the others. The Horse Chestnut's growths averaged about 2 feet long during the first year, from 2 feet to 3 feet during the second, and about 2 feet during the third. The Beech made about 3 feet growths during the first year, but by no means numerous, 1 foot to 2 feet during the second, and 18 inches during the third. I was rather surprised to see the Beech tree putting out any young twigs at all, as it generally does so with reluctance. It made its largest growths during the first year, a circumstance probably owing to the existence of extra sap then in the stem, the after-growths being much smaller.

After the trees had been cut over, and the branches removed, all ought to have received a coat of fresh soil over the roots. This would have been the means of greatly improving them, particularly the Beech; indeed, every tree and shrub, when pruned down and reduced, ought to be thus treated, more particularly large evergreen shrubs, which in many cases die from the want of this necessary precaution. This is often observable in the case of large Portugal Laurels, Hollies, and Yews, as, owing to their close

ness, the roots are generally near the surface, and liable to be injured by frost or exposure to the sun. I may also remark here that as the bark of the Beech tree is of rather a hard, dry character, it would be much in its favour, after being headed down, to have the head occasionally syringed, particularly if the weather is at all dry and warm.

Although the particular trees alluded to have only been three years cut in, when in foliage, they certainly have, as has just been stated, a very good appearance, which warrants our recommending the practice in places where trees would otherwise require to be altogether removed; in some situations, too, only every alternate tree bordering a property would require to be thus pollarded. In the case of Elm trees standing within a boundary wall, I have recommended every alternate tree to be pollarded and branch-pruned as described, and the result in all cases where attention has afterwards been paid to them has been satisfactory, the pollarded specimens filling up in a creditable manner the spaces between the branches of those left untouched.

The Lime tree, even when of large size, stands with impunity "topping" and branch-cutting, and the Ash, English Elm, Poplar, and Willow I have often seen so treated, and with success. It is well known that the Beech, in a young state, will stand any amount of cutting; but I never recommended large Beeches to be so treated till I observed the progress made by the one referred to. My object in making these remarks is to point out to those individuals who are unnecessarily scrupulous about the thinning of outside trees, that if they can put up with the somewhat bare appearance of them for a short time, such pruned trees in a year or two, if properly cared for, become quite as ornamental even at forty or fifty years of age as they were when only twenty years old.

J. M.

Seasoning timber.—Trees, immediately after they are felled, unless they have been previously killed, contain a great deal of moisture, and are, therefore, unfit for use until they undergo a seasoning process. This is simply the evaporation of the water, which if allowed to remain in the tree would ferment and decay, and if dried out too rapidly would leave the timber brittle, because the gum and other matters in the wood would evaporate with the water, instead of gradually assimilating with the fibres, and tending to bind them together as is the case where the drying is properly conducted. How to accomplish this is the principal thing, and there are many means of doing so. Some people say placing timber in a running stream for a time before stacking helps seasoning and renders it less liable to decay. But it is not always convenient nor is the timber as good as if seasoned other ways, for it carries off more matter than necessary. Some say leave timber in the bulk some time before cutting into planks. There is great danger in doing this, for if there are any cracks through the bark to allow the moisture to lodge in, decay is certain. The best way is to cut the timber into planks at once after felling, and place it in a store or shed with good ventilation, but no violent draughts of air and no moisture. The floor should be perfectly dry and the roof lofty. In stacking the timber it is well, when convenient, to stand the planks on end, the root end upward, and well raised from the ground. In all cases, each plank or board should be separated from the next one by laths, to allow the air to circulate freely between them. After being in this position for four or five months it is well to reverse them, and brush off with a hard brush any moisture or mildew that may appear. Timber seasoned in this manner proves the toughest and most durable. In seasoning, hardwoods take about one year to the inch, and soft woods much less. Where it is possible, it is well to cut all timber into scantlings, and in panels or boards to plane them some time before being used, as they are apt to shrink, no matter how long they are seasoning, for the wood which requires least seasoning is generally found to be the most durable; it then becomes an essential point that trees should be felled during the winter months, that being the season when the tree has least sap or vegetation within it.

No. 808. SATURDAY, May 14, 1887. Vol. XXXI.

"This is an Art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—*Shakespeare.*

ROSE GARDEN.

T. W. GIRDLESTONE.

THE HARDINESS OF TEA ROSES.

THE experience of the past winter affords valuable evidence of the fact, now happily becoming generally realised, that the Tea-scented Roses are not too tender to be successfully cultivated out of doors in spite of really severe weather, and if the suggestion that they are hardier as a class than the Hybrid Perpetuals cannot be considered as proved, yet there is no doubt that the tenderer Hybrid Perpetuals suffer far more during a severe winter than do the hardiest of the Tea-scented varieties. By the last are not meant *Gloire de Dijon* and its giant progeny, nor yet the varieties which betray so strong a Bourbon influence as almost to forfeit the right to be considered Teas at all, and of which *Sombreuil* might be instanced as a type, but varieties like *Caroline Kuster*, *Jean Ducher*, and *Madame Lambard*, which, in spite of the low temperatures to which they have been exposed, are in far less sorry plight than such neighbours as *Madame Prosper Laugier*, *Marie Finger*, or *Lady Sheffield*.

A fairly conclusive test was applied this winter to a considerable piece of Teas, including several hundred plants of the best varieties on Brier seedling and cutting stocks, planted on somewhat strong ground absolutely unsheltered, being exposed to every wintry blast. These plants were left without artificial protection of any kind, having neither Bracken among their tops nor a mulching upon the surface of the bed. When the thermometer, suspended on the side of a wooden shed at a height of some 4 feet from the ground, registered 7° Fahr. on two successive nights, grave fears were entertained that there might be a piece of spare ground for Peas or early Broccoli when the *débris* should have been cleared away, but now that pruning time has come and gone, the only variety of which plants are found to have been killed outright is *Madame Bravy*, and even that is not wholly annihilated; while such sorts as *Comtesse de Naudaille*, *Souvenir d'Elise Vardon*, *Niphotos*, &c., commonly regarded as so tender, hardly show a gap in the row.

It was further observed that there was no perceptible difference in the condition of these exposed plants and those which had been carefully protected with an abundance of Fern, and some people have consequently been disposed to raise the question of the utility of the proceeding of wrapping Teas up in Bracken during winter, on the ground that it is unnecessary if the weather be mild; whereas if the frost be severe, Fern appears inefficient.

Without pronouncing definitely for or against Fern as a winter protector, in the absence of more copious evidence, there is little doubt that Tea Roses may be far better preserved from harm in winter by being earthed up than by any other means. Of all the plants in the open those are now in much the best condition which in early winter had the soil drawn up round them about 6 inches high, as if they had been rows of Potatoes. In no case was the wood killed below the level of the top of the drawn-

up soil, although this was frozen solid for considerable periods during the winter, and, in addition to being apparently more effective, the plan of earthing up is infinitely preferable to covering with Fern for protection, from the gardener's point of view. For while in the latter process the beds get trampled down hard, and a considerable litter is involved both when putting on and removing the Fern, not to mention the effects of wind throughout the winter, by means of earthing-up the plants the surface of the beds is kept open, there is no untidy litter, and the ground is thoroughly cleaned by the process both in autumn and at the time of levelling down again in spring. Tea Roses will always have the reputation with some people of being tender, on account of the amount of dead wood that frequently has to be cut out in spring; but it should be borne in mind the Teas will nearly always go on growing in late autumn until interrupted by actual frosts, and that consequently there must be a number of green pithy growths which are naturally destroyed by a cold winter. The thoroughly ripened wood, however, will survive exposure to really low temperatures, and even where the Teas seem more seriously cut back than the Hybrid Perpetuals after the winter, the recuperative power of the former is such that they will probably recover and make far finer plants again by autumn than the latter. For the vital energy of the Tea-scented Roses is such, that they are liable to go on growing continuously unless the needful period of rest is summarily enforced, so that a winter of some severity is a decided advantage so long as it does not quite annihilate the plants, and to do this its severity must evidently be considerable.

A good Rose.—It has so long been thought there is no variety so generally useful and popular as the *Gloire de Dijon*, that we are apt to become sceptical as to the probability of its being ever supplanted, yet this seems likely to happen. This formidable rival will be found, I firmly believe, in *Bouquet d'Or*. I recently saw several strong plants growing in a large Rose house near Bath. They were trained up the rafters, strong bushes of other Teas being grown underneath. At first sight I thought it was *Gloire de Dijon* and commented on it as such, but was assured by the disinterested grower that it is really superior to that variety. It apparently possesses all the good qualities of the *Gloire de Dijon*, and in addition gives far better formed blooms. The one great fault of the *Gloire de Dijon* is its habit of producing so many blooms with ugly twisted centres, and as *Bouquet d'Or* rises superior to this weakness, it may safely be termed the better of the two.—W. L.

Marechal Niel Rose failing.—It is pretty well known that this Rose is liable to canker, and it is very annoying to see strong, handsome Rose trees canker in various parts, causing their rapid decay and ultimate death. There is now growing in the nurseries of Messrs. Paul and Son, Cheshunt, a magnificent specimen of this Rose in perfect health, and it is about twenty years old. There is something remarkable about it besides its vigorous development. The bark has all been scored and cut through to the wood with a sharp knife. Mr. Paul says this prevents canker, by allowing the crude sap to escape at certain seasons of the year. The large Rose tree in question is growing under glass trained to the roof. Its flowering period is April or May, and when the blossoms are all removed the young wood is cut back again; it is summer-pruned, and this is the time to run the point of a sharp knife down the bark or across the old branches longitudinally. The knife is very freely used indeed. This is a very simple remedy, or what is better, a preventive. Probably, if canker once set in, the scoring process might not be so effectual. Mildew is very troublesome on this Rose, and if this parasite or greenfly should spread very much over the

leaves, the growth is checked and canker ensues, or, what is much the same, some of the branches die off. Nearly all the ills which plant life is heir to are caused by allowing insect pests and parasites of various kinds to subsist upon the leaves. We had a house at Loxford Hall in which were two trees planted out. They did well for three or four years, but one of them cankered and ultimately died. The other did very well, except that it felt the influence of London fogs; the leaves would drop off before their time, but we struggled on with it and obtained an annual crop of pretty fair blooms, not like those exhibited at South Kensington by Mr. Walker the other day, but probably as much valued, as they were the best possible under unfavourable circumstances.—J. DOUGLAS.

THE PRUNING OF MARECHAL NIEL ROSE.

"V. M. Devon" (p. 411), states his case so clearly, that he deserves a prompt answer. His case is also so truly typical, as to deserve careful and full consideration. His Rose is so good and so full of wood and of bloom, and yet the plant produces more shoots at the best possible place, too many, indeed, for its present health and permanent vigour and stability. It is simply a case of too much of a good vital force and growing vigour outrunning available area. The question narrows itself, therefore, to this, the striking of a nice balance between the old wood and the new, so as to gain the highest results in vigour and stability of plant and prodigality of bloom.

As to the first two, there can hardly be a question that the best course probably is to cut out one or several of the older shoots that have already bloomed, and lay in some of the young ones to take their place. This plan of leading up growing shoots of the *Marechal* from the base is the surest antidote to warts and exhaustion, as it thus virtually renews its growth and extends the area of its roots and tops every year.

The effects on the amount and quality of the blooms are also obvious. As far as mere numbers are concerned, possibly the close spurring of the old wood would have the advantage; but were the flowers weighed, the young wood would win in a canter. One must see and handle the flowers from young wood to appreciate the enormous difference in texture and size between them and those from spurs on older wood. But the best mode for such fine *Marechal Niels* as the plant your Devon correspondent is favoured with is to adopt the mixed system of spur and long-rod training and pruning. So long as the plant continues to break near its base, lay in one or several shoots annually, and cut out so many older ones to make room for the new. By this simple process, the largest possible number of blossoms from a given area may be gathered, and the plant will probably remain in robust health if properly fed with top-dressings of manure water, &c., while it retains the force of thus renewing itself from near the root-stock. D. T. F.

Manure for Roses.—Some remarkable specimens of Roses in pots are to be seen at the Royal Nursery, Slough—remarkable not so much from their size, for they are young plants of medium dimensions, as from their wonderful development of foliage and the number and size of their buds. This is attributed to the use of Jensen's fish manure. Mr. H. Turner states that as soon as the buds began to appear a good surface dressing was given, and the virtue in it is carried down to the roots when water is given to the plants. The effect of this manure is really surprising, and so a wrinkle is afforded for such rosarians as grow Roses in pots. The Slough Roses should create a sensation at the Royal Botanic Society's exhibition on May 18.—R. D.

Naming Roses.—May I venture, as a Rose-grower, to join in Mr. Girdlestone's appeal in your issue of 30th of April as regards the naming of new (and some old) Roses. I wish that some international society could be formed which would grant certificates only for real novelties or sports perfectly distinct, and no sport to have a certificate

unless it had been proved by the committee for three years; moreover, to refuse certificates to any Rose (however good) whose name contained more than two words. As regards the naming of new French Roses, I hope the new French Rose Society (if ever formed) will do its best to put a stop to these fearful jaw-breaking names. As Mr. Girdlestone rightly says, the south of France rosarians are the worst offenders, but around Paris there are a few who are not innocent. I think that English, and perhaps more especially American, rosarians can pride themselves on the shortness of the names they give to their novelties.—A ROSE-GROWER IN FRANCE.

SHORT NOTE. ROSES.

Rose Marechal Niel.—It would be interesting if correspondents would note carefully this season the condition, after the recent severe winter, of Marechal Niel on various aspects. It has been noticed that of a considerable number of plants in different positions, those facing north appear far less injured than those having any other exposure, and at the present time the former are forwarder and breaking more strongly than the latter. On the other hand, the plants facing south-east were the most severely damaged.

EDITOR'S TABLE.

WOOD FORGET-ME-NOT.—The Swiss Forget-me-not and other kinds have become so popular of late, that the Wood Forget-me-not is scarcely grown enough. It is pretty in woody and bushy places in spring. A good white and the usual blue variety are pretty in a bowl in a cool window.

*

SOME WOOD TULIPS (*T. sylvestris*) FROM THE MEADOWS.—I planted many sent to me by Edouard André from Touraine. The chain-harrow and the roller far from beneficial to the foliage; would have been better in a copse or bushy corner.

*

HORSFIELD'S NARCISSUS, cut in the bud state still good, though cut for nearly three weeks.

*

SNAKE'S-HEAD.—This graceful flower is so modest in the Grass, that it is as well to bring it nearer to one in the room—both the white and common forms.

*

SPRING STAR FLOWER (*Triteleia*).—This I have tried in Grass, and it seems so far to be very happy, and looks very pretty and distinct. Pretty in the house, too, but the strong Onion odour of the stems makes it unpleasant to gather.

*

COWSLIPS, gathered leaves and all—or indeed in any way—fine in a bowl to themselves, and consoling to those who do not buy Orchids at two hundred guineas a plant.

*

THE WHITE CREEPING FORGET-ME-NOT (*Omphalodes verna alba*).—I enclose flowers of this pretty white Forget-me-not. This is a plant but seldom met with in gardens. I have it growing freely in the open border on a light gravelly soil; it is of a creeping habit and perfectly hardy. It looks very pretty planted alternately with the blue *Omphalodes verna* or *Lucilia* in the front of the shrubbery border.—T. B. FIELD.

*

PRIMROSES.—Various friends send beautiful forms of the Primrose and Polyanthus, and so swell the great mass of evidence that we have already of the beauty in all ways, and the rich variation, of our native Primrose, which in its wild form is certainly as beautiful as anything raised from it. The woods in Sussex now are more beautiful than any garden, carpeted with

bosses of Primroses, Lady's Smocks, and Violets, from which rise the beautifully-coloured stems of the Oak in all directions. It is a glorious garden and a lovely picture in one. Mrs. Maxwell's Polyanthus from Kirkeconnell, Newabbey, are very beautiful, and this is the description we must give to all. Mr. Beachey, Kingskerswell, also sends a beautiful box, and says:—

I forward you a box of Primrose and Polyanthus blooms, all seedlings, raised by me here, the result of many years' careful selection. I have attached names to only a few. I believe that you will find all worthy of a careful looking through. Specially would I draw your attention to those in-hose Victoria a this year's seedling, which is, I should imagine, far and away ahead of anything of the sort ever raised before. Prince of Orange and others you will recognise without names, and others for brilliancy of colour and shape, combined with size and other qualities, I am told by experts, who have seen them, are quite unique.

What is worth naming or unique it is extremely difficult to say for one who has seen good collections such as Mr. Waterer's and others that we know. Many lovely things are raised, and probably in the end it is found that if great care is taken in raising seed from good races the best way will be to throw them into groups of colour and to propagate from seed; increasing them by division is a slow process, and the named kinds do not continue to be so pretty and interesting as they are at their first appearance. Mr. Job Candwell, of Wantage, seems to send them from Berkshire as fresh as they come from any other county. He is rather rich in what he calls galligaskin Primroses, and sends them tastefully packed in bunches of their own beautiful leaves. Even in their monstrosities they have a wonderful charm of colour.

*

PRIMULA ORCONICA.—Mr. George Bolas, of Hopton, North Derbyshire, sends us a bunch of *Primula obconica*, fresh, with the following:—

I fully endorse all said about this *Primula* last week, but should like to add another good property to its many. The enclosed flowers were cut three weeks last Monday, the water being replenished now and again.

*

THE WILD PANSY.—The same gentleman sends a very welcome little flower, the yellow wild Pansy (*Viola lutea*), which to me is as pretty as anything in its wonderful grace. He speaks of it as covering, with its blue companion, the hills in North Derbyshire in wonderful profusion. The little bunch of cut flowers is very pretty. Mr. Bolas also sends a good form of the Wood Forget-me-not, which comes quite fresh.

*

THE ORANGE DIPLACUS (*D. glutinosus*).—Mr. Bolas sends this, and praises it very much as a fine old plant and excellent for cutting. We have always known it as a neglected plant. His form of it is very fine in colour—a true flame colour.

*

SALVIA VIOLACEA.—A bunch of this with its purple bracts also comes from Derbyshire with the following note:—

It makes a pretty contrast through the winter and spring for conservatory work, mixed with the Apple-scened *Salvia*; both varieties best pot-bound to induce free-flowering plants. It also makes a telling mass outside. All visitors here generally go up to it and make inquiries about it.

*

AMERICAN COWSLIPS.—The first flowers of these from North Derbyshire. A delicate, bright crimson-coloured form. A pretty plant, of which we never see nearly enough.

*

DOUBLE SCARLET CROWN ANEMONE.—Mr. Prior, of Bury St. Edmunds, kindly sends a bunch of a beautiful double scarlet Crown Anemone, a brilliant and useful thing in a cut state,

looking extremely well for a considerable time in certain positions in rooms. He says—

It is quite hardy; not even sharp frosts affect it. At the present time I have several hundreds of flowers, and from the middle of April it has been one mass of scarlet flowers.

*

CRIMSON VELVETY DOUBLE PRIMROSES.—A pretty bunch from Mr. Hartland, of Cork, who says—

It is a pity so many persons complain of the delicacy of this beautiful variety. I find it quite easy of cultivation, delighting in a rich yellow, turfy loam, mixed with some leaf-mould and coarse silver sand, and planted on a bank against a wall with a northern aspect. Here it grows in great profusion. The bank extends somewhat about 200 yards, 5 feet wide, sloping from 4 feet high at back to 1½ feet in front, and we have no trouble under such conditions with all our rare Primroses and Oxlips, *Primula rosea* and *myalis*, including the much talked of *Primula auricula lutea* and its larger golden form, the true Dusty Miller. I send you some blooms of the Pompadour Primrose, also foliage, for editor's notes. What a scarce plant *Primula elctor eerulea* has become! I find it to grow and succeed admirably on the bank above-mentioned, but impossible to keep up supply, all the celebrated raisers of new Primroses and Polyanthus wanting plants for sake of pollen. There seems a rage now for scarlet Daffodils and blue Primulas. Mr. Max Leichtlin says we are certainly to get the former; we must also get a white *Narcissus cyclamineus* and a white Trumpet Daffodil the size of Emperor. Am glad you liked the consignment of Oxlips sent last week, particularly the giant form William of Orange. This will not give the fasciated stems in the northern position equal to what is got on the plant in a westerly aspect.

*

YELLOW BANKSIAN ROSE.—It is rather early to get this pretty Rose, but Mr. Hartland, who seems to hunt up all sorts of interesting things, should turn his attention to the single Banksian Rose, which we have not had the pleasure of seeing for a good many years. These Banksians deserve attention for their earliness as well as their other charms.

*

SIEBOLD'S PRIMROSE.—Two forms of the beautiful Siebold's Primrose from Mr. Hartland, one delicately fringed. It is much to be wished that our gardeners would learn how to grow them well in the open air. I believe they are very hardy, but it is surprising how seldom one sees them well done.

*

LEUCOCYJUM TRICHOPHYLLUM OR ACIS TRICHOPHYLLUM.—I forward a bloom of this pretty plant. It has, I believe, been lost to our gardens for many years. The only specimen I ever met with was in the Botanic Gardens at Cambridge nearly twenty years ago. It is well represented in the *Botanical Register*, vol. vii., pl. 544, and is there stated to have been received from Lisbon, but in a subsequent note a correction is added to the effect that it came from Moscow, and was probably a native of one of the southern provinces of Russia. Acting upon this supposition, Mr. Lynch very kindly made inquiries on my behalf, but found that it was unknown in Russia. Since that my friend Mr. Wolley Dod, and also Mr. Barr, have obtained and given me bulbs from Portugal, and the enclosed is my first flower.—T. H. ARCHER-HIND, *South Devon*.

*

WHITE WOOD HYACINTH.—Messrs. Veitch, of Exeter, send a beautiful creamy white Wood Hyacinth, which they call *spicata*, but which, no doubt, is a well-grown form of our Wood Hyacinth. The white and coloured varieties of this flower deserve the best attention of all who care for hardy flowers. They come in so well with the common one, and look so well either indoors or out.

*

THE HOOP-PETTICOAT NARCISSUS comes (very good) from Messrs. Veitch, and in the climate of Exeter no doubt it is happy, and grows more vigorously than about London. They also send the Primrose Polyanthus. This is a simple sul-

plum-coloured Primrose, with the stems raised, like those that we call the Bunch Primroses.

*

HOSE-IN-HOSE AND JACK-IN-THE-GREEN POLY-ANTHRUSES.—Mr. Horley, of Toddington, Beds, sends me these, of which he says—

I have a bed of these seedlings upwards of 20 yards in length and 200 plants in number, all at this time being a mass of bloom.

But however curious, we think they are not beautiful, and the cultivation of monstrous developments requires to be checked.

FERNS.

W. H. GOWER.

HUMATAS.

THESE are dwarf creeping plants, with scaly rhizomes, somewhat resembling the Hare's-foot Ferns, and by some authors are included with the Davallias. The genus comprises about a dozen species, several of which are still desiderata in our collections. They all require the temperature of a stove, and all form exceedingly handsome objects if fixed on old stumps of wood or stems of Tree Ferns, as their creeping root stocks readily cling to such a surface, and their fronds will speedily clothe them with beautiful verdure. It is not necessary for the stems to be dealt on which Humatas are planted, for as they are of a dwarf habit, they produce a nice effect when affixed to the stems of growing Tree Ferns.

H. HETEROPHYLLA produces fronds of two forms; the infertile ones are simple, somewhat ovate-lanceolate in outline, about 6 inches in length and 1 inch in breadth; the fertile ones are much narrower and deeply sinuate, and bright shining green in colour. It is found wild in Singapore, Penang, and several of the Malay Islands.

H. ANGUSTIFOLIA is perhaps the least ornamental species of the family, but it is very distinct, and forms a pleasing contrast when grown with other Ferns having finely-divided leaves. The fronds are simple, linear, from 6 inches to 8 inches high, and much less than an inch wide. It comes from the Malay Islands.

H. PEDATA.—This is a very handsome kind, producing stout coriaceous fronds, which are deltoid in outline and about 8 inches high, the upper portion being once divided (pinnate or pinnatifid), the lower pair of pinnae being again somewhat deeply lobed. The sori, which are produced in great profusion, are situated near the margins and are very conspicuous, and add materially to its effect. The colour is deep green on the upper side, but paler beneath. It is found in Sikkim and the Neilgherry Hills, at from 3000 feet to 4000 feet elevation; it also occurs in the Malayan Islands.

H. ALPINA is a small, but remarkably handsome plant. It resembles the preceding in miniature, but its fronds are both smaller and more finely divided, triangular in outline, and deep green. It is found in Borneo, Java, and several of the Polynesian Islands.

H. TYERMANI.—Some doubt is attached to the origin of this species. On its first appearance in this country it was said to have been introduced from the west coast of Africa. Soon afterwards it appeared in another garden in quite a different part of the country, and here it was stated to have originated from amongst some *Dendrobium nobile* imported from Northern India. It is a very distinct and handsome plant. The rhizome is stout, densely clothed with large white chaffy scales; the fronds are triangular, from 6 inches to 9 inches

long, coriaceous in texture, and very deep green in colour above, greyish green beneath.

Other distinct and handsome kinds of Humatas are *H. vestita*, *pectinata*, *parallela*, and *sessilifolia*.

OUR NATIVE FERNS.

MANY British Ferns are very variable in character, and such kinds as the Lady Fern (*Athyrium Filix-femina*), the Male Fern (*Lastrea Filix-mas*), and the Hart's-tongue (*Scolopendrium vulgare*), of which last named species a correspondent some four years ago sent us a printed list of over 130 named varieties, produce so many sports or seedling variations, that the description of all those already known, besides being tedious and uninteresting work, would be an almost impossible task, for some of them resemble each other so closely, that no amount of careful and accurate description could fairly enable anyone to identify them without having recourse to the only satisfactory process, viz. comparison. I will therefore strictly confine my remarks to the most striking varieties, and in order to make the rambles of my readers through woods and lanes more attractive, point out the various places where the original species are found growing in a natural state. The habitats of British Ferns are so various, that it would be a perfect waste of time to look for certain kinds, such as the Royal Fern (*Osmunda regalis*), or the Hart's-tongue in naturally dry situations; and nothing short of failure could be anticipated by anyone looking for such as the Wall Rue Spleenwort (*Asplenium Ruta-muraria*) or the Scaly Ceterach (*Ceterach officinarum*) in continually wet places. Some species, however, are not so particular as to their natural position, and are found growing equally well by the roadside, under hedges, in moist meadows, under thickly-clothed trees, or fully exposed to sunlight. These are principally strong-growing kinds, such as the Lady and Male Ferns, the black Spleenwort (*Asplenium Adiantum-nigrum*), the hard Fern (*Blachnum Spicatum*), the common Bracken (*Pteris aquilina*), and the soft and prickly Shield Ferns (*Polystichum angulare* and *aculeatum*). The differences in their constitution render different modes of culture necessary, and it is because all our native Ferns are subjected to the same treatment that so much disappointment is experienced by growers who are unacquainted with the requirements of the plants. Such being the case, I will endeavour to point out the conditions most favourable to the growth of certain species as regards soil and situation, and these conditions will be equally applicable to their varieties.

Of all our native Ferns, the genus *Lastrea* is one of the largest, and also one which occurs in most districts, some of its members being found in nearly every part of the three kingdoms. On account of its hardiness and of its easy culture, the Male Fern (*Lastrea Filix-mas*) may with every reason be considered one of the very best either for town or for country treatment, as it stands smoke better than any other British Fern. Besides, it has naturally a noble port, and when planted in naturally sheltered places, it is a very nearly evergreen species, most useful for ornamenting the rockery and the corners in the shrubbery. Like many other Ferns, this looks much more handsome when planted out, especially if disposed upon an irregular surface in masses of six or eight strong plants in a clump, with a few large pieces of rock, which greatly add to their appearance, laid in between and among them. A most striking illustration of the above arrangement is in existence at Ashurst Park, the seat of Mr. G. Field, at Tunbridge Wells, where British Ferns (species and varieties) are grown to perfection. The Male Fern is too common a plant to require a special mention of its native habitats; in fact, the difficulty would rather be to find any wide extended district in which it could not be found. The variations from the type are very numerous, and many of its varieties are exceedingly interesting and beautiful. The Male Fern is not in any way fastidious, and will grow luxuriantly either in pots or planted out in almost any soil, provided that during its growing season it re-

ceives a good supply of water at the roots; but it prefers, however, a light and sandy loam to a stiff clay, and although it will stand a good deal of sun, yet it flourishes much better in a shady situation. It is readily propagated from spores, which are ripe soon after midsummer, and also from division of the crowns, which is a much slower process.

Next in importance in the genus, on account of its decorative qualities as well as for its hardiness, comes the *Lastrea dilatata*, a very vigorous grower, producing when in good condition some really gigantic fronds, more decomposed and much more finely divided than those of the above-named species, and, like it, found wild in so many places that no special locality need be specified. It is an extremely variable Fern, which differs in form and stature in accordance with the situation in which it grows; thus when found in a situation which is wet in the spring and dried up in the summer, as on the margin of a pond, its fronds are very dark, large, and quite drooping. A dry and rocky, or a confined situation renders the fronds small and less divided, the pinnae blunt, deflexed, and drooping; whereas permanent wet will elongate the fronds and separate the pinnae and pinnales. It is a very valuable plant for adorning the rockery, the shrubbery, and the edge of the lake, and though it will grow well when exposed fully to the light it attains a much greater size, and is far more beautiful when grown in the shade. This handsome species, whose fronds frequently attain 4 feet in length, will grow very well upon an elevated position that is shaded, but the situation the most appropriate to its well-being is a somewhat constantly moist spot, where it should be planted in a compost of fibrous loam, sand, and leaf-mould, or peat. When sheltered it retains its fronds through the winter, and is freely increased from spores which ripen about September.

THE NARROW PRICKLY-TOOTHED FERN (*Lastrea spinulosa*) is a species closely related to the one just described, from which, however, when grown together it is entirely different. It is a fine, erect-growing kind, remarkably well adapted for the decoration of the rockery and the shady parts of the shrubbery, and although it will bear a moderate amount of exposure, it attains greater magnitude according to the degree of shade under which it is grown. But whichever situation it may occupy, a good supply of water is indispensable to its roots, as it has been found naturally wild in marshy places, moist wooded ground, and wet hedgerows; at Woolston Moss, in Lancashire; Newchurch Bog, in Cheshire; Titterstone (Clee Hills and Bonere Pool, in Shropshire; on Dallington Heath, near Northampton; at Tunbridge; near Torquay, and in a wood near Dunsford Bridge, in Devon. The equally beautiful, though less known

MOUNTAIN BUCKLER FERN (*Lastrea montana* or *Oreopteris*), though deciduous, is a thoroughly distinct and fine plant for the outdoor fernery. It is of medium growth only, its fronds being erect, spear-shaped in outline, rarely exceeding 2 feet in length, and is particularly adapted for planting in exposed situations. As its name implies, it is usually found upon mountain heaths, but it is also an inhabitant of shady woods where the soil is moist, and has been collected at Old Foot's Well, Bromsgrove, in Worcestershire; near Chapel Wear-dale and Darlington, Durham; in the woods at Castle Howard, in Yorkshire; at Conham and Leigh Woods in Somersetshire; near Wrexham, in Denbighshire; also in several parts of Scotland and Ireland. It is one of the few species which do not take to transplanting very kindly, although, with a little care, it may be successfully removed. In any case, thorough drainage is necessary, and the soil best suited to its cultivation is a compost of two-thirds of fibry peat and one-third of leaf-mould, loam, and silver sand. It is most effective when planted in masses on the rockery.

THE HAY-SCENTED FERN (*Lastrea recurva*, *amula* or *Femiseii*) is a very distinct species, which, through its peculiarly crisped appearance, is readily distinguished from any other of the tribe. Its fronds, more triangular in outline than those of any other *Lastrea*, are of a bright, pale green colour, with the pinnae very much curled, or crisped upwards,

giving the upper surface quite a concave appearance. The stalk curves gracefully downwards, the lower half of it being destitute of pinnae, but thickly clothed with long, narrow, semi-transparent scales of a particularly pale colour. This Fern, of dimensions comparatively small for a *Lastrea*, though occurring sometimes in dryish situations, is usually found in moist, sheltered, woody places, and on the banks beneath the hedges. It is not generally found in the British Islands but is abundant on the western side of England, as Cornwall and Devon; also in Somersetshire, Sussex, and Cumberland; and in Wales, in Anglesea and Glamorganshire, and is found wild in the east and west Highlands of Scotland. It is of very easy cultivation, and may be grown with success in almost any degree of shade, excluded entirely from the sun to a situation exposed to its full rays; but in the latter position it is of less luxuriant habit, whereas it will, in the shade, unfold its fronds abundantly and make a noble object. It is an evergreen species, and sandy loam with a little leaf-mould is the soil which suits it best.

THE MARSH BUCKLER FERN (*Lastrea Thelypteris* or *palustris*) is a plant of peculiar appearance, and entirely distinct from any other species on account of its erect, delicate bright green and usually smooth fronds being produced in abundance from slender, underground, creeping rhizomes, and also on account of their being so irregular, that while the barren fronds seldom exceed 1 foot in length the fertile ones often measure over 2 feet. It is a Fern which by its nature is specially adapted for naturally and permanently damp places, as it is found wild in boggy meadows and marshes, especially where the soil is gravelly, and though found in various parts of the British Islands it is very local. It has been gathered in England near Settle, in Yorkshire; at Allesley, in Warwickshire; on Oxton Bogs, in Nottinghamshire; at Belton and near Bungay, in Suffolk; and in a bog in Waterdown Forest, near Tunbridge Wells. In Wales in a moist dell at the foot of Snowdon, near Llanberis; and at Beaumaris, in Anglesea. In Ireland on the marshes of Glencree, in Wicklow; and at Neveaus, Killarney. The Marsh Buckler Fern forms a very ornamental subject when grown in a shallow pot or pan, as it only requires superficial room, its roots keeping at the surface of the soil, and is at home at the base of a rockery where, when once established, it produces its fertile fronds, which are by far the prettiest, in great abundance. It is a plant which does not bear exposure to the sun, which soon discolours its foliage and gives it a peculiarly brownish tint, when the decaying process soon takes place. A very porous compost in which gravel or coarse sand largely preponderate is necessary to the welfare of this pretty species, which when grown in pots requires a constant and liberal supply of water. It is very readily propagated by division of the roots or rhizomes, which are produced abundantly. There are besides the above-named species the Rigid Buckler Fern (*Lastrea rigida*), which is almost confined to the limestone mountains of the north of England; the *Lastrea remota*, also the *Lastrea cristata*, which for some unknown reason is called the Crested Shield Fern, although it shows not the least signs of being crested. But these are amongst our rarest Ferns and very seldom met with, either in cultivation or in a wild state. All the *Lastreas* are exceedingly useful for early spring decoration where they can with advantage replace some choicer kinds. When used in this way they should remain outside all through the winter, but not be allowed to get dry at the roots, although entirely deprived of their foliage. They should then, by the middle of February, be put in a pit, frame, or house where a little heat is kept, and where in two or three weeks they will have developed a whole crop of foliage, the pale and fresh tint of which forms a most pleasing and agreeable contrast with that of half hardy Ferns, or of the spring flowers with which they may be associated in the conservatory.

S. G.

Gardeners' Orphan Fund.—Will you kindly allow me, through your columns, to urge upon gardeners the need

of filling up and returning by Saturday, the 21st inst., forms relative to the above in order to enable the committee to decide upon future action in this important undertaking.
—GEO. DEAL.

FRUIT GARDEN.

W. COLEMAN.

RED SPIDER IN FRUIT HOUSES.

A DRY, cold winter, succeeded by a keen, harsh spring, with wind blowing principally from the north and east, may well be dreaded by the practical fruit grower, for he knows how quickly incessant firing, accompanied perhaps by dryness at the roots, brings spider and other insects into existence. The past season has been especially favourable to the rapid spread of our worst of all insects—red spider—in vineries, and, unless timely steps are taken, soon we may expect to hear of the most promising crops of Grapes having been marred or spoiled by this insidious little pest. Although it is the smallest of all the insects with which we have to contend, the experienced Grape grower cannot walk through a vinery on a bright day without detecting its presence, and sharp, indeed, must be his action if he succeed in breaking up the first colony before some of his finest leaves are sapped and ruined. Spider is sometimes carried from one house to another not only by plants, but by the attendants, whose duties take them through every compartment many times in the course of the day, and one of my most highly valued friends assures me that it is migratory, as he has frequently seen it travelling along the copings of his vinery walls from old to pastures new. The most common cause of its premature appearance, however, is due to imperfect cleansing in winter; it may be of the bark of the Vines, or it may be of some part of the structure itself. Be this as it may, the most fertile cause of its spread is aridity of the atmosphere from incessant fire heat, imperfect ventilation, and an insufficiency of water to the roots; indeed, the latter defect not unfrequently ensures security of tenure when the most approved remedies for its destruction fail.

Dryness being the cause of its development, it is but reasonable to assume that water is the best agent of destruction; but then it unfortunately happens that incessant syringing soon destroys the bloom and renders Grapes unmarketable if not uneatable. Still, whatever insecticides may be used, water to the roots, water wherever it can be applied, must be accepted as one of the most potent auxiliary agents in its destruction. Soft water, free from lime, is best, and a thorough drenching that will wet every leaf and berry will do less harm than light showers of spray; but, prevention being better than cure, I have always made a practice of putting in a syringe of soft water wherever it can be driven against the foliage without running the risk of wetting a berry. Rather late in the evening is the best time to apply this preventive remedy, and some little practice with a trusty syringe is necessary, but it can, and has been done here for years with the most satisfactory results. When this does not produce the desired effect, and the spider from old spurs fastens on the leaves immediately above the bunches, sponging with soapy water, a decoction of Quassia chips, or Tobacco often nips the enemy; and, last of all, in one or more of its many forms comes sulphur. Sulphur, however, is not always a harmless remedy, as many a house of Vines, by its use or abuse, has been ruined for years in the twinkling of an eye. This remark need not deter careful people from using it, as we frequently hear of mishaps brought about by the injudicious application of some of our oldest and

best-tried insecticides. Sulphur, in the first place, should never be applied to the pipes until after the Grapes have passed the stoning stage, otherwise rust will most likely follow, and then even tender varieties, like the Frontignans and Chasselas Musque, often suffer. In the second place, it should never be applied to brick flues, if such still exist, to iron that has been heated in the fire, or newly slaked lumps of lime, at one time so strongly recommended. It may, however, be applied as a paint or wash to the hot-water pipes after they have been heated to a degree that will render them uncomfortably hot to the hand when placed upon them. To prepare a vinery for the fumes it should be shut up hot and dry, at a temperature ranging from 80° to 90°, the wash being applied after the sun has left the roof, when the ventilators may be kept close throughout the night. They must, however, be opened very early the following morning, and unless the operation is to be repeated, when shading should be resorted to, the walls, floors, and all available foliage should be well syringed, not only to break up the webs, but to produce vapour that will render the fumes harmless to the leaves. If the first painting does not make a clearance, it may be repeated once, or perhaps twice, at intervals of two or three days. Many people paint the pipes first and heat them afterwards; but this is a mistake, as they should be hot enough to vaporise the sulphur the moment it is applied. In vineries subject to annual attacks, gardeners use sulphur in the winter dressing, also with the lime applied to the walls, and not unfrequently distribute it over the stems and leaves with the sulphurator; but the best of all preventives is generous culture, with an abundance of air, water, and atmospheric moisture, and last, but not least, moderate cropping.

Identifying varieties of Apples.—We found growing in a neighbour's orchard a valuable early winter Apple with which we were not familiar. It was large, beautiful, free from blemish, productive, and hardy, and the quality pleased me on account of its crispness, tenderness, and mild, sub-acid, Non-such flavour. My neighbour brought the scions from England, where it had been his favourite, and where it was known as Lord Nelson. I exhibited specimens at our horticultural meetings, where no one recognised it, then sent specimens to Charles Downing, and repeatedly wrote and answered letters regarding its identity. Mr. Downing could not name it, and we concluded that Lord Nelson was a correct name, and by that name I propagated it, grafting scions on a large tree near my office door, and the more I saw of it the better I was pleased with it. Charles Downing had subsequently sent me scions of Blenheim, advising me to propagate it. I did so, and after several years found that Lord Nelson and Blenheim were the same. Last year I attended a horticultural meeting at Titusville, Penn. Among the beautiful Apples shown were many examples by different individuals entered "name wanted," and I was asked to name them. I at first replied that I did not recognise the variety, but on closer examination discovered that they were the Blenheim, but much larger and more brilliantly coloured than as grown at Rochester. They were among the largest and most attractive shown. The exhibitors stated that it was their favourite Apple, and most profitable. Mr. Downing had made a special study of the Blenheim, correcting in his recent edition what he deemed errors in previous reports of its characteristics, indicating how easily we may be misled in identification. I am led to make these remarks by reading Josiah Hoopes's favourable notice of Blenheim. He brings out its hardy qualities prominently, more so than we had claimed, not having learned of its success in severe localities. Blenheim has for us as few faults and as many good qualities as any early winter Apple with which I am familiar.—C. A. GREEN, *Monroe Co., N.Y.*

GRAPE LADY DOWNES SEEDLING.

THIS handsome late Grape, part of a crop of which is well figured in the annexed engraving, is the result of a cross between the Black Morocco and the Sweetwater, and was raised about 1835 by Mr. Foster, gardener to Viscount Downe, Benningborough Hall, York. As may be seen by the engraving, there are about thirty bunches on a space of 10 feet long and 7 feet wide, yet this was the lightest of any of my crops of Grapes, and although of good flavour and colour and kept well till the second week in April, was the least profitable. In some cases I had two bunches to a lateral; several of my latest-keeping varieties were so grown. I firmly believe in starting with fire-heat, giving abundance of air; and to my mind this ventilation,

two certain causes of scald. Often in hot, bright weather the temperature inside will be lower than outside, then the rush of warm air will generate steam, and scald will show itself at once. When fire is used a little air on the top of the house all night, increasing before the sun has much power, will be steps in the right direction. I grow Lady Downes, some with one rod to a Vine, some with two, and some with three rods, all at 3 feet apart. The crop is no heavier on the single-rod system, but is ripe first. At date of writing, Lady Downes (my last house to start is looking well, and great care must be exercised in tying down the laterals, as, being so brittle, they are apt to break off. To prevent this, tie slightly down before attempting to finally fix them in position. If these come into flower at



Grape Lady Downes Seedling. Engraved for THE GARDEN from a photograph sent by Mr. Stephen Castle, West Lynn Vineeries, Norfolk.

judiciously given, is of the utmost importance in the treatment of Lady Downes. Some have not hesitated to tell me plainly that I am wrong, thinking that the fire-heat is wasted. Not so. Fire is required; but do not forget air. Give the laterals plenty of space, keeping sub-laterals well in hand. What is to be aimed at is not a quantity of foliage, but fine large leaves, very liberal feeding, in the form of cow manure, soot, lime, &c., being the groundwork of success.

Many causes are put down to scalding, to which this variety is very liable, but to suppose that the sun shining on the berries is a cause is a mistake, as in every case I found my scalded berries on the side where the sun never touched. Low temperature and defective ventilation are

the same time as Black Hamburgh, I shall use the pollen of the latter. At colouring time I find they like plenty of water. Should by chance the borders get dry, the probabilities are that the berries will crack. Very early thinning is wanted for this variety; those bunches taken almost before setting make the noblest Grapes. Alicante and Lady Downes can be well grown together.

West Lynn.

STEPHEN CASTLE.

Syrring Peach trees when in bloom.—

For the purpose of convincing one of my assistants (having tested the matter to my own satisfaction some years ago) I gave permission to have one of the Peach trees syrring with clear water three or

four times a day while the bloom was setting. The result is that there is about the same number of fruit on the tree as there were last year when the flowers were not syrring. This confirms my previous experience that syrring the flowers for the purpose of making them set better does neither good nor harm. I ought to mention that the tree operated upon occupies a position in an unheated house.— J. C. C.

WELL-KEPT APPLES.

THE remarkable collections of Apples exhibited at South Kensington on the 26th ult. by the Messrs. Cheal and Mr. A. H. Snee showed that at least the problem of how to preserve Apples fresh and sound till the end of April, or even later, is solved, and there remains for others having good Apples but to go and do likewise to have beautiful fruits at this period of the year. These Sussex and Surrey fruits had been not merely kept, but they had been preserved in fine condition; indeed, many of the samples, and those of Mr. Snee especially, seemed as fresh and sound as such fruits usually are in November. The Messrs. Cheal's fruits were larger, and evidently grown on young nursery trees. Mr. Snee's bore the appearance of being from robust orchard trees. In any case the condition of preservation was pretty identical. It was very interesting to note that a collection of fairly good Apples from Maidstone, said to have been kept in a dark room and in a low temperature, often, indeed, below freezing point, was still much less well preserved than were the samples from Crawley and Wallington. It would therefore be useful could we learn how these Apples were so admirably kept. Some of the kinds—Emperor Alexander, Ribston Pippin, Lord Derby, Stirling Castle, Blenheim Orange, Calville Blanche, Cox's Pomona, Gloria Mundi, and many others—exhibited were what are termed early winter kinds, so that the admirable condition of preservation was all the more meritorious. It was suggested that some of this excellent keeping was explained on the ground of the thorough maturing which Apples receive in Sussex and Surrey. That, however, would hardly explain all. Really, were a line drawn across England from London to Gloucester, we should find in all its southern part situation and warmth not less favourable than can be found in Sussex, and Apples produced in all those southern counties should be as capable of preservation, if the well-matured theory be the correct one. Of course, thorough maturation is indispensable, but it is certain that something is due to the time of gathering the fruit, something to care in that work, and selecting sound samples for keeping, and something to nature of store, as to which we all have our opinions, but the experience of Messrs. Cheal and Son and of Mr. A. H. Snee would be very valuable, because these gentlemen have shown us that, in practice as well as in theory, they have the proper kinds of stores. Whilst it has yet to be shown that darkness is an indispensable element in Apple preserving, there can be no question as to the need of an equable temperature, for considerable variations in that seem to be exceedingly deteriorating to the fruit. One point is, which is the most desirable range of temperature, and should it ever fall below freezing point? We may be told that the temperature of an Apple store has often been below freezing point, but that information would be misleading were the fruit protected with thick coverings of straw. I do not think anyone will maintain that exposure to a temperature of 28° can be beneficial to Apples, especially if off repeated. I find a general belief prevailing in favour of an earthen floor; not, of course, damp, but through which the moisture always existent in the earth can freely pass, and thus prevent the air of the store from becoming dry. There is one thing to be said, however, in the matter; we have had a long winter almost always cool, and during which everything has been kept at rest. Potatoes have never in my experience kept better than during the past winter, and without doubt Apples have enjoyed the same non-exciting influences; therefore, preserving Apples has been much less difficult than it was during many preceding

winters. The problem of preserving sound Apples through a long winter being well solved, we ought to be able when we have good crops to store an abundance for late winter and spring use, and thus checkmate to some extent the produce of the American orchards which just now commands our markets.

A. D.

GROWING MELONS ON THE EXTENSION SYSTEM.

NOWHERE else have I tasted the Cashmere Melon so good as at Longleat, and probably it is not grown in twelve other gardens in the country. We were led to believe that it could not be properly fruited under ordinary restricted culture, but this I and others have proved to be erroneous. Although good crops have been taken from the restricted or freely stopped plants, the quality was never so good as in the case of fruit cut from plants grown on the extension system. To have Longleat Perfection—the result of a cross between Meredith's Cashmere and Eastnor Castle—at its best, or, say, to equal in quality those grand fruits shown at the Royal Horticultural Society's show at Liverpool last June, or those which Mr. Pratt, the raiser, has repeatedly exhibited in London, the plants must be allowed plenty of room to ramble. This system, which I shall briefly describe, may not be quite so productive as that generally adopted, but if there are fewer fruits they are certain to be far superior in point of weight and quality. Melons can be made to ripen an extraordinary weight of fruit on a given roof area, but when there are only five or six leaves—and these perhaps infested with red spider—to every fruit, the quality is sure to be very inferior. Before condemning the extension system, as some are ready enough to do, they ought at least to give it a trial, and, unless my experience is at fault, they will find Longleat Perfection, Cashmere, Eastnor Castle, or any other variety considerably improved thereby.

THE EXTENSION SYSTEM simply means giving one plant an amount of roof area usually occupied by at least four plants, the treatment at the roots being proportionably liberal. Hot-beds may be formed in the usual way, these being, perhaps, most needed in the early part of the year, about a bushel of good clayey loam and a sprinkling of lime being sufficient for each mound; or they may be grown, as at Longleat, exclusively in pits of soil disposed over bottom-heat pipes. We have tried both plans, are doing so again, in fact, and find our best-flavoured fruits were obtained from plants the roots of which had no access to hot-bed material of any kind. These pits are formed with loose bricks, a thickness of $\frac{1}{2}$ inches being quite strong enough for our purpose, or at the outset they may be four bricks square, and from six to eight bricks deep. They may be filled with the clayey loam and lime, and either allowed to gradually get warmed through, or the whole mass may be quickly warmed with hot bricks buried among it, the latter course being advisable when the plants are liable to become root-bound if left any longer in the pots. Melons generally require to be planted rather high and firmly. If the collar is on a level, or, worse still, sunk below the level of the surrounding soil, they are liable to eanker or rot off suddenly, and the aim, therefore, should be to keep them rather high and dry. At the present time our most promising plants, or those from which we hope to cut good fruit during May, are now showing their topmost roots near the stems, these being stout and green. The soil being well rammed about the roots ensures its being closely occupied by fibre, and this causes a sturdy and fruitful growth. Planted loosely, or even in a more rich soil, Melons are apt to grow as rankly as Cucumbers, but such growth is neither fruitful nor lasting. When first surrounded by this mass of soil the plants require rather careful watering, but by the time the roots have reached the bricks plenty of water must be given, especially in clear, hot weather, and when the fruits are swelling off, water will frequently be needed twice in one day. Plenty of head room being given each plant, three being allowed to fill a house, say 21 feet by 12 feet, a shift must be given, or, in

other words, the pits must be taken down and enlarged a width of two or more bricks. This admits of a quantity of fresh, previously warmed soil being firmly packed around the now partially exhausted heap, and into this the roots quickly find their way, a thin top-dressing also further assisting the plants. Pulverised night soil, mixed with fresh loam and applied as a top-dressing, has been found most beneficial, no other manure being required. Diluted farmyard liquid manure is the next best thing, and at different times we have used Jensen's fish-bone manure and Thomson's and Beeson's manures with good effect. Large quantities of manure are not wanted at any time; they may easily prove harmful unless carefully applied, and a little and often are our instructions to those in charge. If the Melons are planted over slight hotbeds, this being the case with our earliest and successional batches, we still contrive to make use of the loose brick walls. Providing a good level bottom can be found, such as the permanent walls of the pits, a continuation of these with loose bricks enclosing a good quantity of soil, much simplifies the process of watering, and preserves all the outside roots. In very many cases there are only small ridges of soil for the plants to root in, and as it is almost impossible to keep them alive in this, the bulk of the food has to be gleaned from the decaying hotbed material underneath. No wonder that many plants die prematurely, or that fruit ripened on the remainder are of inferior quality.

Training the top growth of unrestricted plants differs materially from that necessary with those thickly grown. They may be either trained straight up the roof and the laterals laid in thinly right and left and not stopped till they nearly meet each other, or the points of the plants may be taken out soon after the trellis is reached, and from four to six growths that follow this stopping be laid in, fan fashion. What is wanted is to gradually and thinly cover the roof with leading growths, abundance of fruit being obtained from the laterals formed by these, stopping at the second or third joint beyond the embryo fruit. It is not the quickest way of fruiting Melons, no attempt being made to secure fruit from the first break or laterals, the sub-laterals being waited for, but by this time the plants will have become very strong, and no difficulty ought to be experienced in effecting a good set at various times. It is no uncommon occurrence to see fruit hanging on one plant in nearly all stages of growth or varying from those ripening to some near the size of Walnuts. Not only is a good succession of fruit thus obtained, but active, healthy growth being maintained, such fruit will be found to be of first-class quality. At Longleat three plants completely cover the roof of a good-sized lean-to house originally built for Vines, and the plants, whenever I have seen them, always appear to be very strong and healthy in spite of the heavy crops being perfected on them. They are well attended to and never allowed to suffer for want of water or fertilisers. Those who cannot devote sufficient time to this method of Melon culture ought not to attempt it, nor should those varieties not possessing a strong constitution be grown where it is impossible to maintain a high temperature at all times. When the temperatures often fall below 70° by night or day, canker and other evils soon set in. Melons require very little air at any time, but should have plenty of moisture about the house, accompanied by overhead syringings in dry, hot weather, both being discontinued should the opposite prevail; no drying off at the roots at any time, though when rather close stopping is resorted to they certainly require much less water when the fruits are ripening.

MELONS CRACKING.—Several who grew Longleat Perfection last season complained of the proneness of the fruit to crack or split badly just before they were ripe, and we discovered the same fault. The only remedy is to maintain a rather drier atmosphere and to cut the fruit before they are fully coloured. If laid on a dry shelf in the same or other house where a high temperature is maintained, what apparently are quite green fruit will ripen beautifully in a few days, and I believe early cutting is the only method of saving the fruit on restricted plants.

Since writing the foregoing I have had an opportunity of seeing the Melons at Longleat. In one house three plants of Longleat Perfection nearly cover a roof area of about 30 feet by 8 feet, and these are now carrying not less than one hundred fruit of all sizes, and more will yet be set. I find they set their first fruit as soon as they can, even if they form on the principal growths. The earliest will be ripe in a few days, and altogether it will be a grand crop.

W. IGGULDEN.

GRAPES MRS. PEARSON AND GOLDEN QUEEN.

Now that Mrs. Pearson is found to possess another good quality, viz., that of long keeping, it will most probably be reinstated in numerous vineries from which it has been elbowed out by more showy varieties. We have two good Vines of it, and this season, but for the timely notice that Mrs. Pearson is really a better keeper than the Muscat of Alexandria, the latter would have been marched on to it. Although not a very vigorous grower, the former requires plenty of room, as it neither sets nor colours well under a heavy canopy of foliage. What it requires is plenty of light, and not full exposure to the sunshine, the former developing the beautiful amber colour. Full sunshine discolours it, while a heavy shade causes the berries, or the greater portion of them, to assume a dirty green colour. It also requires plenty of time and heat to bring it to perfection. Alongside of an equally well-grown Muscat it cuts a rather poor figure, but if others besides Mr. Coleman are as successful in keeping it till March, we may safely predict a greater demand for it.

Golden Queen, I am afraid, will never become popular, owing to the difficulty experienced in colouring it. I have tried it in three different gardens with varying success. No variety possesses a better constitution and it is fairly prolific, setting well, while the berries are large and, if given plenty of fire-heat, are very crisp and refreshing, but, as a rule, the colour is a dirty yellow. Mr. Wildsmith is of opinion Mr. Pearson erred greatly in classing it as an early Grape, but he was not so far wrong as at first sight appears. Let Mr. Wildsmith try a pot Vine in a small forcing house with recognised early sorts, and he will find Golden Queen not so far behind after all. I have grown and forced pot Vines of this variety with good success. The bunches were large, the berries even, and coloured beautifully, or equal to the best Muscats grown, while the quality was said by an authority on Grapes to be the best he had yet met with. Were we in a position to recommence forcing pot Vines, or, better still, small planted-out Vines, Golden Queen would be one of the sorts grown, and Mrs. Pince another—this fickle variety also doing surprisingly well under such treatment. Probably Mr. Wildsmith will have observed that Golden Queen is the first to break and the first to flower in a house of mixed late varieties. At any rate such is the case with us, it being fully a week ahead of Mrs. Pearson, Alicante, and even Gros Maroc, but it ripens slowly, unless a high temperature is maintained. However, if Golden Queen is cultivated, one root will usually be found ample, and in many gardens its place might more profitably be occupied by either Mrs. Pearson or Muscat of Alexandria.

W. I.

SHORT NOTES.—FRUIT.

Apples with handsome flowers—In answer to "W. R. R." in THE GARDEN, who asks (p. 400) about an Apple which produces handsome flowers, I should advise him to plant Lincoln Pippin.—W. INGRAM, *Belenos, Grantham.*

A good keeping Apple—Last November I put away a few good specimens of King of the Pippins Apple in a drawer. I have been looking at them to day and find them almost as fresh as they were when gathered. They are crisp and of good flavour, and I do not think that enough is made of this Apple as a keeping variety.—J. MEIN.

Fig trees in the open—Our Fig trees have never been protected in any way, and I have never seen such prospects of a good crop as there are at the present time, not one shoot in twenty being injured by the frost. There are as many as six nice fresh fruits on some of the shoots, and they are already beginning to swell. The trees are planted on south-west and south-east walls, but those on the former are showing the best crop. This may, however, be owing to their being much older. They are planted on

the Grass, and their roots have never been touched since they were planted. The shoots of last year's growth were not nailed to the wall until they were pruned a week ago.—*D. WALKER, The Garden, Devonian, Taunton Wells.*

Strawberry La Grosse Sucree.—I have on several occasions called attention to the good all-round character of this Strawberry for forcing, and now send you a few that you may judge of its merits. These sent are gathered from a batch of 400 plants, and are not specially picked fruit. They average from eight to ten to each plant, and there are very few small fruit among them. I may add that there is not one blind plant in the batch.—*E. BRIBBLE.*

The fruit sent were large and of a fine rich colour.—*Ed.*

SEASONABLE WORK AMONG FRUITS.

VINES.

THE light showers by which the present month has been ushered in having put an end to frosts for the time being and softened the atmosphere, Vines from the earliest to the latest have made rapid strides, and show by the dense colour of their foliage how quickly vegetation under glass responds to genial conditions. So far, although cold, harsh weather has clung to us, we have little to complain of, and, provided the daily routine is kept well in hand, the crops at one time late will not be far behind at the finish. In early houses containing Grapes now colouring, the principal point will be perfect finish, and as this cannot be secured without the assistance of plenty of fresh air, fire-heat must be applied to prevent the temperature from falling too low. It is very easy to run up the temperature to an extent that will cause the berries to sweat or condense moisture, but this treatment soon reduces the bloom; therefore, whilst giving sufficient close heat on fine afternoons to ensure full size of berry, the stewing system must be carefully avoided by re-opening the ventilators in the evening. When jet-black berries suddenly appear amongst green ones perfect colour is pretty certain, but then even a check must be guarded against, as I have seen the most promising process of colouring suddenly arrested by a change from bright warm to cold, sunless days. Vines which have been heavily cropped in previous years, or now for the first time are just slightly overdone, may possibly be carried through by timely attention to a steady circulation of air in a house that will not exceed 80° by day nor fall below 60° at night, the evaporating pans and floors being regularly supplied with warm, diluted liquid, and the stems bathed with pure soft water to keep the sap in motion. When the colouring process is complete and the Grapes begin to ripen it will be necessary to keep the house cooler and somewhat drier, but the floors and mulching must not be allowed to become dry, as early Vines under daily sun-heat and light will carry off moisture that would be fatal to the crop in the autumn. If more water is likely to be needed before the Grapes are cut a moderate supply should be given at once, and well mulched in with short stable manure to prevent evaporation or the surface roots from becoming dry. A keen eye must now be kept on the foliage, for if hitherto free, it is not unlikely that thrips or spider may start from an unguarded or dry corner, and soon work serious mischief upon foliage, which must be kept fresh and healthy through the hottest part of the summer. Tobacco smoke destroys the first, but the second is more persistent; in fact, bug not excluded, it is the most troublesome insect we have to contend with in our fruit houses, and must be dealt with accordingly. Dry sulphur or a sulphur wash smeared over the pipes when heated checks, but does not always annihilate the enemy. Moreover, its presence in vineries has come to be regarded as a slur upon the cultivator who invariably washes down the pipes when he expects a visitor. To save his trouble and molesty, I would suggest the timely sponging of every affected leaf with warm soapy or weak tobacco water, and incessant syringing with pure soft water whenever a single syringe-ful can be put in without casting spray upon the Grapes. If an early attack is made, sponging is the cheapest, quickest, and most effectual mode of destroying spider.

Succession house.—Here the final thinning out of stoneless berries, and perhaps a little more shouldering may be necessary. Where large exhibition

bunches are wanted their size can be greatly increased by looping up the shoulders, but this work should precede thinning, otherwise many of the prominent berries get cut away from the extremities whilst the centres remain crowded. Next to overcropping, bad thinning cannot be too strongly condemned, for no matter how good the Vines may be, the Grapes cannot be good where this is carelessly performed. When this work is finished, inside borders may be well mulched with short horse manure, and, provided they are well drained, heavily watered with water at a temperature of 80°, the stimulating matter contained in the manure will be quite strong enough for the Vines, but the next supply may consist of diluted liquid. When Vines are doing well it is not a good plan to overfeed with powerful stimulants, and yet, with the view to helping the willing horse this is often done to their detriment. A methodical system of pinching, regulating, and tying down must still be observed, otherwise rampant growers, whilst wasting their strength on the production of gross laterals, will become crowded, and so impede the free circulation of air. Once the whole of the roof trellis is covered, leaders may be trained down the back walls, and weak laterals may have free license, as there is nothing like free growth for ensuring a corresponding development of roots.

Muscats.—Where early and late houses are devoted to these, the latter will now be in flower, a condition which will justify a little extra heat with a free circulation of air. At one time it was the practice to keep the house as hot and dry as a lime-kiln, and to regard water or atmospheric moisture as enemies to fertilisation. Modern Muscat growers have reversed this order, and no doubt they are right, as excessive dryness is a tax on the energies of the Vines, and does not facilitate the setting of the fruit. The principal point in securing a good set is brisk root action in warm, well ventilated, and properly moistened borders, supplemented, as a matter of course, by daily fertilisation with Hamburgh or foreign pollen. Another drawback was the false idea of keeping many strings to the bow by leaving all the bunches on the Vines until after the Grapes were set. As few varieties are more floriferous than healthy Muscats, and a profuse blossom is weakening, the bunches on each lateral may safely be reduced to one as soon as the best can be selected, and then there will be an abundance left to choose from. Lady Downes and Gros Colmar require precisely the same treatment as Muscats, especially through the early stages of their growth. When well advanced, and fine summer weather has set in, a lower night temperature in mixed selections is sometimes necessary, but the best quality, and certainly the best keeping properties are secured when these two Vines are grown side by side with well managed Muscats.

Watering.—The latter part of the past winter and the spring having been exceptionally dry, extra attention to this important matter is absolutely necessary. Modern borders from 2 feet to 3 feet in depth, and resting on a foot of drainage, may easily become too dry, especially when a keen north-east wind of some weeks' duration has been carrying off every particle of atmospheric moisture, but thus constructed it is a difficult matter to over-water during the period of growth. Regular supplies—if tepid, so much the better—therefore should be given internally throughout the season of growth, externally until the rain now due has penetrated to their lowest depths. Once properly moistened and well mulched with fresh stable litter, the annual average rainfall of 30 inches should be found sufficient, but the better to ascertain what is going on below, the main drains along the front with shafts rising to the surface should be open to inspection. When from artificial watering the filtered liquid is found flowing freely, all doubt as to the lower roots having been moistened for the time being is set at rest.

Pot Vines.—An early short-jointed growth from pots well filled with roots must be the first consideration, and when this has been secured thorough ripening is sure to follow. Those intended for next year's fruiting will now take liberal supplies of

weak diluted liquid from the tanks, and an occasional top-dressing, to prevent the surface-roots from becoming exposed. If trained like ordinary Vines to trellises about 18 inches from the glass, they will make more equable canes than when grown upright, and having the full benefit of the sun the lower as well as the upper buds will be properly ripened. Stopping must be regulated by the situation and height of the pit or house in which they are to be fruited, and all laterals from the base upwards to the pruning bud must be closely pinched to the first eye. This will plump up the main buds without endangering them, whilst those above may have more freedom to keep the roots in action.

Vines now carrying ripe or ripening fruit must have more air and a lower temperature to ensure the keeping of the Grapes. Water, too, may be more sparingly used, but not to an extent that will jeopardise the roots or foliage, which must be kept fresh and healthy. Madresfield Court and Foster's Seedling, two varieties subject to cracking, should not receive any water after the Grapes are ripe, but drying out can be prevented by burying the pots in a good body of dry, non-conducting tan or leaves. Vines struck from eyes this spring will now be fit for shifting into 8-inch pots or planting out in warm internal borders where this mode of establishing them is in favour. If the pots in which they are now growing have already been raised to the surface of the plunging bed they need not be replunged after the shift, but water must be very moderately supplied until they have taken to the new soil, and the syringe may be vigorously plied on fine mornings and again at closing time to keep up a proper degree of atmospheric moisture. Laterals should be closely pinched and the leaders stopped where they have made about 6 feet of growth.

PEACHES

in early houses will now be swelling and colouring fast, and possibly in a few instances ripening. The temperature here may range from 60° at night with air to 70° or 75° by day with a free circulation. Air is the grand factor, not only in laying on colour, but also in securing flavour, and the better to ensure a constant circulation without producing cutting draughts, gentle fire heat must always be at command. The syringe may still be freely plied, soft water only being used, and shutting up for an hour or two, not too early in the afternoon, will add considerably to the size of the fruit. Shoots that will be cut out as soon as the Peaches are gathered should be pinched, not only to throw size into them, but also to give those intended for next year's fruiting full exposure to light and air. When the time arrives for gathering directions given in last week's paper on the early orchard house should be adhered to. We used to litter our Peach houses with a quantity of fresh, sweet hay to catch falling fruit, but this was given up years ago, as we find the finest flavoured Peaches are those which we detach with the scissors before they reach the dropping stage. In order to prolong the season of the trees they should be well watered with pure water, and heavily mulched with light manure or short straw some little time before the first Peach becomes ripe or even transparent.

Succession houses. The growth in these is unusually rapid, and, aided by plenty of sun and light, the free admission of fresh air favours the formation of firm, short-jointed wood. This must be kept in proper balance by constant attention to thinning, tying down, and pinching out the points of gross shoots which have reached their limit, or threaten the impoverishment of the lower parts of the trees. An even spread of thinly trained shoots that will shade all the old branches, with plenty of room for the full development of every leaf, should be the great aim; but not one single superfluous growth should be allowed to remain, as overcropping is next-of-kin to over-cropping. Thus managed, large trees with every leaf fully exposed to the influence of sun and light, and not more than 18 inches from the glass, will take enormous quantities of water, and the syringe must be vigorously used twice a day. Houses in which Strawberries or other troublesome plants

have not been grown seldom suffer from attacks of spider, but when they do, a thorough drenching with the engine or hose from the outside on a mild afternoon will generally dislodge it. An indifferent hand with the syringe is soon found out, but the man who lays to backwards and forwards not only moves, but wets every leaf on both sides, and by these means prevents the enemy from gaining a footing. If thinning has not been brought to a close, no time should be lost, and the fruit intended for the crop, averaging one to every square foot of foliage, must be raised to the influence of the sun at leisure.

Late houses.—Thinning in this department is no trifling matter, the fruit on every tree having set unusually well. We do not make a practice of leaving a large percentage to compensate for dropping, especially in late houses, as properly fertilised Peaches always swell away kindly, and unless something is wrong with the roots or in the internal management, timely thinning is an important stepping-stone to full size and good quality. It does not often happen that external borders require heavy watering early in the spring; this, however, has been an exceptionally dry season, and although they have been repeatedly hosed and well mulched, twelve hours' steady rain would quickly be felt by the trees. When the trees in late houses and cases have been disbudded, they should be well syringed and shut up pretty early on fine afternoons to give them a good start, but night air should always be admitted, and ventilation through the day must be regulated by the period at which the fruit is wanted for use. If as late as possible, we ventilate and shut up through May, and throw the house open after the beginning of June. W. C.

STOVE AND GREENHOUSE.

T. BAINES.

CONCENTRATED MANURE FOR POT PLANTS.

In the cultivation of plants of any kind, it is generally admitted that the best time to give manure is from the time their growth begins and onwards. The season is now at hand when most plants are more or less in an active state; consequently, a few words on the subject of manurial assistance may not be out of place. In the case of quick-growing plants, such as Pelargoniums, Fuchsias, Bouvardias, and various others, that admit of the old soil being shaken away and replaced with new at the time the annual potting is carried out, there is little difficulty in giving them much of the manure they require by mixing it with the material in which they are potted. Yet, even with plants of the character named, if justice is done to them, they need further assistance later on in the season in addition to the manure given at the time of potting, as if enough was then mixed with the soil to last until their growth and flowering were finished, it would cause them to produce rank, over-luxuriant shoots at the commencement of the season. Hence, where high cultivation is attempted, manure water or surface-dressings of some concentrated manure are applied to supplement that which is mixed with the soil. With hard-wooded plants the case is different. Being much slower growers than the kinds previously mentioned and others of a like nature, they require proportionately less manure to sustain them, the material—loam or peat—in which they are potted generally containing enough to support their growth for a time without any manure being used with it; but in time it becomes so far exhausted, that it will not keep up the requisite growth; and as few of the hard-wooded plants in question will bear being shaken out of the old soil, it becomes necessary to help them with manure in some shape. An impression used to prevail among many growers of hard-wooded plants,

such as the New Holland and Cape species, including Heaths, that they would not bear anything in the shape of manure; consequently, none was given them, the result of which was to be seen in the starved, stunted appearance the plants usually had when they got old, making little growth and producing few flowers. On examining plants that were in this state the soil in the pots was generally found to be densely packed with healthy roots, whilst the top growth, so far as it went, was equally healthy, the unsatisfactory condition being simply the result of the soil having become exhausted. In cases of this kind, one way of meeting the difficulty would be to give larger pots; but there is a limit to the size of pots which it is expedient to use, both as regards appearance and convenience. Exceptionally large pots are objectionable to look at, and the plants grown in them are cumbersome to move about. With hard-wooded plants that are required for ordinary purposes there is no necessity to use pots that are inconveniently large, as when the plants have been treated liberally in the matter of root room during the early years of their existence and onwards until they have attained fair specimen size, they may be kept for many years in a vigorous, healthy state in the same soil by regular assistance with manure in some form through the growing season. When plants exist under the conditions described, the soil in which their roots are located, having parted with all the fertilising elements which it originally contained, simply acts as a medium through which the roots can be supported with whatever is given them. It thus becomes clear that there must be no break in the supply by giving it in fits and starts in a haphazard kind of way. Each spring, as soon as the growth begins to move, the use of the stimulants must begin and be continued until the wood and leaf extension ceases. After this period the plants are better without any stimulants, as all that is then required is solidification of the shoots, which is effected by light and air acting on the growth that has already attained its wanted size; the comparatively little that is required afterwards in the way of sustenance will be present in the unexhausted elements of the manure given earlier in the season. The principal thing to keep in view when plants are kept for years without change or addition to the soil, and from which consequently the roots have extracted everything in the shape of nutriment which it originally contained, is to provide them all through the time they are making growth with the manure indispensable to maintain the requisite vigour.

In times past when the idea was prevalent that fine-rooted, hard-wooded plants would not bear stimulants, many who grew them used to throw their old stock away after the plants had been two or three seasons in pots as large as they cared to give them. With the exception of such things as Azaleas and Camellias, the first hard-wooded plants on which I tried the effect of stimulants applied during the growing season were *Eriostemon luxifolius*, *E. neriifolius*, and *Boronia pinnata*, all old specimens that had been two or three years in pots as large as it was desirable to give them, and which had begun to make thin, puny growth, which showed that the roots had insufficient support. It was simply a question of putting them in the fire, or of trying to improve their condition by giving assistance to the soil. As soon as the growth began to move I gave them weak manure water made from horse droppings, with a dash of soot in it, and allowed to stand until it was quite clear; they were watered with this mixture once every ten days or a fortnight until

the last made young leaves had attained nearly their full size. At the end of the season all the three plants had made something like double the growth they had produced the year before, and bloomed well in the following spring. The next season the same course was followed with the plants named and a few others, and in addition a moderate dressing of Standen's manure was sprinkled on the surface of the soil two or three times during the spring and summer; by autumn when the growth was finished up, the *Boronia* had shoots from top to bottom 12 inches or 15 inches long, with flower-buds set at every joint. The growth made by the *Eriostemons* was equal to what it had ever been when the plants were in the full flush of youthful vigour. In the spring the sheet of flowers they and the *Boronia* bore was such as never had been obtained from young plants; and in this way they continued for seven or eight years in the same soil, when they began to get bare of foliage at the bottom and were destroyed. After this I gave the same treatment to most of the hard-wooded Cape and New Holland plants whilst in their younger stages as well as when they got old, in all cases regulating the strength and quantity of the stimulants given in accordance with the more or less free habit of growth natural to the kinds. A few things, amongst which may be named *Roella ciliata* and *Phenacoma prolifera*, did not appear to like anything in the way of stimulants. I tried most of the concentrated manures, but for hard-wooded plants generally, including Azaleas, I found nothing so effectual or so safe as Standen's manure. Later on the manure water used was urine from the cow-sheds largely diluted with water, being careful never to apply it until the urine was old enough, that is when it was from three weeks to a month old. Before this its use is dangerous; afterwards its effects are not approached by any of the many things I tried.

In private gardens, except to quick, vigorous-growing things, the use of manure water and concentrated manures, such as Standen's, nitrate of soda, sulphate of ammonia, and fish manure, is not so general as it might with advantage be. Probably there are no cultivators of pot plants who have so thoroughly mastered the use of concentrated manures as the market growers who supply Covent Garden with the marvellous examples of high cultivation, consisting of all the things they grow, from *Cyclamens* and *Pelargoniums* to *ventricosa* and *Cavendishi* Heaths. Through close and patient observation they know exactly the strength of the different manures they use that the different things they grow will bear. It is next to impossible to convey in writing the exact strength of the manure that any particular plant will bear, or the quantity of any concentrated manure that may be applied as a dressing. The only safe advice to give to those who have not experience in the matter is to be sure at the commencement to err on the right side in giving manure water to tender plants by using it weak enough, and to give little enough of any of the concentrated manures when sprinkled on the surface of the soil.

Psychotria cyanococca.—This stove plant is by no means remarkable for its blossoms, which are small and inconspicuous, but are succeeded by clusters of bright blue berries, which form just now a very attractive feature. As it fruits freely when struck from cuttings, small plants in 5-inch or 6-inch pots are very useful, as the berries supply a colour that is but little represented among stove plants, especially at this season. The leaves are about 4 inches or 5 inches long, light green in colour, and prettily crisped at the edges. It is a native of Nicaragua, and has been known in this country for

some time, but outside of botanic gardens it is seldom met with. This *Psychotria* is a plant of the easiest possible culture, for cuttings strike root readily, added to which it can be raised from seed. No particular soil or attention are needed, the principal thing being to give it a light position in the stove, in order to set the blooms and cause the berries to ripen.—H. P.

EXHIBITION SHOW PELARGONIUMS.

TIME was when judges at exhibitions, where show Pelargoniums formed a leading feature, in awarding prizes, required, above all things, form in the flowers allied to substance and smoothness of petal. It was for the attainment of these qualities that the late Mr. E. Foster and the late Mr. G. W. Hoyle worked assiduously during so many years, and produced so many fine varieties. But now that the bright, showy, and free-flowering decorative varieties have come to the fore, with, in many instances, fringed and serrated petals, they play an important part as exhibition plants, and produce

variety, that can be singled out for special excellence; it is of good habit and very free; and *Maid of Honour* (Foster), soft pink lower petals, dark maroon and orange upper petals and white throat, very fine and free.

It is a most embarrassing season for growers of Pelargoniums for exhibition. We get a sunny day or two, when the wind is soft and spring seems to have arrived; then follow dull cold days with icy winds. Whether to retard, or whether to push on, is a question very difficult to settle. So long as the temperature is equable, one knows what to do; but while such rapid changes occur, something like uncertainty of action must follow. R. D.

BEAUMONTIA GRANDIFLORA.

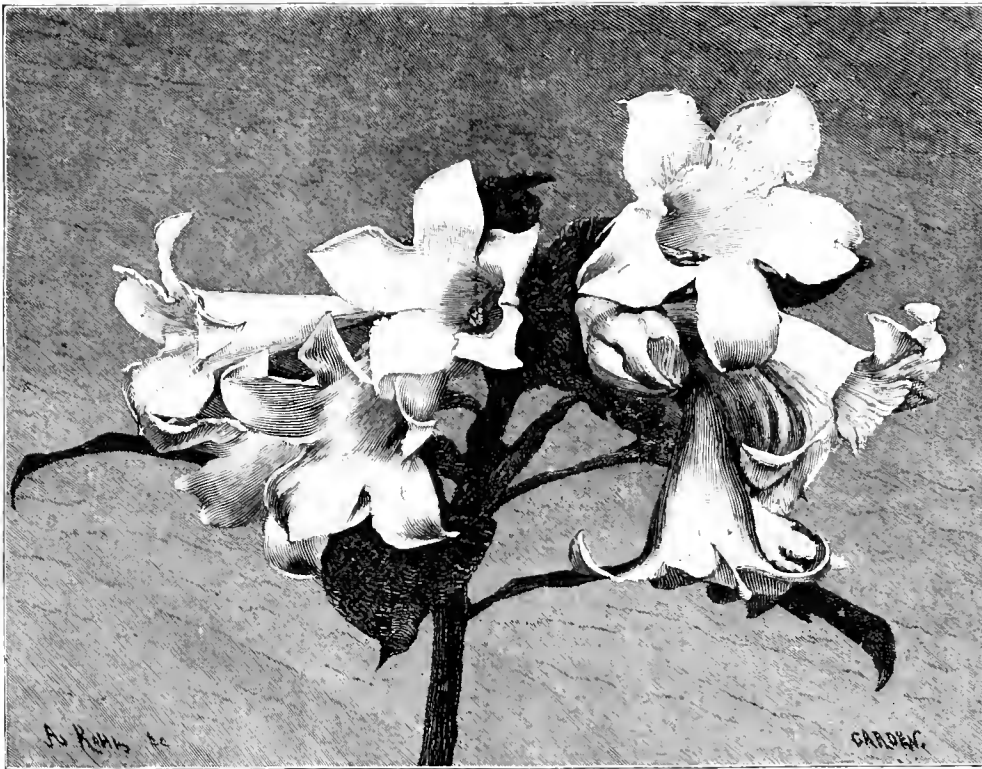
This plant, a truss of bloom of which is represented in the annexed woodcut, has hitherto been considered a very shy-flowering subject in this country. This is by no means the case with our plant at Panshanger, this being the

tained in all its freshness, whereas when out of doors it is often much injured by the cold winds. It forms a clump a good deal after the manner of some kinds of Iris, but the leaves are broader and more recurved. The flower-stems, which overtop the foliage, are terminated by broad, open panicles of blossoms. The individual blooms are star-like, about an inch in diameter, and pure white in colour, except the orange-tipped stamens, which stand out conspicuous against the purity of the rest of the flower. Like the old-fashioned *Agapanthus umbellatus*, this *Arthropodium* will flower in a far more satisfactory manner when undisturbed at the roots. In the shape of good-sized masses confined within pots a foot in diameter or thereabouts, a number of flower-spikes will be produced, and as the first blooms are now opening it will, under favourable conditions, remain in beauty a considerable time. Seeds are sometimes produced from which young plants can be raised, and, besides this, division of the roots is easily effected.—T.

Coronilla glauca.—Though a plant of very easy culture, this old-fashioned greenhouse shrub is now far from common, being probably in many cases driven from the field by the more robust *Cytisus racemosus*, which is grown in such numbers for Covent Garden Market. This *Coronilla* forms a handsome bush, equally effective and floriferous either in small pots or as large specimens. Besides the compact little heads of bright yellow flowers with which the plant is now thickly studded, the peculiar glaucous foliage renders it at all times very ornamental. This *Coronilla* may be classed among the more hardy greenhouse subjects, for even around London it will frequently survive several winters with the protection of a wall, and further south it is of course less liable to injury. At the same time, it is seen to the greatest advantage when treated as a greenhouse shrub, and under these conditions gives but little trouble, for insect pests seldom attack it, and, like many other greenhouse plants, it can be plunged outdoors during summer. Cuttings of the young shoots are by no means difficult to strike, and the plants are generally propagated in this way. Where it is necessary to limit the size of a specimen it may be cut back immediately after flowering.—T.

Rhododendron Dalhousiæ.—In the case of many of the beautiful Himalayan *Rhododendrons* it is necessary for them to attain a considerable size before they flower, so that a large structure is required to show them off to the greatest advantage; but, on the other hand, there are some that will bloom well when not more than a yard high, and to this class belongs *R. Dalhousiæ*. It is of rather a straggling habit of growth, and the roots are by no means vigorous, but these two features can readily be accounted for by the conditions under which the

plant grows naturally, for in a wild state it flourishes as an epiphyte, though in this country, with reasonable care and attention, it readily lends itself to pot culture. The flowers are borne in clusters, and individually the blooms are large and bell-shaped, and though varying a little in colour, they are, when first expanded, generally of a primrose tint, with perhaps a suspicion of green, but afterwards changing to white, or nearly so. Its free-flowering qualities have commended it to the hybridist, one of whose most successful productions has been *R. Countess of Haddington*, the result of a cross between this and the smaller-growing *R. ciliatum*. This hybrid is of free growth, retaining its foliage well and flowering profusely. The flowers are about intermediate between those of its parents, having the shape and almost the size of *R. Dalhousiæ*, with the pinkish tinge of *ciliatum*. Another hybrid is *R. Henryannum*, between *R. Dalhousiæ* and *formosum*. In growing the epiphytal species of *Rhododendrons* the conditions under which they are naturally found must be taken into consideration, and while the compost should consist principally



Beaumontia grandiflora. Engraved for THE GARDEN from plants sent by Lady Cowper. Flowers white (much reduced).

bold and striking masses of colour. When looking through the Pelargonium house at the Royal Nursery, Slough, recently, I found that nearly all the specimens being brought forward for exhibition are decorative varieties. They are *Decorator* (Hayes), crimson with maroon spots; very fine and highly effective. *Edward Perkins*, crimson-scarlet, with dark spots, an excellent variety and very striking. *Gold Mine* (Hayes), rich orange-carmine, very fine, and remarkably showy. *Kingston Beauty*, white with dark blotch, very pleasing. *Lady Isabel* (Hayes), lilac, with slight dark spots, a charming and exceedingly free variety that makes an excellent exhibition kind. *Madame Thibaut*, a pretty light semi-double variety with fringed petals. *Mons. Desmoulin*, deep rose with dark blotches, white throat, and petals with serrated edges. *Rosetta*, rosy purple with maroon spots, very free and effective; and *Triomphe de St. Mande*, deep crimson, a very good old variety.

Of what are known as the show varieties there are two very fine sorts; one is Foster's *Czar*, almost new, a singularly bright, high-coloured

fourth year of its flowering here, and each year surpassing the former in producing its grand masses of Lily-like flowers on the terminal points of the previous year's growth.

I find it a plant easy of cultivation, and although a native of India it does not require a great amount of fire-heat, but all the sun and light it is possible to give. Planted out in a soil composed of two parts fibry loam, one part peat, with a little silver sand, and treated similar to a well-grown Grape Vine, it will soon repay with a grand display of flower. Our plant is trained to wires 18 inches from the glass. After the flowering is over I prune it in rather close to produce young growth for next year's flowering. R. RUFFETT.

Panshanger, Herts.

Arthropodium cirrhatum.—This New Zealand Liliaceous plant is almost hardy in the southern part of England, but does best when treated as a greenhouse subject, for the ample foliage is then re-

pally of open fibrous peat and sand, ample drainage must be secured by means of broken crocks and a little charcoal mixed with the soil. As *R. Dahlbousie* is far from being a vigorous rooting kind, it is less fastidious in its requirements when grafted on a more robust species than when on its own roots.—H. P.

DOUBLE CINERARIAS.

"J. C. C." very properly called attention to the beauty and usefulness of these in a recent number. He explains the true secret of their freshness and beauty in a sentence thus—the plants in a cold frame shaded by a wall. A cool bottom and a shaded top are the chief conditions of success. But *Cinerarias*, double and single, are so extremely useful for house decoration, that almost as soon as they are in bloom they are set in the teeth of the sun and air in some window garden or greenhouse. From the moment they are thus placed they begin to deteriorate; the soft succulent leaves are drained of their proper juices or become a ready prey to thrips, fly, and other insect pests. These ungenial influences rapidly undermine the strength, mar the beauty, and end the life of the plants. In the case of single *Cinerarias* their fleeting character is of less moment. They fill a useful niche in decorative arrangements, ripen seeds, and disappear. As most of the finer strains reproduce themselves, or even improve if the seeds are skillfully selected, the old-fashioned methods of reproduction from suckers, root-division, or cuttings have almost disappeared. All this, however, must be reversed in the case of the finest double varieties. The more perfect the doubling, the less possibility of any seeds being saved from them. So-called double *Cineraria* seed is not infrequently more fruitful of very inferior single than of any double sorts worth growing. Either the seeds are very carelessly selected, or the tendency to revert to inferior single sorts is specially strong among double *Cinerarias*.

Either way, the only way to perpetuate double *Cinerarias* is through offsets, root-division, or cuttings, and to succeed in this with certainty a portion of each good strain or variety should be left in the cool pit or shady house until the propagation is completed. Collections of double *Cinerarias* have hitherto been rather unsuccessful on the whole. Some of the finer blooms have been associated with plants of rather weedy and lanky habit. Varieties also differ widely in stature and in character of growth, and, on the whole, the culture and general effect have seldom approximated to that commonly observed among single *Cinerarias*. Much of this inferiority has arisen from two causes, which, after all, both merge into one—a weak start with offsets or cuttings. Neither is the cause of the weakness far to seek.

Double *Cinerarias* are, on the whole, so novel and useful, from the staying properties and novel character of their blooms, that they have been placed in the most prominent positions. Not seldom has the writer seen them on dry shelves and in cutting draughts endeavouring to contract their evaporating surface to the narrowest limits by the violent flagging of their peculiarly vulnerable leaves. These processes daily repeated speedily weaken the entire plants, until root-stocks and offsets are either encumbered by disease or wholly destroyed. Not a few varieties are thus lost, and the stamina of the whole stock is seriously lowered through a weak start. The practical lesson is as obvious in theory as it has proved successful in practice—keep the plants set apart for reproduction up to their maximum health and vigour to the last.

To this end it may be needful to keep them out of the show and decorative races altogether. This will be all the easier accomplished if the flower-stems are removed from the plants reserved for stock so soon as they show. The effect of this will be to develop in abnormal numbers and to unusual strength offsets or suckers around the root-stock; thus by sacrificing a little bloom one season, we multiply many times the amount the next year, and ensure the permanence of any varieties worth growing, and may grow double *Cinerarias* with almost equal ease and success as single ones.

The two, however, are so different that the one should never be looked upon as a substitute or rival to the other, and in most gardens of any considerable extent there is ample room for both.

HORTUS.

Magnolia fuscata.—I notice in THE GARDEN of April 2 that Mr. Gumbleton takes "T. B." to task with respect to the above-named, and is responsible for the statement that it is "a low and slow growing bush not suitable for a wall." This cannot be accepted as an accurate description of the plant, for we have one here on the back wall of the Camellia house covering a space 10 feet by 15 feet, and it grows freely enough to cover a space three or four times this size. I find on measuring the shoots that the average annual growth is about 12 inches. Where anything showy is required, this *Magnolia*, with its small, insignificant-looking flowers, is naturally of little use, but there are many worse things for covering a bare wall, as the foliage is always bright and clean, and, so far as my experience goes, quite free from all insect pests. Perhaps the vigorous growth of *Magnolia fuscata* in our case may be partly owing to the heavy mulching of cow manure it receives when the Camellias are top-dressed. The scent of this *Magnolia* is very powerful; indeed, I think it one of the most strongly scented flowers in cultivation, the perfume from a single bloom being noticeable quite 20 yards from the house on a bright sunny day; I can detect very little scent during dull, heavy weather. The plant does not flower with us so well as it might under more favourable circumstances, its position on a back wall immediately behind some large Camellias preventing the thorough ripening of the wood.—E. BURRELL.

—In a recent number of THE GARDEN (April 2, page 304) Mr. W. E. Gumbleton gives some useful and correct information concerning the above seldom-seen plant. I should be obliged to him if he would supplement what is there stated by adding the most suitable temperature to grow it in. The only plant I ever had under my charge was grown in a stove temperature. It flowered annually and seldom made more than half an inch of wood a year, often less, and never failed to bloom, more or less freely, annually. The perfume when in an active volatile state is so potent and peculiar, as to be considered fulsome by the fastidious. More generally it is thought pleasant, and is one of the most unique odours among plants, its character being by no means exhausted by Mr. Gumbleton's vivid description.—D. T. F.

SHORT NOTES.—STOVE AND GREENHOUSE.

Gloxinias—These useful plants are now to be seen in great beauty in the gardens at Wykhiam Park, Buxbury. They are mostly grown in 9-inch pots, the plants being over 2 feet in diameter, and carrying from 80 to 120 finely developed flowers on each.—F. F.

Rhododendron Countess of Haddington.—A very fine specimen of this *Rhododendron* may now be seen in the gardens of Mr. E. H. Watts, Devonhurst, Chiswick. It is growing in a 16-inch pot, and is now carrying 150 trusses, each truss bearing on an average three of its beautiful white flowers.—W. T.

Aristolochia elegans.—I have several seedlings, and an uncertainty as to the soil required for their future treatment, and shall feel obliged if any of the readers of THE GARDEN will advise me in the matter.—F. LEACH.

—A coloured plate of this was given in THE GARDEN, June 19, 1886 (p. 570), and also a description of all the varieties at present known in gardens.—E. B.

Hovea Celsi.—I send you a photograph of *Hovea Celsi*, growing here. It is 10 feet high, and covered with its rich blue flowers.—J. THORPE, *Cuddington Hall, N. Crook.*

—A very pretty portrait of a most beautiful plant. We are sorry, however, that we are unable to engrave it, the flowers not being clear enough to do it justice.—E. B.

Bone-dust for plants.—Will some of your readers tell me to what uses among flowering plants bone-dust may be put, what plants it benefits or otherwise, and in what quantity it ought to be used? Would it not be beneficial for permanently planted subjects such as Narcissi, Lilacs, hardy herbaceous, and the like?—L.

Plumbago capensis alba.—I see this plant announced in a Continental catalogue, and would like to ask your numerous correspondents if any of them have flowered it, and if so, whether it is really white or only an unusually pale form of *P. capensis*. Should it be a pure white, this variety will be very valuable, but if only a washed-out tint it is useless.—H. P.

Salvia splendens alba.—Has any reader this variety, or is the reported white splendens a variety of *fruticosa* or some other species? I fancy there is also a white variety of patens. Information or cuttings of either would be much prized. By the way, is there any better mode of growing these winter-flowering *Salvias* than by planting them out in

the end of May a yard or so apart and potting them up early in October?—QUEEN ES.

CAMPANULAS IN POTS.

WHY these plants are not oftener seen in conservatories and greenhouses I fail to understand. We find them of very easy culture, very beautiful when either massed together or mixed among other plants, and fairly serviceable in a cut state. They are available, too, when there are not many *Azaleas*, *Dentzas*, *Cinerarias*, and other showy plants in bloom, and, on the whole, may be said to merit general cultivation and as much attention as any other class of plants that may be raised from seed. The earliest to flower are the *calycanthema* medium varieties, of which there are three distinct forms, viz., white, blue, and rose, the last being the newest, and the first the most valuable and serviceable. *Campanula pyramidalis* in two colours, white and blue, is quite distinct from the foregoing, being later, taller, and less branching, but more profuse flowering. Both well repay for good culture, and are within the reach of anyone possessing a greenhouse and a few frames.

We usually sow the seed early in April, but have been quite as successful in the case of *C. calycanthema*, with plants obtained by sowing early in May. The seed is rather small, but it rarely fails to germinate, a small packet giving enough plants to stock a neighbourhood. It should be sown on the surface of a previously moistened pan of fine sandy soil, and only a little sand distributed thinly over it. The pan of soil being already moist, no further watering or disturbing of the seed is necessary. Place the pans in gentle heat, or in a Cucumber or Melon frame, covering over with a square of glass and shading carefully. The pans being in a moist heat, and not exposed to sunshine or drying winds, little or no watering may be necessary till the seedlings appear, but they ought to be closely watched, as fine seeds are easily injured by drought. When necessary, water through a fine rose, or immerse the pans in tepid water. The glass must be removed from the pans soon after the seedlings appear, or otherwise the plants will damp off wholesale. When the seedlings are fit to handle they should be pricked off into pans or boxes of fine soil, and be kept rather close and shaded for a few days. They soon commence to grow strongly, and when large enough they should be planted out, as this will be found the best method of growing them to a useful size. They ought to be planted on a fairly rich, well worked border, and not less than 12 inches apart each way. During a very dry summer it is advisable to give them an occasional liberal soaking of water, but, as a rule, they require very little attention till the autumn.

Late in September as many of them as are needed should be lifted, no difficulty being often experienced in preserving a good ball of soil and roots, and potted into either 9-inch or 10-inch pots, according to the size of the plants. A good loamy soil suits them, this being firmly packed about the roots, and it is advisable to use clean, well-drained pots, especially if the plants have to be wintered in frames. We stand them at once on a bed of ashes in a cold frame, in which they remain through the winter, all the further protection needed being a liberal covering of either mats or straw litter whenever severe frosts are imminent. Last winter our plants suffered very much and lost nearly all their outside leaves. This did not injure them greatly, as they are now breaking into strong growth, and in the case of the *calycanthema* varieties, very branching flower-stems. Those who have plenty of room in various cool plant and fruit houses may with advantage winter their plants in some of these, and if well attended to and not smothered up by other plants, be rewarded with an earlier display of bloom. They, after active growth has recommenced, require abundance of water at the roots, as well as frequent supplies of weak liquid manure, and if in comparatively small pots and much root-bound, they may well be stood in pans of water, but this should not be resorted to as a rule. Our plants usually grow to such a size as to be too top-heavy for the pots, and are

literally one mass of flower from top to bottom. The white forms of both species are especially chaste and beautiful, the calycanthema varieties being most showy, owing to the calyx of the flowers being of the same colour as the flower proper. The latter ought to be grown by those who require abundance of white-flowered plants, either for grouping or cutting from at Whitsuntide. A few strong plants will afford armfuls of flowering branches, and these, if no heavier flowers are laid on them, will travel to a good distance fairly well. A well grown plant of *C. pyramidalis* ought to throw up a flower-stem at least 1 foot in height, and this will give hundreds of blooms, many of which may be cut with a fine stiff stem. The white variety is useful alike for vases, bouquets, or wreaths. After flowering all may safely be thrown away, seedlings being preferable to plants obtained from suckers. Quite small plants of *C. calycanthema* will flower, but late raised or weakly plants of *C. pyramidalis* will not do so, and must be kept another year; hence the necessity for making an early start and for growing the seedlings as rapidly as possible without actual stove treatment.

Both species are very effective border plants, and those not required for flowering in pots may be either flowered where grown or transplanted to positions where a display is needed. Frequently hundreds of seedlings will spring up in the autumn or early in the spring near where the old plants flowered and seeded, and these are excellent for preparing for pot culture. Some good cultivators raise their seedlings of *C. pyramidalis* in the autumn, keeping them in the seed-pans till the spring, and this is a good method of securing extra fine plants.

W. I.

AURICULAS.

SEVERAL inquiries were addressed to me at the recent Auricula show by persons interested in this flower as to where the new varieties that were so plentifully shown could be purchased. I could not reply to this question, as it may be years before a sufficient stock of some of them will admit of their being sent out. I could but assume that some, at least, of these inquirers were persons attracted by the unusual character and beauty of the flower, and were desirous of growing it. They thus stand in the relation of young beginners, and to such I would say make a commencement with some of the commoner sorts until you have ascertained whether or not you can grow them with success, and when you can, then add to your collection choicer and higher-priced varieties.

The choicer varieties of named show Auriculas appear to be scarce, for they are in constant demand. The propagation of any one of these is at best but a slow process, as they can be increased only by means of offsets, which are often produced very sparingly. The cheaper sorts are in less demand, and a collection sufficient for a novice to commence with can be got together at a comparatively small cost. Of green edges, there are Litton's Emperor, Smith's Lycurgus, Oliver's Lovely Ann, Headly's New Green, Ashton's Prince of Wales, and Traill's Rev. George Jeans. If he wishes to add something of a little higher class quality, Traill's Anna and Simonite's Talisman are good varieties. Such fine sorts as Traill's Prince of Greens, Leigh's Colonel Taylor, and Simonite's Rev. F. D. Horner still command high prices, and are likely to do so until some of the newer green-edged flowers find their way into the market.

In the grey-edged class some good flowers can be had at comparatively low prices, such as Headly's C. E. Brown, Walker's George Levick, Read's Dr. Horner, Chapman's Maria, Lightbody's Robert Traill, Campbell's Confidence, and Lightbody's Richard Headly. A few shillings more will secure Headly's George Lightbody, Kay's Alexander Meiklejohn, Lancashire's Lancashire Hero, and Simonite's Frank Simonite. The last four are the flowers of the flock, but those first-named are varieties that cannot fail to give satisfaction to anyone who grows them properly.

In the white-edged section there is ample need for some strong and decided white edges, as many

of them are weak in density of meal on the margin. A strong white edge is a lovely Auricula, and some very promising new additions to this section were recently shown at South Kensington, but it will be some time before any of them can be distributed. But such white edges as Heap's Smiling Beauty, Taylor's Glory, Hepworth's True Briton, Traill's Beauty, Lightbody's Sophia Dumaresque, and Read's Acme are by no means difficult to obtain. The newest in this section, viz., Douglas's Conservative and Mello's Reliance, are yet dear, but the former is becoming more plentiful and cheaper. Walker's John Simonite is a fine white edge, but, unfortunately, very scarce and dear.

Then of the self flowers, such good sorts as Spalding's Blackbird, Pohlmann's Ellen Lancaster, Campbell's Lord of Lorne, Turner's C. J. Perry, Campbell's Pizarro, and Kay's Topsy are all cheap and easily obtained. A little higher outlay will secure Simonite's Mrs. Douglas and Horner's Sapphire. It will thus be seen that a young beginner can soon secure a collection of Auriculas on which to try his hand and not spend a great deal of money in doing so.

And if he would add some alpine varieties also good exhibition flowers are now cheap, amongst them being Colonel Scott, Evening Star, George Lightbody, King of the Belgians, Mrs. Dodwell, Mrs. Ball, Mrs. Lumby, Napoleon the Third, Phoenix, Sailor Prince, Prima Donna, Tenniel, and Vesuvius, and a charming collection is thus provided. When once a commencement is made it is easy to add better flowers, as success follows efforts, and the ambition of the cultivator rises to higher levels.

R. D.

SEASONABLE WORK IN PLANT HOUSES.

CAMELLIAS.—Plants that flowered during February and March will now be in full growth; the conditions most favourable to its free development are an intermediate temperature, a moist atmosphere, and shade in bright weather. In dull springs like the present it is necessary to be more particular in shading plants that require this kind of protection than in bright seasons, inasmuch that when the young leaves have been made under an all but continuance of dull weather, they are proportionately less able to bear the sun's direct rays. Even when Camellias are grown under late Vines, in lean-to houses facing south it sometimes happens that the leaves get much disfigured by the sun before the foliage of the Vines is sufficiently advanced to give the requisite protection. Plants that flowered late and are pushing freely should be frequently examined to see that the soil in the pots is sufficiently moist, as, with daily syringing overhead the surface is frequently wet enough, whilst the ball lower down is so dry, that healthy growth is out of the question. When in this state, immersion of the ball for twenty-four hours in a tub of water is the best remedy. The worst instances of the roots of Camellias being dry below whilst the moist appearance of the surface is such as to give the impression that all is right may now and then be seen with large plants that have been a long time turned out in borders. When plants that are turned out in this manner begin to make short, unsatisfactory growth, no time should be lost in ascertaining the state of the border. Should it turn out to be dry, it takes an immense amount of water to moisten the soil. The best way to proceed is to make a shallow dam or dams round the border, filling up with water daily for a week or two. Plants that flowered through the end of last year will, if subjected to heat as soon as they had done blooming, now have their flower-buds in a prominent state, and will require a little consideration as to the time they are again wanted to bloom. Few things are more easily regulated as to the time of their flowering than Camellias, but it is only during the time that immediately follows the formation of the flower-buds that the period of their blooming can be accelerated in a satisfactory way by the use of heat; after the buds are formed they will keep on growing so long as the plants are kept in warmth; whereas, if they are turned out of doors, or kept cool by a free admission of air to the house in which they are located, and then are sub-

jected to heat in the autumn with a view to hastening their flowering, the chances are that many of the buds will fall off.

AZALEAS.—Any plants that have bloomed late should now be kept in a growing temperature. In the southern parts of England it is only in cold, sunless summers that fire-heat is required, as by giving only a limited amount of air, and this only in the middle of the day, sun-heat can be economised to do the work. Continue to treat in this way until after the buds are set and have attained some size. In the colder parts of the kingdom to grow Azaleas properly fire-heat is necessary, especially to plants that have flowered late in the spring, as without the aid of artificial warmth the solar heat is gone before the buds are sufficiently advanced to admit of the flowers attaining their full size, and to ensure the buds not going blind in winter. Stand the plants well up to the glass, keep the atmosphere moderately close and moist, with a thin shade when the sun is powerful. Stimulants, either in the form of manure water or some concentrated fertiliser, should be given to all plants that have fully occupied the soil with their roots; without this it is impossible to keep the growth up to the requisite strength.

NERINES.—A greenhouse from which these bulbs are absent in autumn is wanting in a section of the most telling plants that bloom at that time of the year. The little difficulty there is in growing them, and the comparatively little attention required to keep them in a thriving state, make it difficult to account for their not being more grown. Give enough water to keep the roots moving freely until the foliage has attained its full size and is fully matured. Syringe freely overhead two or three times a week, as unless the leaves are kept quite free from red spider the plants do not thrive so well. They cannot have too much light at all times, but especially from the time the leaves begin to move until they die off naturally.

HYDRANGEA.—This fine old plant is by far the most useful for conservatory decoration when grown annually from cuttings struck either in spring or in the autumn after the growth is matured. Plants propagated at the latter time usually give the largest heads of bloom, but spring is the most convenient season for many to strike them. Shoots that have sprung up from the collars of plants that have been forced will now be in condition for taking off; they are best put singly in small pots, as then no after disturbance of the roots occurs. When the cuttings are rooted and have got well established, it is advisable to put them at once into the pots in which they are to be grown and flowered; such as are from 5 inches to 7 inches in diameter are large enough. After this a cold frame with the pots plunged in ashes is as good a place as any for them until the roots have got well hold of the soil, when they may be fully exposed to the sun till it is necessary to house them in autumn. Any side growths that appear should be removed with a view to direct all the strength to the formation of a single shoot and head. The plant will bear much careless treatment, and still live and flower after a fashion, yet it is well worth the little extra attention requisite to secure the fine heads of bloom which it is capable of producing. If only for the length of time that the flowers will keep in presentable condition when stood in rooms and dark corners in conservatories where most other things could not exist, it is deserving of being well treated.

EPACRIS.—The later flowering portion of these plants should have their shoots cut back as they go out of bloom; after this if they can be located for a few weeks in a house or pit where the atmosphere is kept a little close by admitting no more air than necessary to prevent the temperature rising too high in sunny weather, it will help them to break more freely. Syringe overhead in the afternoons, but be careful that no more water is given than necessary to preserve a healthy condition of the roots, as these plants—always impatient of any excess of water—are still more so after their branches have been reduced. Epacris require

comparatively less pot room than the generality of hard-wooded plants, especially after they have attained something like specimen size; but in the case of young thriving stock it will not answer to restrict the root-space too much, or the growth will be weak and puny and will interfere with their flowering satisfactorily. Any that require additional room should have a shift as soon as they have made growth an inch long. After potting keep them closer and with less air for two or three weeks than at other times, likewise giving a thin shade when the sun is on the glass.

HEATHS.—Plants that were potted early in last month, and since have been kept drier than at other times, will now be in a condition to take water more freely, but it is necessary to see that they are not over-done in this matter, as if the new soil was to get too much saturated, the roots would not enter it, in which state they are all but certain to get into an unhealthy condition. An objection sometimes exists against the cultivation of these beautiful flowering plants, and arises through the erroneous impression that little use can be made of them for decoration when in bloom, through the notion that they do not like moving from the house or pit in which they are grown. Heath's do not well bear for any time a close, confined atmosphere, especially in positions either overhung or too much crowded by other plants, or when placed in a conservatory that is kept warmer than greenhouse plants require to be. In a house of this character where an ordinary temperature is maintained, and that admits a fair amount of light, Heaths may be kept during the three or four weeks they are in bloom without any danger of their suffering, particularly if a little forethought is exercised in selecting places for them where they will not be too far from the glass and where air is admitted. It is the indiscriminate thrusting of these and other light and air-loving plants into the positions in conservatories where they are supposed to be most effective, and where they are in a state of semi-darkness, or keeping them too long where some or other of the conditions essential to their well-being are absent, that is injurious. The sorts that flower in spring and summer especially can be made use of in the way under notice, as at these seasons the length of the days, coupled with the freer admission of air to the structure, is more in accordance with their wants than at other times of the year. What holds good regarding Heaths in this matter is equally applicable to hard-wooded plants in general which may be used for conservatory decoration without hesitation during the time they are in flower, provided the precautions indicated are followed and they are not kept too long in such quarters. It is scarcely necessary to say that if an *Aphelaxis*, a *Boronia*, or a *Hedera* were allowed to remain as long as their flowers were presentable in a house where the conditions to their future existence were wanting, much harm would be done, as their flowers, lasting, as they do, for months, would entail their being located in places where the growth that was in progress at the same time would be deprived of the light necessary to give the requisite solidity to the plants. T. B.

Education for gardeners.—I quite concur with the remarks of the editor in *THE GARDEN* (p. 374) when he says "a gardener should learn his own business well." "H. J. H." introduces rather too many subjects for the average gardener to master, and if "H. J. H." had a magazine introduced called "The Under Gardener," I very much question whether it would do much good, unless it contained a coloured plate and a column or two of "gardeners wanted." The majority of young gardeners care very little about reading; they are not picked from that class. I have found some young men study, but very few. Two who were under me, and who were of studious habits, are in first-class places to-day, and enjoy the confidence of their employers, but generally I find very few who care to read. I have sent *THE GARDEN* up to the young men's rooms every Saturday for the past eight years, and after a month's time I generally find it has never been cut. The coloured plate is looked at, and the remark passed as to whether it is a good one or

not, and then they look to see if anyone wants a gardener, and that is all they care about. I lent them the "English Flower Garden" to read, and after some time I asked how they liked it, and got for an answer, "It is of no use to a gardener; it is all about outdoor hardy stuff." Anything that will grow without a flower-pot, and without a shade to draw down every time the sun shines, is not worthy of their notice. My advice is to study geometry (a little), heating, geography, botany, and arithmetic. These are subjects which will not cost much to get a fair knowledge of. "H. J. H." says their means are too scanty to buy books; but books will never make a gardener, nor will a lifetime spent in the houses. The true gardener admires and loves the hardy plants as much as the most expensive *Cattleya*.—MILTONIA.

CHRYSANTHEMUMS.

E. MOLYNEUX.

THE plants now being grown for producing large blooms for exhibition or otherwise will vary in height from 1 foot to 2 feet 6 inches, according to the variety. If all has gone well with them since their propagation they should have one stem, and be furnished with healthy, stout green leaves, which should if possible be retained until the plants perfect their flowers. This can be done if all the necessary details of culture are attended to during their growth. If they are neglected and allowed to become dry at the roots, or mildew attack them, or if the plants are allowed to stand too thickly, the leaves cannot perform their natural functions, and are thereby weakened. Future success is largely influenced by an early disfigurement of the primary leaves of the plants. In many instances, such varieties as *Lady Selborne*, *Elaine*, *Baronne de Prailly*, *Triomphe de la Rue des Châlets*, for example, will now be making their first natural break into additional shoots beyond the number started with. This multiplication of branches is caused by the formation of a bloom bud in the point of the shoot. When this takes place growth is for a time at a standstill. After this bud is so formed new branches start from each joint below the bud; this is a critical period of growth puzzling to beginners in the culture of this flower. What to do with the new shoots is the puzzling question to many persons. Where the flowers are intended to be of the first order of merit, it is not wise to make provision for more than three on each plant, but where home use is the desideratum as many as six will suffice. The point, then, at this stage is to lay the foundation for future productions. As one bloom only of anything above average merit can be depended upon, it is therefore necessary to provide ourselves with as many branches as flowers are expected. In the case of the first number, the shoots to that extent should be retained at the time when the plant makes its first natural break, as pointed out previously. Select, then, the three uppermost branches, removing the flower bud and all other branches forming below the three left. In the case of the plants grown for home use only, the three upper branches should be retained in the same manner as in the former case, the additional number to be added at a later stage. Many growers pinch the point out of each plant at 6 inches or 8 inches high; the strongest shoots resulting from this topping are selected to the number of two, and by some three, but from experience I have found that plants which are allowed to break into growth naturally produce the best results. Plants that are grown for other purposes, such as bush, pompons, singles, and specimens, should have close attention as regards the pinching of the

branches at this period, as growth is now quickly made; neglect of this renders the plants taller than is wished for, and in such a manner they cannot be made to look so effective as where the necessary details are carried out at the proper time.

GARDEN FLORA.

PLATE 596.

PRIMULA STUARTI VAR. PURPUREA.*

THIS is Sir Joseph Hooker's name for the fine Primrose figured in the coloured illustration. The synonyms are *P. purpurea* (Royle), *P. macrophylla* (Don), and *P. Jaschiana* (Kerner). The following characters of the type and the variety are extracted from Sir J. Hooker's "Flora of British India," vol. iii., p. 490:—

P. Stuarti, mealy or not, quite glabrous, leaves 4 inches to 10 inches long, coriaceous, sub-erect, broadly or narrowly oblanceolate, or obovate spatulate, acute or obtuse, quite entire, crenulate or finely toothed, midrib very broad, petiole broadly membranous below, flowers loosely umbelled, bracts elongate, calyx torcite, lobes usually long, narrow, acute, rather obtuse; corolla yellow or purple, &c. Habitat throughout the Himalayan range at an altitude from 12,000 feet to 14,000 feet; also in Af. hanistan.

After long study I am unable to draw any specific characters between the many forms of purple and yellow (rarely white) Primulas included under the above character. If there are species among them they hybridise so as to defy recognition. Five varieties are described, each of which may have its small and great form with narrower or broader, entire and serrated, mealy and green leaves, many or few sessile or pedicelled flowers, more or less deeply cut calyx, mealy on the outer only or on both surfaces and a longer or shorter corolla tube with very variously formed lobes. *P. purpurea* generally resembles the type, except in colour, but sometimes has the flowers in two whorls.

The coloured illustration is a faithful copy of an oil-painting by Miss North, from a sketch taken by that lady of plants flowering in the garden at Edge Hall on September 15 of last year. It must be explained that by an optical delusion some of the right-hand flowers of the lower umbel appear to be united by branched pedicels. This, of course, is not really so, the pedicels being all one-flowered, and all uniting in the same point at the top of the scape, though it is difficult to trace them in the figure. The two plants were not growing together, but in different parts of a raised bed. The colour is the richest glossy purple. In some of the dried specimens in the Kew herbarium the individual flowers are much larger than those here shown. As regards cultivation, many of the Himalayan plants seem puzzled by the English climate. Some of the Primroses, as *P. denticulata* and *P. rosea*, are so hardy as to endure any rough treatment, even being cut to pieces through the crowns, and seem to thrive in spite of it. Others, like *P. sikkimensis* and *P. capitata*, are easy to rear to a first and second flowering, but not easily made true perennials. *P. Stuarti* is one of the less easy species to deal with in our climate. Seed of it is not sent in great abundance, and it does not ripen it freely in England. The seed, if fresh, generally comes up pretty well, but the growth is rather slow. Plants of it seldom flower here till they have passed through two winters. The root-stock is very liable to rot and destroy the plant in the second winter, and if they survive to flowering, this liability is much increased. *P. S.* var. *purpurea* is less easy to rear to flowering size than the type. The plants figured may be called lucky accidents of cultivation, for I cannot explain why these two flowered so well twice in the same year, and three or four dozen others which were treated exactly in the same way mostly died without flowering, either in my own garden or in those of my friends. The seed from which I raised

* Drawn by Miss North in the gardens of the Rev. C. W. Dod, Edge Hall, Malpas, Sept. 15, 1885, and printed by G. Severeigns.



them was sent from India in January, 1884, and raised without artificial heat under glass. When large enough they were pricked off into a box a foot deep, and were kept without shelter until winter, and placed under a light till the next spring. Then about May, half of them were planted in raised beds of equal parts of loam, peat, and broken stone; the rest were distributed; at the beginning of the winter of 1885 seven or eight survived, some being of large size. I covered most of these with handlights or inverted flower-pots, and by the middle of April the two plants here figured were in flower. One of the umbels was much larger than that shown, having more than fifty flowers. I could not, however, find any seed, though capsules were formed.

The same two plants flowered again, apparently from the same axis of growth, in September, and from this second flowering the sketch for the picture was taken. Several plants of the type *P. Stuarti*, from seed sown at the same time as *P. var. purpurea*, flowered last June. One of them after flowering produced fifteen new crowns; these I detached, and most of them flowered at the end of October. In other cases both the old plants and the young growths rotted away from no apparent cause, and with my present imperfect knowledge of its habits I must pronounce *P. Stuarti* one of the most capricious of hardy plants.

C. WOLLEY DOD.

FLOWER GARDEN.

PERMANENT FLOWER BEDS.

IN August of last year, a correspondent of THE GARDEN (page 195) asked if "some one would suggest any arrangement of plants suitable for permanent beds in a flower garden," in answer to which query I gave a short answer, intending when opportunity offered to go more fully into the matter, and as I have lately been engaged planting beds after that fashion, I make the effort to fulfil my intention whilst the matter is fresh in my memory. Up to a very recent period, consequent on the pre-eminence of summer bedding, by the term of "flower gardening," it was pretty generally understood to mean the bedding-out branch of it only; in fact, it was for a number of years so popular, that the younger generation of gardeners had come to regard bedding-out as the only proper style of flower gardening. However, we have advanced—are advancing—for now, instead of one prevailing phase of flower gardening, we are getting larger hearted, and are ready to find a place for flowers of every description. This is my case, but I would not have it understood that I thereby repudiate every description of summer bedding; as now circumstanced, I could not if I would, and would not if I could. I prefer reformation to annihilation, and the lines of reform I long since adopted were, as stated in a recent note, "the getting rid of as many tender plants and plants of transitory effectiveness as possible, and substituting hardy and long-lasting flowers and shrubs." The work of reform was at first difficult, because having, as I suppose everybody does, imbibed certain notions of what is proper, and the contrary, these what I may call fixed ideas took a lot of eradicating. I will give an instance, which is but an illustration of many similar ones. I have a particular liking for the white Japanese Anemone and for the yellow-flowered *Rudbeckia Newmani*, and had a strong wish to use both in association with summer bedding plants; but, strange as it may seem, I could not for years bring myself to see that they could with any degree of propriety be used with *Pelargoniums* and the like; and I doubt not but that there are many with similar ideas, and to such I would say, do not rely too implicitly on notions of propriety; anent this matter, as they will all vanish as soon as the experiment is made of planting herbaceous

perennials, shrubs, &c., in conjunction with ordinary bedding plants. But, notwithstanding that there is no incongruity in such mixtures, when permanent flower beds are in question, I would never think of using the ordinary run of summer bedding plants in such arrangements. The correspondent alluded to at the beginning of this note mentioned having *Rhododendrons* and *Azaleas* doing well, and by using the word "permanent," evidently wished for flowering plants as hardy as these, and probably intended any that might be named for intermixing with them. To this plan there is only the objection that both *Rhododendrons* and *Azaleas*—in good soil make such rapid growth, that unless they are distributed very sparsely indeed over the bed, they quickly overshadow and eventually smother slower-growing plants. Of course, this can be obviated by drafting the large plants every second or third year into the shrubbery, and using smaller plants from the nursery beds. More or less of this same sort of exchange will be necessary in respect of other plants, as they get too large or outgrow their position. This, though, is a very small matter, and not worth taking into account if contrasted with the labour necessary to obtain good floral effect for the summer season only. If these conditions (occasional change of plants) be recognised and acted on, there will be no difficulty in making an arrangement of plants, some or other of which would be in flower during ten out of the twelve months of the year. It is necessary to say that whatever number or variety of flowering plants may be used in such permanent flower beds, a small proportion of evergreen and ornamental deciduous plants ought also to be used, for the same reason as we use greenery in arrangements of cut flowers, and this will explain the presence of such plants in the list following. Supposing, then, that a number of large beds have to be planted on the lines indicated, *i.e.*, with a view of having flowers for the longest possible period, taking into account our uncertain climate, the following is the list of plants I would use, and which is entirely made from memory, so that probably some good kinds unknown to me are omitted. Of course, from such an extended list, smaller selections, according to size and number of beds to be filled, will require to be made. Evergreens, both for their flowers and foliage—*Rhododendrons*, *Kalmias*, *Andromedas*, and *Berberis Darwini*; deciduous-flowering shrubs—*Almonds*, *Azaleas*, wild *Cherries*, *Deutzias*, *Ribes*, and *Weigelas*; shrubs and small standard trees for foliage—*Acers* (*Maples*), particularly the finely cut and coloured foliaged varieties and the variegated kind, *Negundo variegata*, *Acacias*, *Liquidambar*, and *Sumachs*; small Evergreens for foliage only—*Aralia Sieboldii*, *Bambusa Metake*, variegated *Osmanthus*, *Vuccas*, and *Retinosporas*; dwarf evergreen flowering plants—*Heaths* (*Ericas*), *Irish Heaths* (*Menziesias*), *Helianthemums* (*Rock Roses*), and *Veronicas*; tall-flowering herbaceous perennials—*Helianthus* (*Sunflowers*), *Asters* (*Michaelmas Daisies*), *Tritoma Uvaria*, *Delphiniums*, *Solidagos*, *Galegas*, *Monardas*, and *Pyrethrum uliginosum*. The best herbaceous plants of medium height are *Aquilegias* (*Columbines*), *Spireas*, *Campanulas*, *Potentillas*, *Hemerocallis* (*Day Lilies*), *Phloxes*, *Oenotheras*, *Pyrethrums*, *Polemoniums*, *Staticeas*, *Japanese Anemones*, *Rudbeckias*, *Funkias*, *Iris*, *Lilies*, and *Paeonies* in great variety; the best dwarf-growing kinds are—*Anemone coronaria* (*Windflowers*), *Iberis* (*Candytufts*), *Primulas* (various, more especially the *cutusoides* section), *Hellebores* (*Christmas Roses*), *alpine Phloxes*, *Geums*, *dwarf Campanulas*, *Gentians*, *alpine Poppies*, *Silenes* (*Moss Campions*), *Trilliums*, and many others; the best of the more common dwarf flowers are—*Pansies*, *Violas*, *Pinks*, *Carnations*, and biennials in variety, such as *Wallflowers*, *Sweet Williams*, *Canterbury Bells*, *Snagdragons*, and *Pentstemons*. This is a list sufficiently comprehensive for the largest garden and largest beds or borders, without having recourse to undue repetition of kinds in any one arrangement, whilst for small gardens and beds from so long a list the grandest selection can be made.

ARRANGEMENT OF PLANTS.—In arranging the plants in the beds it is necessary to observe the fol-

lowing rules: First, to so disperse the various kinds of flowers over the entire bed, that at every season of the year there shall be an equality of flowers; secondly, that with the exception of plants that are used for their foliage only by way of enhancing the effect of the flowers, all others shall be grouped or planted in masses of from three to nine plants in each; and thirdly, that plants of the most varied characteristics, so long as they agree in height, shall be planted in juxtaposition, as, for instance, broad-leaved and robust-growing plants near those that have finely cut foliage and a more wiry growth. In arrangements composed solely of herbaceous plants the same rules should be adhered to, and in the more highly kept parts of the garden the bare soil beneath the plants and the outer margins of the beds will look all the better if clothed with the mossy-growing *Sedums*, such as *Glaucium* and *Lythium*. W. WILDSMITH.

THE NEW SNOWDROP.

(*GALANTHUS GLOBOSUS*.)

IN the last GARDEN I see a plant figured under this name, for which, I presume, Mr. Wilks is the sponsor. I shall be glad to know whether in his opinion and that of the editor of THE GARDEN, who I see still maintains a preference for English names, this name is to be accepted as a botanical name, in which case a more definite description should be given, and whether the provisional naming of plants which are of very doubtful specific rank is a practice likely to produce good results. *G. Elwesi*, like almost every other plant, is variable, but if Mr. Wilks will consult the figure and description of it in *Botanical Magazine*, t. 6166, he will see that there are characters of flower, leaf, and basal sheath by which it can be strictly defined, and which I have not known to fail either in imported plants or home-raised seedlings. His *globosus* seems to me but an inconstant two-flowered variety, and not a bit more globose than many plants of *G. Elwesi*. Had he not better cancel this name at once, and call it *Elwesi var. biflora hort.*, because in that case gardeners will know what is meant, and botanists will be saved the trouble of hunting up back numbers of THE GARDEN to refer to the description?—H. J. ELWES.

— Mr. Wilks writes as follows: "The name is by no means intended as an authoritative botanical name. I am not a botanist, only a humble gardener. I have examined thousands of *G. Elwesi*, and have a very large number growing in my own garden, and the flower in question is very distinctly and very greatly more globose than any single specimen of *Elwesi* which has ever come under my notice. No one need recognise the name *globosus*, as I have only given away one bulb of it to a great authority on Snowdrops, who considered the plant very distinct and concurred in the suitability of the name. Nothing would induce me personally to label such a lovely plant in my own garden as *Galanthus Mrs. Smith Jones*, or *G. Mary Anderson*, or any other English proper name—names whose significance will in a generation have quite passed away, while the plant will be fresh as ever. The editor of THE GARDEN is not in any way committed to my provisional name, nor to any of my opinions. The utility of such a paragraph as that in the last number was to elicit opinion and report a supposed novelty. Mr. Elwes, who has not seen it, considers it a variable form of *G. Elwesi*; I who have, do not."

** We do not clearly see why Mr. Elwes should raise this question about the new Snowdrop. The figure will remain, and we think, justify the name Mr. Wilks has given it, though it, like all other Snowdrops worth growing, must have an English name. Mr. Elwes can hardly suppose that people will go about mouthing dog Latin names for his Snowdrop or any other Snowdrop! Whether *globosus* is a variety of the one named after him or not we do not know; it is a point that can be tested. I believe the Snowdrop sent by Mr. Wilks to be a more beautiful one than *Elwesi*, and as a garden plant distinct. As a species also it seems to be as well marked as some of the other Snowdrops

supposed to be species. But what one botanist calls a species another does not, and from a garden point of view it does not matter one jot. Only a narrow pedant would contend that names in a foreign tongue are more necessary or reasonable than English ones. Whether plants differ as species or not matters little in the garden, as many of our best things are varieties—Gloire de Dijon Rose and the Weeping Beech, to wit. Ed.

Chionodoxa Lucilæ. The comparative merits of this plant and *Scilla sibirica* have been discussed from time to time, and while fully aware that the opinion of the majority is in favour of the newer introduction, under certain conditions I should give the preference to the *Scilla*. As bearing on the point I may mention that we grow them both here under exactly the same conditions in rather an exposed spot; and though the *Chionodoxa* flower just as freely as the other, they do not resist the strong cutting winds so successfully. This is owing to the weak flower-stalks of the *Chionodoxa*, which during windy weather sway about in such a manner that the flowers are often severely bruised, while the stout, sturdy habit of the *Scilla* enables it to bear these wintry blasts with impunity. Where as extensive a display as possible is needed for a small outlay, the cheapness of the *Scilla* compared with the other is also a consideration. The *Scilla*, too, can be forced into bloom by Christmas, but I have not yet succeeded in inducing the *Chionodoxa* to flower so early.—H. P.

Jeffersonia diphylla.—This plant, rarely seen in gardens now-a-days, although I believe obtainable at almost any nursery devoted to the cultivation of alpine plants, is for beauty both of flower and foliage unequalled by any other in character at the present time. The blooms are large, pure white, an inch or more in diameter, and have numerous conspicuous yellow stamens. The leaves are deep purple, as also are the stems, and the contrast between them and the flowers is most striking. It is found in North America in shady woods, and does well with us in a deep rich peat bed in a rather shady spot. Other plants nearly allied, which will grow well under the same treatment and have an equal claim on the cultivator, are *Podophyllum Emodi*, a Himalayan plant of rare merit, quite hardy in the open air, and accompanied after flowering by beautiful large orange-yellow or reddish fruits; *P. peltatum*, a very handsome large-foliaged plant; *Diphyllia cymosa*, &c., all of which may be grown successfully in a peat bed kept moderately damp.—K.

Anemone trifolia.—This species, which may be said to be nearly allied to our own native *A. nemorosa*, is in fine condition with us at the present time. Its mode of growth and general appearance, which are most marked when in flower, distinguish it readily when the two are placed side by side. *A. trifolia*, as its name denotes, has trifoliate, short, and very regularly toothed leaves, while those of our English plants are very irregular and resemble more nearly those of *A. ranunculoides*. The flowers are pure white, thrown well up above the foliage, but hardly so large as *A. nemorosa*. The latter, with its variety *Robinsoniana (azurea)*, are both seen far too rarely in gardens. When we see them in their wild habitats we think no amount of admiration sufficient to describe their beauty, though we hardly ever think of introducing them. Both are easily accommodated in ordinary soil, and well repay a little attention. K.

Double Polyanthes. It will be interesting to know how far the double *Polyanthus* Queen Victoria, crimson with gold lacing, differs from the old double Gold Bell of so many years' standing. Unfortunately, I missed seeing the double *Polyanthus* Queen Victoria. Gold Bell is said to be plentiful in the north of Ireland, a part of the United Kingdom that appears to suit it well. How seldom one sees the still older double dark *Polyanthus* or *flex* Theodore; it is said to have become very rare. I cannot grow it at Ealing, and I have made many attempts to do so; it is too hot and drying in summer. I have known semi-double forms come among the gold faced varieties, but

they are never worth saving, and I suppose we shall all be willing to admit that there is a great deal more beauty in a single *Polyanthus* of any kind than in a double one.—R. D.

NOTES ON HARDY PLANTS.

FRITILLARIES AND DAFFODILS. We have rarely seen two plants growing so well together as the common Daffodil and *Fritillaria Meleagris*. Intermixed in a rather damp situation in the Grass, the drooping chequered flowers of the *Fritillaria* contrast well with the yellow flowers of the *Narcissus*. It is only occasionally, however, that this will be seen, as the Daffodils are very late this season, and though now at their best, they have lost little of their colour as yet. *F. Meleagris* seems to be the only one that can be naturalised with any success. *F. imperialis* has been often tried, some few seasons with a little success, but mostly a complete failure; the majority seem to go blind from some cause which we fail to account for. The soil has been blamed, but it can hardly be this altogether, as they do very well in certain seasons. *F. pallidiflora* is a really good plant for borders, &c., and one of the best of them is *F. latifolia*, which is to all appearance a very large form of *F. Meleagris*. It seems to increase more rapidly than any of the others, and is much easier accommodated. *F. lusitanica*, *Moggridgei*, and others are worthy of attention.

AUBRIETIAS.—From the ordinary purplish flowers of the type to the new *A. Leichtlini*—exhibited from the Royal Gardens, Kew, at the Auricula show—a vast improvement has taken place, the course of which may be traced from the variety *Mooreana*, through *purpurea*, &c., to *Hendersoni*, *violacea*, and then to *A. Leichtlini*. The latter is certainly one of the finest acquisitions of late years to the hardy alpine garden, and, like the others, is quite hardy in the open air, and it will, no doubt, become a general favourite. A *violacea* is of a rich violet colour, but the new *A. Leichtlini*, raised by the gentleman whose name it bears, has rosy red in place of the violet, and when first open the colour is very striking indeed. In some cases, however, if too much exposed, the colour fades very quickly, leaving a washy pink, but this can be avoided by growing the plants in a sheltered spot on the rockery, or on overhanging ledges, &c., positions in which they will be very effective.

ADONIS VERNALIS.—This is really one of the most charming spring flowers we have seen this season. It is in full beauty at the present, sturdily holding its handsome large yellow flowers aloft in spite of the cold, ungenial weather we are now having. Its flowering at this time considerably enhances its beauty for the rock garden and flower border, and as it is easily accommodated in ordinary garden soil, we can strongly recommend it to lovers of alpine. Its near ally, *A. pyrenaica*, which flowers later, seems rather scarce; I believe from the fact of its being much more difficult to flower well. An importation from the Pyrenees last autumn seemed to be fine healthy plants when they arrived, but now, on examining them, I find many have succumbed to the damp, while those left are throwing up weakly leaves, and in all probability will not flower at all. The question of leaves seems to be the chief difference between the two species, *A. vernalis* having no root leaves, while *A. pyrenaica* has long, stalked leaves, those on the stem being sessile, or nearly so.

PRIMULA ROSEA. No *Primula*, in spite of the very numerous additions to our collections of late years, surpasses this beautiful species for open-air culture. It is undoubtedly one, if not the best, both for quantity and quality of flowers, and as it is so easily grown and can be raised so freely from seed, it should command a place in every garden where these plants are grown. On a north border, for want of a better situation, it does very well, as moisture seems to be the main essential to its welfare. A bog or marsh bed is its natural home, and here, if possible, with its roots in the water and the top fully exposed to the sun, it flowers with

remarkable freedom—sturdy, with the leaves reddish, and not pale green, as they are when grown under glass. The flowers grown in the open air are of a much deeper tint also than those we find under shelter, the stems shorter, and altogether in better character. The variety *grandiflora*, or *superba*, is of a much deeper tint, and if anything more robust. They both seed freely in the open air, and where patches have been grown we have picked up hundreds of self-sown seedlings.

PRIMROSES AT THE EXHIBITION.—Amongst the many beautiful *Primulas* shown lately at Kensington none attracted more attention than the new variety of *P. obtusifolia*, called *Gammieana*. It seems to nearly resemble a very deep-coloured, one-whorled state of *P. japonica*, and may after all be an outlying form of that species. The small *P. glabra* was also very interesting, too minute, however, to become of general interest to *Primula* growers; it seems to lie between *P. farinosa* and *denticulata*. The plants shown as *P. Kingi* and *P. reticulata* were nothing more nor less than *P. sikkimensis*, a species common enough to cultivation in our gardens now-a-days. *P. Kingi* more nearly resembles *P. Stuarti* than *P. sikkimensis*, and *P. reticulata*, though somewhat resembling *P. sikkimensis*, has much coarser, deeper, and sharper serrated leaves, the flower-stem as long again, less than half the number of flowers, and these being very small and of a poor colour. K.

Alpine Auriculas, shaded and unshaded.

—The remarks of "R." (p. 417) are called for at the present time. Nearly twenty years ago I urged the importance of raising alpine Auriculas, with the edge all of one shade of colour. I again took the matter up about ten years ago, one leading grower took the other side of the question, and stated that I advocated the introduction of alpine Auriculas with the leading quality left out. Since that time very few self-edged flowers have been introduced. All the varieties raised, either in the north or south, have been shaded. Quite a new type was introduced from France which was termed *laced*, a dubious name. Mr. Dean tried his hand at improving this strain and was very successful, but he seems to have dropped it. They were shaded-edged alpines, with the paler colour near the edge more clearly defined. It is supposed by the fanciers that the shaded edge gives a greater variety, and for pot culture I must confess that I like them, but to plant out in masses on the rock garden or in the flower borders the self-edged forms are most striking. I do not care anything for the double varieties either as pot plants or for the borders, with the exception of a semi-double golden yellow which has erect stems requiring no support.—J. DOUGLAS.

SHORT NOTES.—FLOWER.

Plants for rockery.—Would someone give a select list of plants for a rockery in full sun and partial shade? Also as to when such plants should be planted, and under what conditions?—L.

Golden-leafed Valerian.—The young foliage of this Valerian is very bright. Good sized clumps of it here are just now remarkably effective. It is only during the spring that this Valerian is of so conspicuous a hue, for as the season advances a great part of its beauty disappears.—H. P.

Arenaria balearica.—This is growing very freely in the rock garden, running over the faces of the stones and rocks; it is most persevering in its creeping habit, and we have some difficulty in preventing it from covering the gravel path in front of the rockery.—T. B. FIELD, *Stanley Hall Gardens, Bridgnorth.*

Hardiness of Passiflora cærulea Constance Elliott.—This supposed hardy Passion flower has been killed outright here this winter. It was planted out in a border, and trained up a wall that has a natural protection of shrubs all round, and it had a good mulching, but not otherwise protected. We are planting it again, and shall for safety give it the protection of a mat.—W. A. COOK, *Holme Wood, Peterborough.*

Double Primroses from seed.—Mr. B. Hooke, of the Towers, Hillingdon, has just sent me a truss of a double Primrose which he states came from some seeds of *Polyanthus* I sent him a few years ago. It somewhat resembles *platypetal a* and, like that variety, it throws *Primrose* flowers in single stalks and also trusses of bloom like a *Polyanthus*, but Mr. Hooke states that he has not this plant in his garden, and that what he sent to me was a *born tide* seedling.—R. D.

PASSIFLORA CERULEA CONSTANCE
ELLIOTT.

IN addition to the article which accompanied the beautiful plate of this in THE GARDEN of May 7, I should like to make a few remarks.

This plant was introduced to commerce by Messrs. Luceombe, Pince and Co. in May, 1885, and thousands of fine specimens at popular prices were then sent out from their famous and old-established nurseries at Exeter. On the 25th day of August, 1882, I found the original plant, which was at that time standing alone and apparently uncared for in the court at the rear of Mr. Fuller's house at Newton Abbott. It was not then in flower, but on the 13th day of the following month Messrs. Fuller and Son sent flowers of it, saying that they had raised it from the blue Passion-flower, and that it was the only one of the batch of seedlings. It was transferred to the Exeter Nursery, and a secure position against an outdoor wall was soon found for it, where it braved the inclement weather of that winter without protection. During the succeeding summer the plant became especially noteworthy on account of the extraordinary growth it made and the profusion of its delightfully fragrant white flowers. It was even at that time correctly predicted that the variety would prove an acquisition of the highest merit, and every means were immediately used to raise a large number of plants. It is easily propagated from cuttings. On the 27th of May, 1881, some flowers were, by desire, exhibited in London before the floral committee of the Royal Horticultural Society under the name of *Passiflora Constance Elliott*, when the much-coveted first-class certificate was at once awarded. This charming Passion-flower is now in constant request, the reason doubtless being that, in addition to its great beauty, it will flourish alike in the humble garden of the cottager as well as in the more elaborate gardens and conservatories of the wealthy. W. NAPPER, *Alphington Cross, Exeter*.

Your beautiful plate of this very useful climber in THE GARDEN, May 7, brings prominently into notice yet another hardy plant that will repay the shelter of a glass roof. Out of doors everyone is familiar with the long pendulous shoots of *Passiflora cerulea*, and have only to picture to themselves its white form to see the latest addition to this excellent class of plants, which, I may add, appear to thrive just as well in towns as in the country. It is late in summer before the young growths out of doors give a good supply of bloom; whereas by having a plant under glass one gets a supply of bloom very early in the season, as it is one of those plants that is almost a continuous bloomer. We have some plants now in full flower, the shoots as they grow forming bloom-buds in endless numbers. It is well adapted for wreaths, for although the stalks are not very long, the single blooms can be taken off and wired. It is of the easiest culture, and a plant not at all liable to insect pests. It is just the thing for lofty conservatories, where, after the main shoots get established, the growth of the current year can hang down in its own graceful fashion, and I am sure that anyone giving it a trial will not regret it. On the south coast, and especially in the Isle of Wight, wall climbers are more freely used than in any part of the kingdom I have ever visited, and it is surprising how beautiful even the most common-place-looking house is made by a covering of verdant foliage and beautiful flowers. Of course, many of the plants employed are not suited to northern gardens; but there is no lack of subjects hardy enough for any situation.—J. GROOM, *Cosport*.

Harrison's Musk for bedding. I am much surprised that your correspondent "J. C. C." in THE GARDEN (p. 370), is able to commend this plant as suitable for edgings to flower-beds. It is a pet plant of mine, and I have tried to grow it in every conceivable position, and complete failure has regularly occurred whenever that position has been an open one—that is, exposed to the full glare of the sun. In the far north and in rainy districts it would probably do well in such a position, but here it will not, no matter how unlimited the water

supply may be. The best, most pleasing, and effective use it can be put to in bedding arrangements is by way of undergrowth to tall-growing sub-tropical plants, no arrangement being more telling than with Gibson's Ricinus. The deep bronzy brown, both of stems and foliage, harmonises perfectly well with the light green foliage and yellow blossoms of the Musk, and the latter are larger, more profuse and continuous, by reason of the shade which the large leaves afford, as well as the shelter from heavy rains that in open beds batter down the flowers. W. WILDSMITH, *Heckfield*.

PRIMULA SIEBOLDI.

I NOTE the remarks by "A. D." on this *Primula* in THE GARDEN (p. 119), and give the reason why a larger number of plants of it was not exhibited. Up to the present season exhibitors were allowed to compete in the class for twelve species of *Primulas*, if they exhibited six distinct species; and as a result of this rule, as many as seven different varieties of *P. Sieboldi* have been shown in this class. For the present year an extension was made in the *Primula* classes. There was a class for twelve and one for six; in each class distinct species were required, and if more than one variety of *P. Sieboldi* had been exhibited in either class, the collection containing duplicates would have been disqualified. "A. D." is not very complimentary to my own collection of twelve distinct species which gained the first prize; all he has to say for it is that it contained "a huge *P. japonica*, with large leaves and a few poor flowers." *P. japonica* has large leaves, and the flowers of the white varieties are even smaller than the deep coloured varieties; but the plant was raised from seeds in our own garden in January of the previous year, and I am not sure that "A. D." could have done better in the time. We think it rather a remarkable plant, of course, as any one could see the spikes were not fully developed. I may say that unless a very large collection of species of *Primulas* are grown, it is very difficult to stage a dozen distinct species on a certain day in April.

Some growers were not able to exhibit even in the class for six. One would suppose that the rest of the collection contained "piny rock varieties, needing the aid of a microscope to discover their floral charms." In the first place, I do not know what a "rock variety" is. Does it mean the alpine and Himalayan species, the most piny of the *Primula* family, such as *P. Lurida*, grow in bogs? In the next place, I may say none of those were in my collection. All the plants exhibited by me were good specimens, with many trusses of bloom. I did exhibit one specimen of *P. Sieboldi* which was in an 8-inch pot, and had from twelve to fifteen trusses of bloom on it or more. The collection from Kew, so unceremoniously dismissed by "A. D.," contained the cream of one of the finest collections of *Primulas* in Great Britain, and added immensely to the interest of the show. There were classes of double and single *Primulas*, *Polyanthuses*, &c., for those who admire them, and I am sure no one would resent more than Mr. Llewellyn himself the remark that he alone brought plants, and other exhibitors pieces. In fact, my collection exhibited on the 26th contained larger plants, and occupied a larger space than any collection ever exhibited by Mr. Llewellyn. J. DOUGLAS.

White Daffodils and London clay. In THE GARDEN of April 30 (p. 388) Mr. Hartland observes that it is nonsense to talk of growing white Daffodils on the London clay. I most fully endorse that gentleman's words, and can only imagine that he has arrived at his conclusions after many and various attempts to cultivate these lovely flowers on the Irish clay. Whether in London or elsewhere, no one but a pure novice would ever make the attempt, for if we take the whole army of hardy bulbous plants many of them having vigorous constitutions—how many can be grown on clay, much less these choicer Daffodils. I know a provincial garden where even the Poet's Narciss will not do more than exist, the same garden growing herbaceous *Phloxes*, *Roses*, *Dodecatheon* *Jeffrey*,

anem, and many other things to perfection; the soil in this case is stiff, overlying blue lias clay. Surely Mr. Hartland does not wish to infer that white Daffodils cannot be grown near London at all? If so, then let your correspondent deepen his experience in this particular, and not thus dream of difficulties unknown, at least to the writer. Our soil is a beautiful light, fibrous loam, of which we have an average of nearly 2 feet deep, with a sub-soil of splendid gravel nearly 5 feet through. For upwards of fifty years this was one of many meadows belonging to a farm near by; hence we have an abundance of fine turf which is all turned in, and in this natural soil with a little cow manure added, clematis and its forms, albicans, tortuosus (syn. *Leda*), *moschatus*, *William Goldring*, and others revel; and, apart from our own stock of tortuosus, I had the pleasure a few days since of inspecting several thousands of its bulbs, which have stood for several years undisturbed, sufficient in itself to prove the fallacy of Mr. Hartland's remarks; these luxuriate in quite ordinary soil, and are about nine miles from Charing Cross.—E. JENKINS, *Hampton*.

MY AURICULA GARDEN.

THERE are some persons who appear to fancy that those who grow Auriculas under glass for exhibition purposes have no conception of growing them in the open ground. Really it is not so. There is scarcely one of us—perhaps not one of us—who does not grow Auriculas in the open border in addition to his choice collection in frames or in a house. Most of us are raisers of seedlings, and we raise some that, while not good enough to name, are yet too good to be thrown away, and the question arises, how best to utilise these. I do it in this way: I have a border some 12 feet by 6 feet facing the south, and raised some 8 inches above the path. It is edged with pieces of bricks, and over this kind of wall or fence falls a margin of *Amblycista violacea*, and so when heavy rains fall the soil is not washed down. Here, then, I plant out Auriculas, and they are just now in flower, and a very pretty sight they make; more than that, they give some useful seed. Then I have a mixed flower border, and alpine Auriculas make a very pretty and appropriate edging next the Box, and they are also used in many odd corners and places. When the Auriculas within doors are going out of bloom those outside take up the floral succession and carry it on some weeks later.

Now I plant out with some care, for I find this necessary. One has always by them some refuse Auricula soil, and this comes in very handy for the outdoor garden. I take out a good sized hole, and put some soil at the bottom; then the ball of roots is placed in it, and well lined with soil; some more is placed on the surface, and all is pressed down close together; finally, I give a surface dressing of Cocoa fibre. During the summer a top-dressing of soil is occasionally given. In this way I can maintain a very pretty outdoor Auricula garden, to my great delight.

I make this statement because it is thought that we Auricula growers are insensible to the beauty and usefulness of the Auricula in the open, and that we discourage attempts to grow it in this way. Why, the very reverse is the fact. The choicer plants are grown under glass, not because they are not hardy, but because they would flower in the most unsatisfactory manner in the open; and also because the rains, storms, and frosts of spring would rob them of their beauty. To me my Auriculas are a source of interest all the year round; and during the depth of winter, when they are at rest, they are yet able to attract the attention and regard of the enthusiastic cultivator. R. D.

Imported Hyacinth blooms. These appear to have been unusually abundant this year, as they may be found in every town and village in the kingdom. One may know them at a glance, for the sight of boxes full of flower-spikes packed like herrings without the slightest vestige of a leaf or green of any kind is anything but pleasant to the

eye. There is one side of the question that the Dutch growers appear to be overlooking, viz., if they swamp our markets with bloom the demand for bulbs must fall off, as an enormous quantity of bulbs are planted solely for supplying cut spikes, and at the prices these imported ones are retailed it is simply useless for home growers to try to compete. I am well aware that we have a goodly portion of the season still clear, but even if only a few weeks are taken off, the bulk of the trade in bulbs must be reduced.—J. G., *Hants.*

THE DAFFODIL COMMITTEE.

LIVING at a great distance from London, I find it now impossible to get Daffodil blooms to reach or be delivered by the postal authorities in time for the sittings on Tuesdays. I cannot post on Sundays, and even if I did they would not leave until Monday. It would be a great boon to parties thus situated if the hours for sitting were changed to 2 p.m. instead of 12 noon. In this way parcels will be surely in time from Monday's posting. There are a great many questions relative to wild plants to be settled—one in particular, the white Trumpet section. It is really puzzling this confusion relative to what is true *tortuosus* as distinguished from *Colleen Bawn* and *Leda*. The name *Colleen Bawn* first originated at one of the 1885 sittings with blooms sent from Ireland. From my point of view this plant has broad blue-green foliage, producing a snow-white flower rather late in the season and the outer perianth segments when you look at the flower fully having the twist of a ship's propeller, trumpet-shaped as a cylinder, and extended at the crown like the true form of *Haworth's bicolor*. Then, as regards the *tortuosus* of 1881 conference, this plant shows a facsimile bloom of *Colleen Bawn* in colour and foliage, and smaller, but the perianth segments are not so broad (snow-white in colour), yet lacking the propeller-like twist, and not so tall either as *Colleen Bawn*. Now, with regard to *Leda*, this plant has glaucous foliage, very tall, flowers when opening lemon-yellow, turning off to French white, not snow-white, as in *Colleen Bawn* and *tortuosus*, and many of the blooms having the appearance of a distinct flange at the crown, particularly when a little advanced in the season. The bulb of *Leda* is also quite distinct, being silver-skinned, like *pallidus precox*, and it blooms rather early. I have been doing my very best with large masses of the sections and noticing all their peculiarities, yet up to this have got very little assistance. I am half inclined to think they may be wild plants, but for their non-seeding properties, as wild plants seed so freely, while garden subjects are the reverse. Then, as a member of the Daffodil committee, I have been posting blooms to everyone who asks for them. I even went so far as to offer a five-guinea prize at South Kensington, to be competed for on the 12th of last month, for the best fifteen sorts of white Daffodils, three blooms of each, but failed to see a solitary entry, and for a bloom of the true *tortuosus*, as got from Tooting in 1881, I have searched two famous grounds near London, and could not see a sign of it, yet one firm offers it by the hundred.

Another set of Daffodils I want a word of controversy over; what is true *Haworth's bicolor* and *bicolor grandis*? Both are scarce plants and both have their substitutes; the true *bicolor* of *Haworth* is at Trinity College Gardens, Dublin, also at Temple Hill. I never saw it elsewhere, while the true *bicolor maximus*, or *grandis*, is at Temple Hill with its long, pale yellow crown and snow-white angular perianth segments so beautifully set and imbricated. It is from the back I know many flowers, particularly this one. Now the question for the Daffodil committee to settle is, what is the false Dutch *bicolor maximus* of commerce? Have we a place in *Haworth* for it? Exist it does, and existing there are two forms of *brevifolius*, and likewise a larger *tortuosus* of 1881 conference; I would like to call this the plant *Haworth* saw in photo., or used to dream of in stage-coach times; what joy he seems to have had at the rediscovery of ordinary *cernuus* in writing to the Rev. Canon Ellacombe, of Bitton Vicarage, in the year 1831. From my point of view

with this trial of white Daffodils, it matters but very little which of the lot we call *tortuosus*. Certainly the plant with the larger proportions, for the sake of fitting *Parkinson* and *Haworth*. If we grant this, the big one of all is at Temple Hill and snow white—evidently a wild plant, for it seeds freely, and up to this I have not sent it to South Kensington. The funny part about *Colleen Bawn* is this: at Manchester it is *tortuosus*, at Temple Hill it is *tortuosus latifolius*, while at South Kensington it has now been called true *Colleen Bawn*, and at Tooting I am told there is another *Dromo*.

Cork.

W. B. II.

PROPAGATING.

PANDANUS.—Seeds of many of the species are often obtained, and when such is the case all that is necessary is to sow them as soon as possible under the same conditions as Palm seeds. They should not be allowed to attain too large a size before potting them off, as the stout fleshy roots are very brittle and will bend with difficulty. Where seed is not obtainable, many of them (the dwarfier kinds especially) can be propagated by offsets; indeed, this is the method adopted for the increase of the variegated kinds. These offsets are generally thrown out just at the collar of the plant, and if it is potted deeper, so that the point of the junction of the offsets with the stem is completely covered, some of the shoots will form roots of their own, and can then be carefully detached from the parent plant and potted at once into small pots. Where the offsets are not already rooted, they should be detached with just a heel of the old wood, and potted into small pots in a very sandy compost. The pots should then be plunged in a bottom-heat of 80° to 85° in a close propagating case, when they will soon strike roots, and can then be shifted on into larger pots as required.

YUCCAS.—Generally speaking, the various kinds of *Yucca* are by no means difficult of increase, for most of them produce stout fleshy roots in the same way as the *Dracenas*. These roots, if cut off and placed under favourable conditions, soon form fibrous roots and push up a crown of leaves. From this circumstance it is often possible, should the specimen be in a pot, to turn it out, take off those stout creeping roots which in many cases will have made their way to the outside of the ball, and replace the plant in position without disturbing it further. Where the number is limited, a good way is to put each underground shoot in such a manner that its top, from whence the young leaves will be produced, is about an inch below the surface of the soil. The hardy kinds should, if possible, be sheltered by a frame till they commence to grow, and the greenhouse varieties push forth foliage all the quicker if given a little more heat than that in which they have been growing. The beautiful variegated forms can be increased in this way, and where there are any old, naked-stemmed plants of *Y. aloifolia variegata*, they can be cut down, and if the top is put in as a cutting it will soon root, and the stem can be divided into pieces about a foot long, which, if laid in *Coccoloba* refuse in a gentle heat, will push forth young plants from the dormant buds, and as the plants produced in this way form roots of their own, they can be potted off as soon as large enough. The old stems will often retain their vitality for a long time and produce several crops of young plants.

POINSETTIAS.—Where the old plants of *Poinsettias* have been kept rather dry after flowering, then shortened back, and placed in a moist growing atmosphere, they will be by this time studded with young shoots, which, when from 3 inches to 4 inches long, form the most suitable cuttings. They may be taken off at the point of union with the old wood, and inserted singly in small pots. The pots must be well drained, and the soil used of an open sandy nature, but sifted moderately fine. After insertion the pots may be plunged in a slight bottom heat, and kept fairly close and shaded till rooted. As the succulent shoots of the *Poinsettia* are liable to decay if kept too moist, care must be taken that

they are not over-watered, and at the same time, though in a close propagating case, a little air must be given in the morning to dry up any super-abundant moisture. As soon as rooted, they must be quickly inured to the air of the house, as a good deal of the success in their culture depends upon the encouragement of a short, sturdy habit of growth.

RHODODENDRONS.—The only class of *Rhododendrons* that have so far perfected their growth as to be suitable for cuttings are the hybrids of *Jasminiflorum*, *Javanicum*, and *Lobbi*. Where these have been kept during the winter in an intermediate temperature for the sake of their blossoms, many of the earlier shoots will be so far advanced as to have already lost their succulent character, and become slightly woody in texture. When this stage is reached they are then in the most suitable condition for cuttings, and in propagating these *Rhododendrons* it is necessary to catch the cuttings just at this particular stage, for if too young they are liable to shrivel up or decay, while if they are allowed to remain on the plant too long, the cuttings will often stand for months without rooting. From this circumstance a plant should not be allowed to perfect all its shoots before taking them off as cuttings, but rather the plants for propagating from must be looked over at this season about every fortnight in order to take off those shoots that have reached a condition suitable for cuttings. If not too long the cutting should be formed of the entire shoot taken off just at its base where two or three joints are crowded closely together. They should be taken off with a very sharp knife, and if a slice be cut from one side of the cutting for about an inch at its lowest part, a larger space for the production of roots is thus ensured. The soil for the cuttings should consist of very sandy peat and pounded charcoal or corks, the whole being sufficiently fine to pass through a sieve with a quarter of an inch mesh. A leaf or two being removed from the base of the shoot, it is ready for insertion, and as the leaves on the upper part tend to make it top-heavy, the cutting must be buried rather deeply in the soil. On this account a great many corks cannot be used for drainage, but if a good one is placed over the bottom the open nature of the soil will be sufficient; though except in the case of unusually large cuttings, a few more broken corks are beneficial. The soil must be pressed down firmly, and a little pure silver sand spread on the top. After a thorough watering the pots should be placed in a close propagating case, the best place for the purpose being that used for striking stove plants, as a little additional heat greatly accelerates the formation of roots. They will not be long in striking provided the cuttings are in a suitable condition. Grafting may also be employed for the increase of any variety, provided suitable stocks are at hand, but its principal use is for the propagation of those that do not root vigorously. The beautiful bright coloured *R. Duchess of Edinburgh* is one of these, and it will grow in a much more satisfactory manner when grafted than on its own roots. The older varieties, *Princess Royal* and *Princess Alexandra*, are generally used as stocks, the last from its vigorous habit being especially suited for the purpose. For grafting, the stock should be young and clean, while the scion may be slightly older than a shoot taken for a cutting. Side grafting is the method generally followed, and care must be taken that the two parts fit perfectly together. If this is done in a satisfactory manner, and tied securely in position, in about a month the union will be complete. After grafting the plants must be put in a close case and treated as cuttings till the two unite. As the confined atmosphere of the propagating case is very conducive to the increase of thrips, a sharp look out must be kept after them, as they soon disfigure the leaves if they are once allowed to effect a lodgment thereon. Besides these two modes of propagation this class of *Rhododendrons* can be increased by seeds; but, of course, they cannot be relied on to perpetuate any particular variety. As the varieties now in commerce represent the selected of several raisers, it is probable that out of a large quantity not one might be raised superior to, or even sufficiently

distinct from others in cultivation, yet the flowering of seedlings is especially interesting, and although they may not be quite up to the standard, are beautiful. If the earlier flowers were fertilised the seed-pods will be by now approaching maturity, and in that case they must be closely watched, as the pods will open and scatter their minute contents to the winds. Just as the seed-pod shows signs of cracking, it should be enveloped in muslin, or have a paper collar placed around it, to catch the seed. In sowing, well drained pots, or pans of sandy peat should be used, and being well watered the seeds may be sown thinly on the surface. From their minute character the seeds will not require any covering, except a pane of glass laid on the top, to be removed when the young plants make their appearance. When large enough they can be pricked off, and grown on as quickly as possible. It will be three years before they flower, and in some cases longer, but the result may possibly compensate for the length of time it is necessary to wait. T.

TREES AND SHRUBS.

W. GOLDRING.

THE SASSAFRAS.

(S. OFFICINALE.)

THERE is nothing particularly striking about the Sassafras as an ornamental tree, but it is of

is therefore effective when planted as a lawn tree, like one sees it at Syon, Kew, and several other places where old exotic trees abound. The illustration shows well the form of foliage as well as the flowers, which, by the way, are dioecious—that is, the flowers are male and female. The fruits are berries, not conspicuous, but somewhat like those of the Nettle tree or Hackberry (Celtis). The tree is only medium size. In its native habitat it grows, Gray says, from 15 feet to 50 feet high, and is common in rich woods, being especially abundant in North and South Carolina. In England it attains its fullest development, for some of the largest trees are quite 50 feet high. At one time it could be bought at nurseries, but since Loudon's time enthusiasm in planting ornamental trees has abated, and consequently it does not pay nurserymen to keep out-of-the-way trees in stock, so that when one asks for a really old and interesting tree, it is not to be got. There are, however, some slight indications that the demand for trees and shrubs out of the ordinary run is increasing.

Ribes aureum.—The flowering Currant (*R. sanguineum*) is everywhere met with, yet *R. aureum*, though equally beautiful, is to a great extent overlooked, being quite a rare plant compared with its



The Sassafras tree (*Sassafras officinale*). Branch, fruit, and flowers.

interest, inasmuch as it is one of the oldest foreign trees in English gardens. It was brought originally from North America as long ago as 1633, though it appears that it was introduced more on account of the medicinal properties it possesses than for ornament. It was known to the early gardeners, such as Gerard, who called it the Ague tree, its bark being employed as a remedy in several diseases, though its alleged extraordinary properties have since proved to be more apparent than real. As a cultivated tree it is not without merit, its leafage being handsome and of a peculiar soft yellowish green, that renders the tree distinct from most others. It

relative, though no reason exists why it should not be equally common, as both are plants of the easiest propagation and culture. The blooms of *R. aureum* are borne in great profusion, their colour being rich golden yellow, and besides this the bright, glossy, prettily lobed foliage renders it at all times an ornamental shrub. This glossy character of the leaves enables it to resist the smoke far better than *R. sanguineum*; indeed, I have seen it doing fairly well in towns where the latter could not exist. The genus *Ribes* is an extensive one, and though there are several kinds whose flowers are not particularly ornamental, on the other hand, many of them should find a place in any collection of flowering shrubs. The best would include, beside

R. aureum and *sanguineum*, the undermentioned varieties of the last: *atrorubens*, much deeper colour than the generally cultivated form; *albidum*, blush-white; *glutinolum*, lilac; *flore-pleno*, the flowers of which are double and later in expanding than the rest; besides *Gordonianum*, the colour of whose blooms suggests that it is a hybrid between the yellow and red-flowered kinds. In addition to these the Fuchsia-like *R. speciosum*, a strong-growing shrub with bright crimson coloured blossoms, is remarkably showy, the peculiarly spiny branches giving it a very uncommon appearance. Against a wall this kind will often flower quite early in the season, but does not bloom till May or June when planted in the open ground. It is seen at its best when in fairly good soil in not too hot and dry a situation. As a foliage plant, the golden-leaved form of the dwarf-growing *R. alpinum pumilum* is now very pretty, just as the clusters of young leaves are opening; indeed, during the first half of the summer it is seen at its best, as the foliage becomes much greener later on.—H. P.

TOP-DRESSING CONFERS.

FEW operations in tree culture are more efficacious than this. What a dusting of guano is in dripping weather to a green crop, that a dressing of fresh soil is to growing trees; it acts almost as suddenly, and its effects are far more durable. I believe, too, the action is compound; for the breaking of the turf over the roots of the trees seems to give nourishment to them, and it also cuts off such a greedy feeder as grass from the ground. And there is a stock of fresh food provided by the top-dressing, into which the roots rush up with a rapidity stimulated, one would think, by hunger. From whatever cause, this important fact is certain, that the roots almost follow the top-dressing, and the top mostly responds to them liberally the very first season; while the second gives even further proof of the effect of the dressing.

I was convinced of the great utility of the system by accident. Having occasion to level the surface of a pinetum, the peculiar position of many of the trees compelled me to level up, not down. The consequence was an accumulation of soil in some quarters from 6 inches to 30 inches deep. This latter I was somewhat afraid of. Roots buried so deeply might refuse to feed on the new or, indeed, on any material. These fears, however, proved entirely groundless. The deeper the dressing, the better the trees grew; not, however, that I would recommend any such depth; from 6 inches to 1 foot is sufficient at any one time. But, nevertheless, such was the fact. Ever since then I have been a convert to top-dressing Confers. To keep them growing at maximum speed, dress every third year; or if express growth is desired, and the trees are on the turf, dress every year.

Thousands of trees in isolated positions on the turf are simply starving into Moss-covered dwarfs. The original larder below is emptied of good things, and the Grass above is robbing the roots. Hence the weakness, leanness, and stuntedness of the trees. If a top-dressing of rich soil be given, the roots as well as the top and side branches will be much benefited. Remove the turf, cutting it thin to avoid the surface roots. Apply the dressing, and relay the turf directly. Where there is no turf, the operation is still more simple. F.

Andromeda japonica.—Apart from its beautiful blossoms, this evergreen shrub when in a young state has very handsome foliage, especially at the present time. Some specimens here, which have been rather sheltered and are consequently in a more advanced state than those fully exposed, are thickly studded with young shoots from 2 inches to 4 inches in length, the foliage on which is of a bright bronzy crimson colour, which at a little distance causes the bush to appear densely covered with bright coloured blossoms. This is by no means the only member of the Ericaceæ whose young growing shoots form such a prominent feature, some of the Himalayan species of *Rhodo-*

dendrons being a case in point, as in them not only are the young leaves brightly coloured, but the bracts that encircle the leaf-buds are equally effective. T.

Magnolia conspicua.—When paying a visit to the gardens of Digswell House, Herts, the residence of Mr. Brown, on April 21, a fine tree, about 20 feet in height, of the above was in full flower and presented a grand appearance, being literally covered with its pure white Tulip-like blossoms. After the severe winter we have just passed through it struck me as being more hardy than is generally supposed. No deciduous tree that I am acquainted with could be more beautiful at this season of the year. It requires to be planted in a sunny sheltered position, and the flowers are also very valuable when cut, as they last a long time.—EDWIN BECKETT.

Exochorda grandiflora.—In no collection of flowering shrubs should the Pearl Bush, as this is called, be omitted, for the beauty of its blossoms is further enhanced by the fact that they are among the first of our hardy shrubs to make their appearance. A suitable setting for the beautiful white blossoms is furnished by the delicate green of the unfolding leaves. In the open the flowers of this bush are sometimes injured by late spring frosts, but though to a great extent protected when treated as a wall plant, the light and graceful character of the entire specimen is lost. The fact of its being by no means common can be accounted for from the difficulty attending its propagation, as cuttings very rarely strike root, and layers are a long time before they can be removed. T.

KITCHEN GARDEN.

W. WILDSMITH.

TRIFLES AS APPLIED TO KITCHEN GARDENING.

I BELIEVE that attention to so called trifles in kitchen gardening is essential to success, and no season of the year could be selected better suited to illustrate and enforce this doctrine than the present. In days gone by there may have been gardens with men sufficient to keep all in good order without having recourse to the scheming and forethought that in these high-pressure, short-handed times is necessary to keep up a full supply of vegetables and the garden generally in neat condition. I know of no garden that can boast of such circumstances now; hence the necessity of forethought and of forecasting our work that no time may be wasted or crops suffer from timely lack of attention. This bright, the first real spring, morning (May 7) is welcomed, but the welcome is not unmingled with sadness in prospect of the difficulty of coping with the work that will quickly follow consequent on the change in the weather; but the practice of attention to trifles will greatly help us, and we shall commence with surface hoeing to kill weeds in some instances before they are visible, for my faith in this practice is so strong that during the summer-time it is no unusual occurrence for all hands to be told off on a hot sunny day and keep on till every bit of ground that it is possible to hoe has been gone over. Thinning out of seedlings is another of the trifles that we never postpone except when the ground is so dry that the work cannot be done easily without injury to the plants that are left; then, perforce, we must postpone till rain falls. The importance of an early attention to this matter of thinning is apparent from the fact that the work can be done much more rapidly than when the roots have got entangled together. Several kinds are now ready to thin out, such as Lettuce, Parsnips, and Turnips. Another important trifle is never to allow an exhausted crop to remain on the ground a day after that state has been reached, for even

if the ground be not wanted, unnecessary impoverishment of the soil is going on, not to mention untidiness where neatness might reign at the price of simply clearing the refuse to the rubbish heap. Our ground is, I was going to say, always newly cropped before the old one has been cleared off, and such is virtually the case, as succeeding crops are decided on long before the old crops are off, so that gardens of restricted size have their merits, contributing as they do to the exercise of one's mental faculties, and therefore to a higher state of cultivation. Over-production, too large a supply of vegetables, occasionally does happen from the vigilance thus exercised, but that, I contend, is a good fault, and all the writing to the contrary will never deter me from striving to get as much off the ground as possible. Other small matters that, so far as our kitchen garden work is concerned, are now needing attention are, indeed, but trifles; yet if neglected say for a week or ten days, the consequences will be increased work, some amount of injury or check, and, not least, a personal uncomfortable state of mind. There is the planting out of Tomatoes that have got pot-bound whilst waiting for fine weather that the work might be safely done; Peas to stake; drills in which we planted Cauliflowers to fill in now that rain has fallen—a procedure that serves as a mulching and prevents the necessity of watering, and also of earthing up; early-sown Broccoli plants and Savoys to thin out before they get damaged by overcrowding, to plant some of the last-named on the ridge of Celery trenches whilst the ground is moist; Strawberry plots to weed and re-mulch with long stable litter, that it may get washed by rain before the blossoms open; Potato haulm, protection from frost, is as yet a daily anxiety and labour to keep covered up. To conclude, it is largely the pleasure derivable from seeing all crops flourishing that enables us to pay such close attention to details of cultivation.

Beek's Dwarf Green Gem Bean is not nearly so much grown as its merits deserve, as it is one of the most prolific and useful of the whole of the Broad Bean tribe. The space required for a row is very small, and the Beans are of the size that rank them as first-class vegetables. It is by no means a new thing, but somehow it has never become generally known or grown. I find it answers better for successional sowings than the larger kinds, and a few rows may be grown on borders or positions where the tall kinds could not be utilised. When cooked it retains its beautiful dark green colour, which is such an attractive feature in good vegetables.—J. G. H.

Vegetable prospects.—In THE GARDEN of April 30 (p. 391), "Hortus," in an article on this subject, states that it will be long past midsummer before he can cut spring Cabbages. I should after that time most unhesitatingly put them down as summer Cabbages. If such be the case, better not grow spring Cabbages at all when we have a Cabbage that can be grown to perfection in about four months and under. I have grown Sutton's Little Gem to maturity in that time. The Cabbage that has stood the past winter here with impunity is Ellan's Early, of which I have already cut nice little hearts. I have another plot of the same Cabbage with several others, all of which have bolted, thus showing the great necessity of making two sowings to stand the winter. I have been cutting Broccoli for some time. The sorts that stood best are Carter's Late White, which stood well, I having only lost 5 per cent.; of Veitch's Model I lost 10 per cent.; Knight's Protecting I have lost 25 per cent., and some others swept clean off. Chou de Burghley and all the Savoys were killed outright. The Broccoles have stood well, as also have all the Kales. We have had a continuous supply of Brussels Sprouts since last September, and Cauliflowers and Asparagus are now making rapid strides, so that we shall soon again

hear less murmuring about the past winter. Peas with me have come up rather badly (maincrop varieties). Early Peas sown in February are looking well, and with fine weather will soon be in flower. Lettuces have stood very well. I grow a selection of the old Brown Cos. Fruit trees look remarkably well in this district.—W. A. COOK, *Holme Wood, Peterborough.*

HOME-GROWN I. MARKET VEGETABLES.

A CORRESPONDENT, who some years ago soliloquised over that early importation of Pines from St. Michaels, was, no doubt, quite correct, and within his right in stating that the culture of English Pines was doomed; but when he took this fact as his text for asserting that British gardening generally is going to the dogs, it might have been as well had he kept the matter to himself or made a note in his diary for the benefit of the coming New Zealander. That gardening, like all other matters mundane from the time Eve picked the first Apple down to the advent of Gilbert's Jubilee Chou de Burghley, has undergone many changes, no one for a moment will deny; but few, I think, will agree with "W." in his assertion that the thousands and tens of thousands of well-to-do owners of gardens in this country will turn these pleasure-giving spots into hen-yards because vegetables of a certain quality can be bought at a cheaper rate than they can grow them.

Assuming that every well-to-do owner were living within reach of a good market, a very small percentage might risk the destruction of their digestive organs through patronising those narts, and very wisely they would act by making homeopathic dishes suffice. But, apart from the immense pleasure which they derive from their gardens, the majority who have been in the habit of eating fresh, sweet, succulent vegetables would insist upon having their home-grown Potatoes, Cauliflowers, and Peas, and the men who could not supply them from frames or warm wall borders, which I maintain are better than hedge or tree shelter, would soon have to make room for others capable of arranging their crops to meet without waste the requirements of the household. Possibly some of these might cost five, or it may be fifty, per cent. more than they could be bought for, but from this source they must come or be dispensed with, and surely "W." will not insult his brethren of the blue by asserting that a fresh sweet Savoy from the home garden is not better than one that has travelled by rail or road to the nearest market, and after sundry pitchings and handling requires cooking with an extra grain or two of soda. Good gardeners do not grow Broccoli by the thousand or Cabbages by the acre unless they are wanted; neither do they go into the culture of Peas that are not worth the sticks, otherwise how does it happen that they carry off all the leading prizes at the shows and gain for themselves the well-merited character of first-class cultivators?

Stripped of its verbiage, "W.'s" last lamentation amounts to this, "Can Mr. Coleman tell us what becomes of the thousands of Broccoli and acres of Cabbages," &c.? Willing as I am to answer all reasonable inquiries and queries, never having grown or encouraged the growth of a plethora of common vegetables, I do not feel bound to answer that question. If I could show that they might be disposed of at a fair profit, I might live to see my statue erected in Mud-Salad Market, as every trade grower would contribute a trifle towards its cost. This honour, however, I do not covet, and as "W." is inspired, I will leave him to solve it in his own way. Meantime, the owners of gardens, according to his own showing, having become so thoroughly commercial, if not parsimonious, perhaps he will explain how, only last week, they flocked to Downside, Leatherhead, by trainloads, where, for duplicate Orchids, they paid sums varying from ten to three hundred and ten guineas. Whilst shrewd gentlemen, who know what they are about and how the pulse of the nation beats, can afford to pay three big figures for a small plant that might be packed in a hat-box, "W." may safely take fresh heart, for, bad as the times are, men much younger than either of us will live to see their grandchildren digging

home-grown Potatoes from frames and cutting delicious Cauliflowers from cap-glasses.

WILLIAM COLEMAN.

A SUCCESSION OF CELERY.

GOOD Celery is always a valuable vegetable, as it commands a high price in the market, is much appreciated in the kitchen, and it can be sent to the table cooked or uncooked. Stewed Celery is a most delicious vegetable, and although professional cooks use it largely in this way, I do not think small families fully understand its value in this form, or a succession of Celery would be a leading desire with all cultivators. In fact, in places where the value of Celery is thoroughly known it can never be ready too soon or preserved too late, and by giving attention to successional culture it may be had in good condition from July until May. Those who plant one good batch of Celery and think they have done their utmost with it are mistaken. It ought to be grown in three distinct lots—one for use from the end of July to November, another from November to March, and a third from March until May. One plan is to sow seed for the first lot, take the foremost of the plants in hand as soon as they can be handled and allow the others to remain crowded in the seed quarters for some weeks, and then transplant more of them to form a second batch of plants. But this system is never satisfactory, as although the first lot of plants may do well, the second batch is sure to show the effects of crowding and retention in the seed-pots or boxes by seeding prematurely. The earliest crop should be sown in February and planted out about the beginning of May, but the later crops are sown too soon as a rule, and more dwarf and better plants would be produced if sowing was deferred. All Celery will gain maturity in four months after sowing, especially in the summer season of the year, and instead of sowing November Celery in April, as is often done, the end of May or any time in June is soon enough to sow it. April-sown plants, which are not required until November, will be ready for use in September, and after gaining maturity they will have to remain on at a standstill until the winter, and this is not in favour of their keeping well, but if they do not gain their full size until November they enter on the winter in prime condition, and there is no difficulty in keeping them in first-rate condition. A great deal of Celery becomes soft and spongy during the winter. Many cannot account for this, but I think too early sowing and having the plants ready before their time is the main cause of it, and an easy remedy is in the hands of everybody. Spring Celery, too, is often ready for use in the autumn or early winter, and it is much against it that it should be kept dormant for some months before it is used, but if sown in July and grown so as to have plants about half or three parts their full size by November, it will grow on slowly during the winter and turn out first rate in the spring. It is now too late to give any hints as to the sowing of the first crop, as, like scores of plants we possess at present, they should be ready for planting at once. They should be put in double rows in trenches 8 inches or 10 inches deep and 18 inches wide. Give them abundance of manure, as there is no danger of their being forced on too fast; transplant with good balls of soil attached to the roots; tread the soil very firmly round them immediately after planting; place a little short manure between the plants as a mulching, and water copiously in dry weather. In this way a fine crop will quickly be produced. Now comes the second crop. After the month of May it is not necessary to sow Celery seed in heat; it may be sown in a cold frame, under a handlight, or in the open air, and the July sowing should always be made in the latter position. The seed should be sown very thinly, and only covered over to a depth of a quarter of an inch in rather rich soil. As many frames are now being emptied of bedding plants, if one light can be given up to the Celery seed, it may be sown thinly, and the plants allowed to remain until planted out in the trenches, but they must never be allowed to become crowded, and if there is any indication of this, draw the large ones up, and plant them about 3 inches apart elsewhere.

They will succeed if treated like Cauliflowers while young on any warm border, and those hardy-reared plants very often prove the most compact and robust throughout their growth, as plants reared in heat are always apt to receive a check unless they are well and carefully hardened off before planting out. Celery being planted now may follow Broccoli or any crop that has served its purpose, and the later crops can follow Potatoes, Peas, and such like. A rather light soil, free from grubs, is by far the most suitable for Celery. I have recommended a good deal of manure to be used with the earliest Celery, but the second crop should not have so much, and the third still less, as manure forces it into very luxuriant growth, and although this is very desirable where quick returns are the aim, compact and substantial growth is the hardiest and best for standing the winter, and when that proves severe or the district is a cold one, those points are more valuable than luxuriant growth. CAMBRIAN.

The hardiest vegetables.—I thank "W. L." (p. 390) for the generous manner he criticises my writings, and also for the good word he gives your readers on the Jubilee Green. But at the finish "W. L." says Chou de Burghley is not so hardy as I would have you believe. I send you two plants which have with some thousand others stood the winter in an exposed place; you will see what they are like. If Chou de Burghley is not hardy, I then confess I really do not know what is. R. GILBERT.

* * * The plants sent did not appear to be the least injured. Ed.

Market Cabbages. At a time when even with the exceeding dearth of white Broccoli seen everywhere in home market gardens, such good greens as Purple Sprouting Broccoli are selling at from 6d. to 9d. per bushel, it is evident that material which has to be a year on the ground, dating from the time of seed sowing, can hardly be profitable, let the crop be ever so good. But whilst there is an abundance of Sprouting Broccoli and heads of white Broccoli from warmer climes, good hearted Cabbages are scarce, and when good obtain fair prices. Of course, the chief difficulty to surmount, even with such hardy things as Cabbages, is the bringing them safe through the winter unharmed, and only the hardiest kinds will so stand. But there is something to learn in respect to time of planting out, for if the plants become too large they suffer from frost and snow terribly, whilst if too small it is then difficult to market them in the spring in time for another crop to follow; and that is important, because a late-gathered spring crop means the loss of the season for the year. Large heading kinds do admirably where sheep can follow and clear off the refuse, but for a profitable market the best are those of moderate size turning in very early and planted up thickly, so that no ground is wasted. It is hard to name kinds that may be found specially suited for this sort of work, because all may not be precisely hardy on diverse soils; but there are plenty of such, as any market grower can soon ascertain from his seedsman. In ordinary seasons the first week in August is a very good time for sowing seed, and the third week in September for planting out, following upon Potatoes, the soil being light and deeply worked. Such a crop should have headed in by the middle of May. A. D.

SHORT NOTES.—KITCHEN.

Chou de Burghley.—Having now grown this vegetable four years, I am able to endorse all that Mr. Gilbert has said in its favour. I certainly find it one of the most useful vegetables I grow, and should not like to be without it. By sowing twice, first about the middle of March and again the second week in May, we are able to cut Chou de Burghley from the beginning of October till the end of March. I find it very hardy, more so than any Cabbage I know.—R. G. G.

Seedling Cucumbers.—I send you a Cucumber, the result of a cross between Tender and True and Improved Telegraph, the last named being the seed parent. Will you kindly give me your opinion of it? I have been cutting for the past three weeks fruits from 1½ inches to 23 inches long. —STEPHEN CLARKE.

* * * The Cucumber sent was a very fine sample, but no improvement on existing varieties.—Ed.

The best position for Lettuces.—Lettuces vary very much in quantity and quality according to the position in

which they are grown. No one need ever expect to get good Lettuces from poor soil, and they absolutely refuse to become of any merit where the earth is very shallow. I have tried them in all positions, and for several years past we have invariably secured the best of our Lettuces from the ridges between the Celery trenches. It is astonishing how large, crisp, and fine they grow in this position, and were I asked to grow the finest Lettuces I could possibly produce, I would never wish to grow them in any other position than on a Celery ridge.—J. MEN.

KITCHEN GARDEN NOTES.

PLANTING AND THINNING. At last we have been favoured with sunshine and showers, the perfection of weather in which to plant out Cabbages and Cauliflowers, and thin out Turnips, Spinach, and autumn-sown Onions. This is the last planting of Cabbage we shall make till the autumn, but another small planting of Cauliflower Dwarf Erfurt (spring sown) will be made, and after that two or three plantings of Autumn Giant Cauliflower, the best of kinds for late summer and autumn supplies. The plants have just been pricked out on a warm border, and will be ready for the first planting out in about a month. Turnips Early Milan and Early Munich have been thinned out to from 1 inches to 5 inches apart, this being ample space, as they are always used in a very young state. Spinach we thin out to about the same distance, as large leaves are asked for. The thinnings are not appreciated, though the vegetable is just as good in that young state. The real cause of objection is to be found in the longer time it takes to prepare for table than leaves that are fully grown. We planted out some time ago all the autumn-sown Onions we are likely to require, but a few rows were left as sown to afford supplies as wanted, and it is the remainder of these that have now been thinned out to afford room for those that are to be left to grow to a full size.

RHUBARB AND SEAKALE. The pots, boxes, &c., that have been used on the Rhubarb plot to gently force it on have been cleared away, and a few blanks made good by planting the roots, or portions of them, that were lifted for forcing indoors, after which the ground was lightly forked over, and except hoeing about twice during the summer to keep down weeds, this branch of our work is finished for months to come. From Seakale the ashes placed round the crowns for blanching have been taken away, the flowering shoots cut down, and all but two of the most promising shoots on each crown rubbed off. Only one growth, the strongest, will be permitted to remain on the plants of the newly planted plot, and all others will be rubbed off as soon as discernible. The ground from which our late supplies of Kale have been taken by covering up the crowns with ashes, having had a good dressing of Beeson's manure, is now being deeply dug and as close up to the crowns as it is safe to do it without injuring the roots. Seedlings are just emerging through the soil, and slugs having found them out, the usual antidotes, soot and fresh lime, will be applied forthwith.

BROCCOLI. The final sowing is now made, and profiting by the past two severe winters, the kinds that have stood best are those we have now sown. They are Sutton's Late Queen, Safeguard, Veitch's Model, and Purple Sprouting. Late Queen is the gem of the lot. Purple Sprouting we are now cutting in quantity; this and Cottager's Kale, or as it is sometimes called Asparagus Kale, are now, and have been for some time, our mainstay in the way of green vegetables; though, up to a fortnight ago, Brussels Sprouts made up an excellent trio. The latter are now over, but the two former will, I think, last till the spring Cabbages are in, which we have usually been able to commence cutting by the middle of April; if we could cut by the middle of May this year, but if another week be added they will be no finer than, as a general rule, they are in April.

GENERAL WORK.—To make successional sowings of Lettuce, Radish, Mustard and Cress, the two last-named we put on any bit of spare ground, and from now till end of September sow a little every week. To plant out Tomatoes, we have no wall to give up entirely to them, but a few are planted against any bare bit of the fruit tree walls, and others are planted on a border having a western aspect and well screened from wind. To plant out

Vegetable Marrows on ridges prepared by throwing together all the spare vegetable refuse and manure. When first planted out it is necessary to guard the plants from wind and frost, either by handlights or a thick screen of evergreen branches. To draw soil close up to Potatoes, so long as there is any risk of the haulm being injured by frost, and any that are already too high to be protected in that way we cover with straw or litter whenever there are signs of frost. To make another sowing of Peas, and also of dwarf French Beans, and in dry weather, whenever opportunity offers, hoe between the rows of Carrots, Parsnips, Onions, Peas, and Broad Beans.

W. W.

ORCHIDS.

W. H. GOWER.

THE TRICHOPILIAS.

THIS is a small genus of handsome-flowered Orchids, nearly all of which are natives of

Trichopilias form handsome specimens when cultivated in pots, but the flowers are seen to the best advantage when the plants are grown in hanging baskets. They thrive best in the cool end of the Cattleya house with a genial moist atmosphere and moderate supply of water to their roots during the growing season, but very little is requisite in the winter; yet the supply must not be entirely withheld for any length of time, otherwise the plants will suffer. It is most important that the soil for Trichopilias should be sweet and open and the drainage free, as few Orchids so rapidly decline in health under adverse conditions. In potting these plants they should be well elevated above the rims of the pots or baskets. Thus treated all superfluous moisture rapidly passes away from their delicate roots, and as the flowers are produced below the leaves it affords more space for their display. The potting material should



Trichopilia suavis.

Equatorial America, where they abound in the humid shady forests of that region, for the most part at moderate elevations. They are nearly allied to the Maxillarias, but differ in having long spreading sepals and petals, but more especially in the anther cap, which is curiously ornamented with plume-like tufts of hairs. These plants vary considerably in size, although all of them are dwarf; they are characterised by their compressed pseudo-bulbs, which are enveloped in large and curious sheaths, and bear a solitary thick leathery leaf. The scape is short, bearing one or two flowers (but sometimes several are produced upon a spike), which in nearly all the known kinds are showy.

consist of fibrous peat and living Sphagnum Moss, through which a few nodules of charcoal should be dispersed. Trichopilias are very free bloomers; moderate-sized specimens will frequently produce from fifty to a hundred or more flowers, and these in most instances appear in spring and early summer.

T. SUAVIS, of which we here give an illustration, ranks amongst the largest of the species, and is a fair representation of their general contour; the sepals and petals are creamy white; the funnel-shaped lip is also white stained with yellow in the throat, blotched and spotted with rosy crimson. The flowers yield a grateful perfume resembling that of Hawthorn. The rare

variety *alba* is entirely white, saving a stain of yellow in the throat. It comes from Costa Rica.

T. TORTILIS.—The flowers of this species resemble the previously named kind in shape; the sepals and petals are narrow, spirally twisted, brown in the centre, bordered with yellowish white; lip yellowish white spotted with brown and rose. It comes from Mexico.

T. HYMENANTHA is a distinct plant, with long, narrow, thick, and fleshy leaves, which are pale green on both sides. The raceme is drooping, bearing six to eight flowers; sepals and petals white, slightly twisted; lip nearly flat, white speckled with reddish purple, and toothed round the edge. It is a native of New Grenada.

T. COCCINEA comes from Central America; the sepals are long and spreading, slightly twisted, reddish brown, narrowly bordered with white; the trumpet-shaped lip is white on the outside, reddish purple, shading to crimson in the throat.

T. GALEOTTIANA is a plant with yellowish white sepals and petals; lip deeper yellow, passing into orange in the throat, and freckled with linear markings of reddish crimson. It grows wild upon the snow-capped mountain of Turialva, in Veraguas, but at no great elevation.

T. CRISPA is a fine species of robust growth; the sepals and petals are large and broad, carmine-red, narrowly bordered with white, and undulate on the margins; lip white outside, deeper red within than the petals, shading to dull crimson in the throat, front lobe crisp, and margined with a narrow white border. The variety *marginata* has stouter pseudo-bulbs and broader leaves; the flowers are also larger and much deeper crimson in colour. Both forms come from Costa Rica, where they grow upon trees overhanging streams of water.

T. LEPIDA somewhat resembles the last-named kind in habit and appearance, but its showy flowers are very distinct, and are some 4 inches or 5 inches across; sepals and petals rosy red, with an irregular white border; the trumpet-shaped lip is purplish crimson, becoming deeper in the throat, with a broad irregular white border, spotted and blotched with crimson-purple. In the variety *rosea* the lip is of a bright rose colour in the centre. This species and its variety come from Costa Rica.

Sobralia leucoxantha.—This is an elegant dwarf-growing member of a family too much neglected by Orchid growers; the distinct growth and numerous handsome flowers render these plants conspicuous in a collection of Orchids. The complaint against *Sobralias* is, that the flowers are very fugitive; but to counterbalance this, a great number of blooms issue from each spathe, so that a long succession of flower is maintained. This rare variety grows about 18 inches high, producing flowers between 5 inches and 6 inches across, sepals and petals white, lip white externally, beautifully crisp on the edge, the throat being rich orange and yellow.—G.

Cattleya citrina.—This is considered by some Orchid growers a most difficult plant to flower, but here it seems to thrive. We have one plant at present bearing six beautiful rich yellow wax-like flowers of great substance, the lip being beautifully frilled and edged with white, which contrasts well with the deep yellow. *C. citrina* succeeds best in a cool house in summer, and in a temperature of from 45° to 50° in winter. It requires no soil whatever to grow in, just merely fastened with copper wire to a teak raft or a piece of cork. This drooping habit not only protects the blooms, but adds greatly to their beauty, as it is the only way in which the flower can be seen to perfection. *C. citrina* should be suspended from the roof. When

mounting them on teak rafts, which snit them best, care should be taken to have the bulbs placed downwards. Water freely in the growing season; afterwards withhold the supply.—S. B. G., *Nearbridge*.

Odontoglossum elegans.—This is supposed to be a natural hybrid between *O. cirrhosum* and *O. cristatum*. That the first named is one of the parents there can be little doubt, but, judging from the plant which was recently in bloom at The Woodlands, Streatham, the second parent is very likely *O. Halli*. The flowers are large, the sepals and petals are somewhat narrow, with much the character of those of *O. cirrhosum*, yellowish white blotched with chocolate; lip triangular in shape, toothed on the disc, white in front, with a large bright brown blotch on the centre, with a few spots of the same colour near the apex, crest deep yellow. A coloured plate of this form appeared in THE GARDEN, Vol. XXVI, p. 276. G.

Dendrobium Dalhousianum.—I send you a piece of *D. Dalhousianum*. The plant is 4 feet 6 inches high, carrying seven spikes of flower and was imported from Burmah about four years ago.—G. T. S., *Godstone*.

* * * The inflorescence sent represented a very fine form of this superb species. The flowers measured 4 inches across, the sepals and petals being rich creamy yellow suffused with soft rose colour; lip recurved in front, white, crested all over with short filaments, the basal part being lined with crimson, and bearing on each side a large eye-like spot of bright crimson-purple. The plant is a tall grower; therefore, those with small houses only cannot accommodate it; but where space will admit of its culture it should never be absent from a collection, as no finer species has hitherto been introduced.—Ed.

SHORT NOTES.—ORCHIDS.

Odontoglossum gloriosum.—A very handsome form of this fragrant species is now flowering at Selborne, Streatham, the residence of Mr. J. Southgate. The flowers are large, sepals and petals white, irregularly spotted with chestnut brown. This variety was imported a few years ago under the name of *O. nœvium majus*, but although it is not the latter variety, it is a very distinct and charming plant, and equally as free growing and hardy as the typical *gloriosum*.—G.

Lælia purpurata alba.—I send by parcels post a flower of *Lælia purpurata*, which I shall be much obliged by your informing me through your journal if it be any special variety. It is taken from an imported plant purchased in 1884, and has at the present time sixteen fully-expanded blooms, and has been in flower during the last fortnight.—W. S. Brown.

* * * A very fine form of *Lælia purpurata alba*, the flowers measuring 8 inches across. We have seen varieties in which the sepals were wider, consequently forming a fuller flower.—Ed.

Destruction of wild flowers.—I am much interested in what Mr. Coleman says about the fashion of gathering lovely wild flowers in such quantities, and so carelessly as to destroy them, and not only the flowers, but the woods in which they grow, especially in places like Eastnor Park, where they are only half wild. This is, I truly believe, a mere fashion, for it is hardly possible that real flower-lovers would act so ruthlessly. We are not free from the pest even in this region. In that remarkable geographical formation, the angle between the Loch running up to Fort William and Loch Eil proper, there are several islets; one of these is called the Lily Island, because it is, or, alas! was, nearly covered with single Daffodils. Tradition says they are not really native plants, "that there's no like o' them in the country," but that they came from France to decorate an ancient garden belonging to a castle built on the island by a Lochiel of some remote period. Thus these beautiful flowers have occupied the same spot for centuries, but within the last few years the modern craze for wild flowers has reached Lochaber; people have gone over in boats to the Lily Island, not only gathering the blossoms, but digging up the roots, so that this year no Daffodils were to be found upon a reasonable number were required for the Easter decoration of the Episcopal Church at Fort William. This wanton mischief is more completely

inexcusable than it would otherwise be, because moderate gathering of wild flowers by those who really love them would do no harm; when we gather blossoms from our gardens, we not only abstain from following Mr. Coleman's suggestion as to beating the beds with mats, but are careful not to trample them with our feet; and anybody with right feeling would act in the same way in a Cowslip field or on a Primrose bank.—E. C. M., *Lochalther*.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL.

MAY 10.

THE usual fortnightly meeting of the fruit and floral committees was held in the conservatory, and was rendered very attractive by the groups of Roses, &c., exhibited.

The following first-class certificates were awarded, viz.:—

NARCISSUS CAPTAIN NELSON.—A very handsome variety of the large trumpet section, of a rich golden yellow colour, with lighter petals. Exhibited by Mr. T. S. Ware and Barr and Son.

NARCISSI GLORIA MUNDI, GLORY OF LEYDEN, MADAME W. DE GRAAF.—All of these shown by Messrs. Barr and Son.

PRIMULA SIEBOLDI (Ware's White).—A pure white variety with large flowers. Shown by Mr. T. S. Ware.

FRITILLARIA PALLIDIFLORA.—A variety with pale yellow flowers and a few dark spots. Exhibited by Mr. T. S. Ware.

The most remarkable feature was doubtless the *Cypripediums* staged in competition for the Veitch memorial prize, for which there were two competitors, viz., Mr. R. J. Measures, Cambridge Lodge, Camberwell, and Mr. G. F. Tautz, Studley House, Hammersmith. The group from Mr. Measures was perhaps the finest collection of Lady's Slipper Orchids which has ever been staged in public competition in this country. It consisted of about fifty varieties and double that number of plants. The artistic manner in which the plants were arranged, and their different forms and colours so well contrasted, amply proved that these plants are most effective and ornamental even without the addition of other flowers. The most notable kinds were *C. curvandrums*, *superbiliaris*, *selligerum*, *Robelini*, *Lawrenceanum*, *laxigatum*, *caudatum* in variety, *ciliolare*, *Curtisi*, *cardinale*, *Druryi*, *vernixium*, *Stoneli*, *Argus* in variety, various forms of *barbatum* and *Boxalli*, and numerous others. The plants were arranged in a groundwork of Maiden-hair Ferns and small Palms, so that the pots in which they were growing were completely hidden. This group deservedly received the prize. Mr. Tautz exhibited *C. Lawrenceanum*, *niveum*, *pubescens*, *Peteri*, *Sedeni*, *Lowi*, *Druryi*, *barbatum* in variety, *ciliolare*, *Boxalli*, &c.—in all about a dozen and a half varieties.

Mr. G. Cragg, nurseryman, Crouch End, sent a group of seedling *Auriculas*.

Mr. R. Dean, Ranelagh Road, Ealing, staged a group of *Polyanthus* in several varieties, all very handsome.

From Mr. Miles, nurseryman, Shoreham, came plants of a new Regal *Pelargonium* named Pearl. It appears robust and dwarf in habit and very floriferous, flowers semi-double, pure white, with just a spot or two of carmine. It will no doubt become exceedingly popular for furnishing purposes as well as for cutting from.

Mr. De B. Crawshay, Rosefield, Sevenoaks, exhibited three plants representing as many forms of *Odontoglossum crispum*, all remarkable for size and fullness of flower.

Mr. Shuttleworth, new plant merchant, Clapham Park, sent *Cymbidium tigrinum* and a curious new hybrid *Odontoglossum*, which received the provisional name of *Carderi*. It is very distinct, and will probably prove to be a fine variety with further cultivation.

Mr. G. F. Tautz, Studley House, Hammersmith, sent a small plant of the curious and rare *Odontoglossum Schillerianum*, cut flowers of several varieties of *Cattleya Mendeli*, and *Phalenopsis Sanderiana*.

Mr. Rumsey, Joyning's Nursery, Waltham Cross, sent cut Roses, many of which were of great excellence, particularly a stand of twenty-four blooms of *Souvenir d'un Anni*, which were of a most exquisite tint of rosy peach. Other fine blooms were Madame Jules Margottin, Marie Van Houtte, Amazon, Catherine Marnet, Madame Lambard, Charles Lefebvre, Paul Neyron, *Souvenir d'Elise*, Baroness Rothschild, and *alba rosea*. A bronze Banksian medal was recommended.

A group of *Narcissi* came from Messrs. Barr and Son, King Street, Covent Garden; the blooms were not overcrowded, and being arranged with their own foliage had a very pleasing effect, their appearance at this date clearly indicating the unusually late spring. The group was awarded a silver Banksian medal. Messrs. Collins Bros. and Gabriel, Waterloo Road, were awarded a bronze Banksian medal for a large group of *Narcissi*, &c., these also being tastefully arranged with their natural foliage. Mr. T. S. Ware, Hale Farm Nurseries, staged a large group of *Narcissi* and miscellaneous plants and flowers, for which he was awarded a silver-gilt Banksian medal. Mr. E. H. Krelage, Haarlem, sent a collection of *Tulips* and *Narcissi*.

Mr. A. Waterer, Knap Hill Nurseries, Woking, staged a group of hardy *Azaleas*, consisting of some very fine forms of mollis and numerous plants of *A. pontica narcissiflora*, the flowers of which are soft lemon-yellow, semi-double, and very fragrant; also several plants of *Cydonia japonica Simonsi*, in which the flowers are very large and rich deep crimson in colour.

Mr. J. James, Farnham Royal, Slough, showed flowers of his very fine strain of *Calcicolarias*.

Messrs. Tuchman and Sons, Upper Tooting, sent seedling *Rhododendron javanicum*.

Messrs. W. Paul and Son, Waltham Cross, sent a remarkably fine group of Roses in pots. They consisted of well-grown dwarf plants edged in front with a row of trays of cut bloom; the most notable flowers in the collection were *Magna Charta*, Countess of Rosebery, Duke of Teck, Grace Darling, Madame Falcot, Camoens, Glory of Waltham, Violette Bouyer, La France, Maréchal Niel, Captain Christy, Devonensis, Red Dragon, Alexander Bernaix, Duke of Wellington, Crown Prince, Niphetos, John Hopper, Dr. Andry, and M. Furtado. A silver-gilt Banksian medal was awarded.

Messrs. Pearson and Sons staged a fine lot of cut trusses of single zonal *Pelargoniums* of wonderful size and shape, the best being W. Bealby, rosy scarlet; Rev. R. D. Harris, soft salmon-scarlet; Sissy, salmon, shaded orange and pink; Ruby, rosy scarlet, white eye; Norah, blush white; Mrs. Millar, dark crimson; Mrs. Johnson, rose; International, white, very large; Lady Francis Russell, clear rose-pink; C. H. Swinstead, vermilion; *Aspasia*, white; Edith Pearson, rosy salmon; Mrs. David Saunders, pale lilac-pink; and Lady Chesterfield, salmon, suffused with orange.

Fruit committee.—Mr. Norman, Hatfield House Gardens, sent six remarkably fine bunches of Lady Downes Seedling Grape, which had been ripened in the last week in September, 1886. The berries were as fresh and plump as they were at that time. Black Hamburgs of this season's growth came from Mr. W. F. Hume Dick, Thames Ditton, who also sent a scarlet-flesh Melon called Thames Ditton Hero. This the committee wished to see again. A seedling green-flesh Melon came from Mr. Parker, Impney Gardens, Droitwich, and Mr. Goodacre, The Gardens, Elvaston Castle, Derby, sent a dish of fair-sized Elvaston Long-keeping Onions. From the society's gardens at Chiswick were sent several varieties of Rhubarb.

Scientific Committee.

Peristeria cerina and *P. guttata*.—Mr. O'Brien exhibited two flowers, one yellow the other spotted, believed to have been borne by the same plant, and characteristic of these two species. It was suggested

that they might prove to be male and female respectively. Mr. Ridley undertook to examine and report upon them.

Longicorn beetle in *Saccolabium ericete*.—Mr. Pascoe exhibited a live specimen taken from a stem. It proved to be *Diaxenes Taylori*, from Moulmein, in the Malay Peninsula.

***Leucijum trichophyllum*.**—Rev. C. W. Dod showed a specimen of this plant. Though figured in an early volume of "Curtis's Magazine," it appears to have been lost. It is a native of Portugal.

Daffodils, hybrids.—He also showed a number of native hybrids between *N. poeticus* and *N. pseudo-Narcissus*. They grow in abundance and great variety at an elevation of 7000 feet in the Pyrenees, since as soon as the snow disappears both these species flower simultaneously, and not separately, as in England. They are called "Bernards" in their native home.

Euonymus vars.—Dr. Masters exhibited sprays of the common green *Euonymus* with yellowish young foliage. They were received from M. Max Cornu. The yellow tint disappears as the season advances; the cause was attributed by the secretary to cold, as he had noticed transplanted Bluebells remained yellow-green until the temperature rose, when they suddenly became green. Mr. Murray corroborated this fact, and added that corn will sometimes become yellow again on return of cold weather.

Tulip bulb abnormal.—Dr. Masters also showed bulbs in which one of the lowermost scales had become bent downwards; an axillary bulb had grown downwards in conjunction with it. Mr. Dod alluded to the fact that Bluebells and Crocuses sometimes bore bulbs on dependent axes below the parent bulb; but it was somewhat difficult to account for this peculiarity.

The following communications were received from Mr. Plowright:—

Distorted Crocus leaves.—"The Crocus leaves sent herewith present a curious distorted appearance towards their extremities that I have frequently observed at this season of the year. It usually becomes more marked later on. At first sight one would imagine it due to some mechanical injury, but this I believe not to be the case. The plants from which these specimens are taken have had their leaves similarly distorted for several years in succession. Whether it be the work of an insect or not, I should be glad to have the opinion of any member of the committee who may be familiar with this diseased condition." This is of common occurrence, and is due to chill or other cause which prevents the leaves escaping freely from their sheaths.

Larch disease.—"Most likely several diseases are included in the term 'Larch disease,' as one frequently sees it employed in various semi-scientific periodicals. The specimens in question were obtained last autumn near Aberdeen in one of the excursions of the Scottish Cryptogamic Society. Professor Trail pointed out to me the large number of young Larches which were thus injured. During the following week, while at Hereford, I searched in vain for specimens of this disease, nor have I been more successful with the Larches in this neighbourhood. The specimens sent herewith were living at the time they were procured, the leaves attached to them being quite green. The peculiar swellings of the affected branches being like those produced by the Podosomata on Junipers—more or less fusiform—there is no reasonable doubt but that the disease is caused by the presence of the mycelium of a fungus, *Peziza Willkommii*. The diseased condition of the branches and the structure of the fungus, &c., are well shown in R. Hartig *Lehrbuch der Baumkrankheiten*, pl. xi. The specimens show the fusiform swellings of the branches and the *Peziza Willkommii in situ*. It has been asserted by those who confine their attention to the examination of herbarium species that no difference exists between *P. Willkommii* and *P. calycina*. Without doubt the perfect fungi resemble each other closely in external appearance and in spore measurements, but their life history is distinct, the former affecting living trees, the latter dead ones. A similar case in point occurs with the two acidia,

which in this county occur upon *Ranunculus repens*, the one of which is connected with *Puccinia Magnusiana* on Reed and the other with *Uromyces pop.* For my own part, I am quite unable to distinguish these acidia from one another, either by their external appearance or by their spore measurements, but their life history is abundantly distinct." It was the opinion of Mr. Smith and Mr. Murray that *Peziza*, a purely superficial fungus, had nothing to do with disease, but only followed it.

Cymbidium tigrinum.—A finely grown specimen of this plant was exhibited by Messrs. Shuttleworth, Carder and Co., Clapham. It was figured in *Botanical Magazine*, t. 5457. A botanical certificate was awarded for it.

Arisema triphyllum.—A North American Aroid, green var., was exhibited by Mr. Ridley; the usual form is more showy, having purple spathe with bars.

***Dracunculus creticus* (Schott).**—This powerfully odoriferous Aroid from Crete was shown by Mr. Lynch, who observed that it proved to be perfectly hardy during the last two winters.

Sisyrinchium filifolium, from the Falkland Islands; *Iris lineata* (Foster), from the Caucasus; *Arctotis aureola*, *A. revoluta*, and *A. arborescens* were shown by Mr. Lynch.

Narcissus committee.—The last meeting of the committee for this season was held at South Kensington, on Tuesday, May 10. Among the specimens received were a seedling from Emperor, registered as Glory of Leyden, a seedling from Empress-moschatus, registered as Madame de Graaff, and a variety of tridynamis, which the committee desired to see again; all from M. de Graaff. Tridynamis, raised by Mr. Rawson, registered as A. Rawson. From Dr. Wallace, a citron-coloured double form of incomparabilis, with the corona entirely suppressed, similar to what appears sometimes as a sport in sulphureus plenus. It was doubted whether it would prove constant. In some cases only half the flower sports in this manner. Mr. Ware showed a flower similar to the above, together with a single form, which had been cut from the same bulb of the variety known as semiparviflorus. Mr. Barr sent a flower observed among collected bulbs of moschatus in which three of the anthers and stamens on one side were beginning to form a double flower. A natural hybrid, a variety of N. Bernardi, was registered as H. P. Buxton; and Mr. Barr also showed a collection of triandrus illustrating the great variation in form. It was thought desirable to register the variety which had been known as Burbedged conspicuous under the name Constance, in order to avoid the confusion which might occur between it and the variety of Barri called conspicuous, as also in order to carry out the principle of naming all garden forms and hybrids in the manner adopted by florists, and not in the manner adopted by botanists. — C. R. SCRASE-DICKINS, *Hon. Sec.*

SHORT NOTES—VARIOUS.

Scottish Pansy Society.—We note that the date of this society's exhibition has been altered from the 17th to the 24th of June, on account of the Jubilee holiday.

Chrysanthemum show and conference.—The council of the Royal Horticultural Society have resolved not to hold the proposed Chrysanthemum show and conference which had been fixed for November 8 and 9 next.

Dresden International Horticultural Exhibition.—At this show, which opened on the 7th inst., Mr. B. S. Williams, of the Victoria and Paradise Nurseries, Upper Holloway, was awarded two gold medals and prize of honour for collection of Orchids, new and rare plants, Cyclamens, Anagallis, Hiansophyllums, "The Orchid Album," and his various other horticultural works.

Basic slag.—"F. H." can get basic slag from Mr. S. M. Thomson, manure manufacturer, Lamark, by steamer from Glasgow to Liverpool.—M. G.

Mushrooms.—Can you tell me the enclosed is? Is it a Mushroom or a fungus? It comes up in my Mushroom beds, but I am afraid to use it.—M. C.

The Mushroom sent is a perfectly genuine one, but it belongs to a peculiar and perhaps inferior variety. It must not be assumed that inferior Mushrooms always arise from inferior spawn. Good spawn under bad conditions of growth will give rise to inferior Mushrooms. Our correspondent's example is 8 inches across, dark sooty brown in colour on

the top, rather thin in the flesh (for so large a specimen), and with a comparatively thin and lanky stem. A very distinct form.—W. G. S.

LAW.

ACTION AGAINST A TENANT FOR CUTTING DOWN SHRUBS.

THE action (Smith v. Oliver) was brought to recover damages for waste caused by the defendant in cutting down trees and shrubs on the grounds of the plaintiff. The defendant denied the damage. The plaintiff is an accountant and agent at Warrington. About ten years ago he bought what was described as a "charming little place" called Bryn y Gwynt, at Pant Asaph, Flintshire. The house and grounds were subsequently let to the defendant, at a rental of £30 per year, and during his tenancy the trees and shrubs were cut down. The place, which was formerly admired for the beauty of its Evergreens, had been, it was alleged, denuded of its most beautiful feature, and its letting value was therefore reduced. Several landscape gardeners gave evidence, and expressed the opinion that the value of the house and grounds had been reduced by £250 to £300 through the cutting down of the trees. The plaintiff said he let the house to the defendant at a reduced rental on the understanding that he would trim the grounds. The Judge said there were several ways of trimming grounds, as one man might trim a garden by keeping up the trees in a particular way, and another man might trim it by letting in sun and air. Mr. Collins contended that none of the trees had been cut down to the stumps. The house was damp, and what the defendant did was with the view of letting in light and air. Mr. Johnson, manager to Messrs. Dickson & Sons, nurserymen, Chester, and other witnesses, gave evidence to the effect that the way in which the trees had been pruned and cut improved their condition. In summing up, the Judge said the evidence of Mr. Johnson and the other witnesses for the defendant was entitled to much weight. In his opinion there was not the slightest pretence for the large claim the plaintiff had made. The jury returned a verdict for the defendant.

Death of Mr. G. Ford.—We are sorry to hear of the death of Mr. G. Ford, who had for many years been gardener to Earl Cowper at Wrest Park, Bedfordshire.

Names of plants.—*W. J. Dover.*—1, *Asplenium Adiantum-nigrum*; 2, *Davalia elegans*; 3, *Adiantum macrophyllum*; 4, *Liodeca trapeziformis.*—*J. H. W.*—*Andree.*—1, *Leptogramma villosa*; 2, *Lomriopsis heteromorphia*; 3, *Rhipidopteris peltata*; 4, *Elaphoglossum rubiginosum.*—*G. H. Greenock.*—1, *Trichomanes anceps*; 2, *T. pyxidiferum*; 3, *Hymenophyllum caudiculatum*; 4, *Feca spicata.*—*H. W. V. D. Decker.*—1, *Adiantum formosum*; 2, *Asplenium Inciduum*; 3, *Todea superba*; 4, *Lycopodium clavatum.*—*G. E. M. Gote.*—1, *B. romit elator*; 2, *Ereca albis*; 3, *Cerophaga Garderi*; 4, *Talerpumontana coronata*; 5, *Tetratheca verticillata.*—*S. S. Kom.*—1, *Rhododendron Nuttallii*; 2, *R. Gibsoni*; 3, *R. ciliatum*; 4, *R. javanicum*, pale coloured variety.—*J. S.*—1, *Oncidium albatrum*; 2, *Cattleya amethystina*; 3, *Eurycles Cunninghamii*; 4, *Eochia grandiflora.*—*W. H. W.*—1, *Saccolabium Odcebus*; 2, *Oncidium insculptum*; 3, *O. sarcodes*; 4, *Lissochilus Krelii.*—*T. J. M. Johnston.*—1, *Masdevallia Reichb. chiana*; 2, *M. triaristata*; 3, *Cymbidium pendulum*; 4, *Cattleya amethystina.*—*J. Gough.*—1, *Dendrobium transparens*; 2, *D. Jamesianum*; 3, *D. eburnum*; 4, *D. tortile roseum*; 5, *D. chrysotoxum.*—*J. T. R.*—1, *Lycaste macrophylla*; 2, *Oncidium aureum*; 3, *O. insculptum*; 4, *O. fonticolum.*—*Yeve.*—*J. B. North Devon.*—*Streptosiphon Jamesoni.*—*J. J. S. Stone.*—*Agaricus umbellatus.*—*L. H. - 1, Allium neapolitanum*; 2, *Aenac amata*; 3, *Cytisus racemosus*; 4, *Epidyllum species*, cannot name from specimen sent; 5, a partly a *Fuchsia*, cannot name from leaves only.—*J. S. M. - 1, Narcissus pseudo-Narcissus*; 2, appears to be *N. Mary Andron*; 3, *N. oxus*; 4, *N. incomparabilis.*—*Capt. D. Stebbing.*—*Primula farinos.*—*J. C. W. - 1, Primula Sieboldii blanda*; 2, *Fritillaria Melegris*; 3, *Opheia conyosia*; 4, *Thalictum anemoides*; 5, 6, 7, varieties of *Spiraxa tricolor.*—*Hortus.*—*Gesnera macrantha*; cannot name varieties of *Gloxinia.*—*A. S. W. - 1, Verbidae.*—Winter *Aconite* (*Erathis hibernica*).—If you require this plant largely and quickly, it would be more satisfactory to obtain flowering bulbs, which can be obtained from any nurseryman for a few shillings per hundred.—*M. G. S.* Specimen insufficient, kindly send flowers.—*Kent.*—Yellow flower *Oncidium sessile*; small dotted flower *Restrepia elegans*; other flower *Miltonia*, name next week.—*B. Sell, Worthing.*—You will find a notice of the Pelargonium in report of Kensington show of this week.

Names of fruits.—*T. T.*—The small fruit is *Burré Rouge*; the other, *Burré Gris d'Hiver*.

WOODS & FORESTS.

“YORKSHIREMAN.”

FORESTRY NOTES.

SHRUBS FOR THE SEASIDE.—Judging from the very limited number of shrubs that is usually seen in maritime gardens, one is led to believe that few indeed are the members of such that will succeed under these conditions. This is, however, quite a mistake, as from rather long experience in a seaside district we have found out that the number of both trees and shrubs is by no means meagre, and includes some of our most ornamental-foliaged and flowering subjects. The Escallonias are particularly well adapted for planting in seaside gardens, and grow with a luxuriance there that it is unusual to see even in warm inland situations. Two or three kinds of Myrtle may in many of the maritime Carnarvonshire gardens be seen flourishing to such an extent that dwellers in inland districts feel vexed that they cannot imitate them. Then, again, we have the tree Purslane (*Atriplex Halimus*), the *Coluteas*, Box Thorn (*Lycium europæum*), Lilaes of sorts, the Tree Groundsel (*Baccharis halimifolia*), the pretty-berried, silvery-foliaged Sea Buckthorn, *Fabiana imbricata*, the *Pittosporums*, *Aloysia citriodora*, or the lemon-scented *Verbena*, and hosts of other shrubs that time and space will not permit of our mentioning at present. Amongst trees particular mention may be made of the *Sycamore* and *Willow*, the *Aleppo Pine* (*Pinus halepensis*), *Pinus Pinaster*, and *Cupressus macrocarpa*. The list might be greatly extended, and will be perhaps in an article devoted to the most suitable trees and shrubs for planting along the sea coast.

FILLING UP GAPS IN LIVE FENCES.—This is an operation that rarely receives the amount of attention it deserves, for when attended to in time and properly executed it is productive of very great good by maintaining the hedges in a sound and perfect condition. From many causes woodland live fences are apt to get gappy and broken, and which, if not attended to in time and the work well performed, soon tell a tale and necessitate extra expenses in many ways. Where *Quicks* are to be substituted for such as have died out, only those of strong growth and with plenty of bushy roots should be used. It is well also to take out the old and exhausted soil from the line of fence, and substitute instead that of good quality from an adjoining field or wood. Great care is necessary in digging out or grubbing up the dead plants to avoid as much as possible cutting or maiming of the roots of the adjoining live *Quicks*, but this is easily enough avoided by carefully picking out the soil and well loosening it up before using the spade. A few poles materially assist in strengthening such newly filled-up gaps until such time as the *Quicks* have become strong and established. It is always advisable to have a few extra strong picked plants of the *Quick*, *Beech*, *Hornbeam*, or *Privet* set aside in the home nursery for filling up such gaps in woodland fences.

TREE GUARDS.—These should always be erected of sufficient height to prevent horses and cattle, the former in particular, barking the stems and browsing on the branches of valuable trees and shrubs. For trees whose stems are destitute of branches for 10 feet or so from the ground, all that is necessary is to nail uprightly small poles to a circular hoop placed around the tree's stem at 6 feet from ground level, the ends of the poles being driven into the soil for half a foot. The hoop should not be placed too tightly around the tree's stem, and the points

of the upright poles which project above this may be sharply pointed, thus preventing to a great extent horses reaching over to bark the stem and branches. Ordinary wire netting has also been recommended for preventing horses, &c., from gnawing the bark of standard specimen trees; but here, at least, this method of prevention has not met with much encouragement. The netting, from its rough surface, acts as a capital rubbing-post when in conjunction with the stem of the tree, and is thus apt to get torn off; while it is dangerous, from the horses' shoes getting entangled in the meshes.

PROTECTING SMALL PLANTS FROM FROST.—Seedling forest stuff that has been transplanted from the seed beds during the past season will require a certain amount of protection during frosty weather, for as everyone who is acquainted with nursery work knows that very considerable damage is often inflicted on young stock by their being lifted bodily from the soil during severe winter weather. We have found the flat branches of *Spruce Fir* or those of *Abies Douglasi* to have a wonderful effect in preserving the young plants against damage; indeed, even during the most intense frost a double layer of these branches will preserve even half-hardy subjects. The branches may be laid flat on the beds in the case of seedlings, or pegged down between the lines of plants in the borders, while as a screen for newly planted out, half-hardy *Conifers* they may be warped out and in between the bars of hurdles, and these placed around the trees to be protected. Until thoroughly established, or as it were acclimatised to the situation, the finer *Azaleas*, *Rhododendrons*, &c., will be all the better for such a screen placed on the windward side of the beds or brakes. During fine, open weather it is advisable to remove the branch covering from seed beds, as owing to the branches being placed flat and excluding the light the foliage is apt to suffer in consequence.

STAKING NEWLY-PLANTED TREES.—Where trees of large size are planted out firm staking should be set about at once. This is rarely necessary in trees of less size than say 6 feet, unless, indeed, the situation be very exposed and the plants used bushy in proportion to their height, when those of from 4 feet upwards may likewise receive attention. Too often it happens that specimen trees are planted out and allowed to rock about with the wind until the roots become so maimed and barked as to be totally unfitted for their proper functions, the result of which is premature decay of the tree. Staking is so simple and inexpensive a matter that in all cases where there is the least likelihood of the trees being root-shaken it should receive early and careful attention, and if well done at the first will require but little after attention. A. D. WEBSTER.

Mismanaged planting.—I was much amused in reading “Yorkshireman's” remarks in THE GARDEN, May 7 (p. 41), in reference to planting, and I think some of his remarks are far from complimentary regarding some of our public nurseries, and more especially to the management of the *Corsican Pine*. I am fully convinced that where “Yorkshireman” has planted one *Corsican Fir* the writer has planted ten, and I may say the same with all other plants. “Yorkshireman” says frequent transplanting is not worth anything if the roots are not there. I always thought that frequent transplanting was the means and object of getting roots. I hold that the *Corsican Fir* will die off in most cases no matter when or how careful the operation of planting is performed. I have planted thousands of them both from home and public nurseries, and always had losses, and I am sure that most planters of the same trees will be able to bear me out in what I say. Talk of planting

in September; in nine cases out of ten most foresters can hardly go into the woods or moors at that season on account of the game. Then as to the notch or slit system of planting, “Yorkshireman” must not have had much experience of this plan, as only on the score of cheapness can he recommend it a very great object in forming plantations, I hold. But after thirty years' experience in the management of woods, the writer could show “Yorkshireman” hundreds of acres covered with fine healthy trees of *Austrian*, *Corsican*, and *Scotch Pine*, and all planted on the notch or slit system. And as to his theory of all forest trees having tap roots, I must say that it is quite new to me. I will close by asking, Did he ever see a *Spruce Fir* with a tap root? RUSTICUS.

Abies Douglasi at Jardine Hall, Dumfriesshire.—This tree, figured in Solby's “Forest Trees,” was planted in 1828 as a seedling 2 feet high, and is therefore of the same age as that at Dropmore.

Year.	Height.	Girth at				Diameter of spread of branches.	Circumference of spread of branches.
		base.	1 foot.	3 feet.	5 feet.		
1828	F. 2.	—	—	—	—	—	—
1842	25	—	2	9	—	—	14
1845	—	—	3	7	—	—	—
1875	—	—	11	0	—	6	—
1881	—	—	12	0	10	3	55
1884	—	13	0	12	7	11	0
1887	70	—	—	—	—	11	0

Owing to crows building as this year for the last thirty or forty years, the top is much broken, and, instead of 70 feet high, might have been 105 feet or even more.—W. H. MAXWELL.

Creosoting timber.—It has been said that no process of treating wood by chemicals to make it durable had proved a success. From 1838 to 1853 four processes were in active competition for public favour. Creosote proved, after fifteen years' experience, most reliable and stable. About this time the construction of railways in India commenced, but it was soon discovered that the native timber was subject to rapid destruction by decay, and the East India Railway Company were forced to provide durable material for their permanent way. They accordingly sent out large quantities of creosoted sleepers, and after an experience of sixteen years, pronounced decidedly in favour of this process. The intensely acrid and pungent properties of acridine present in the creosote proved destructive to all insect life. In 1848 Mr. Bethell creosoted the telegraph poles for a line from Forcham to Portsmouth, a distance of twenty miles. In 1874 the requirements of the service necessitated the removal of these poles, and when taken down they were found as sound as when first erected in 1848, twenty-six years. In 1859 the managers of the railway company's line from Rouen to Dieppe, in France, creosoted their sleepers. Twenty years later an examination on the occasion of the Paris Exhibition showed that not a single sleeper bore the slightest trace of decay.—J. F., in *Country Gentleman*.

Pines as medicinal agents.—Although some forests are regarded as sources of malaria, and Oak trees and Hazel bushes have been counted insalubrious in Europe, like the Tamarind tree in the East, yet the air of Pine forests appears always grateful to the lungs, and has been considered wholesome, although of its absolute curative influence there is little evidence, and, indeed, it must be difficult to procure such. The idea of Pine forests exercising a balmy influence on the lungs is a very ancient one. Pliny considered that the air of Pine forests was more useful in phthisis and in convalescence from acute diseases than the voyage to Egypt recommended in such cases in those days. Both Bourneouth and Arcachon at the present day owe a good deal of their reputation to their Pine woods. The air of the latter is said to be distinctly

sedative. On the whole, then, the air of the Pine woods of the Black Forest may be regarded as an element entering into the consideration of the value of its baths. But besides merely inhaling the air of its forests, people have of late years made much use of the products of Pine in baths, vapour baths, and inhalations. Even this is not entirely modern, for the ancients recommended chiefly the internal use of decoctions of Strobili and of Pine tops, and thought Pine nuts very useful in diseases of the chest; and at a more modern time, besides the internal use of drinks made from the Spruce and the far-water so long in vogue, we had inhalations of tar and of various resins. The ancients did, indeed, recommend in gout baths of water in which Cedar wood had been boiled, but the use of the Pine extract bath is quite modern. It has spread rapidly, and is in use at Gleisweiler, Rehburg, Liebenstein, Ruhla, and Eisenach. These aromatic extracts are procured from various Pines—as from the *Abies excelsa* or Norway Spruce, Silver Fir, *Pinus sylvestris* or Scotch Fir, *Pinus maritima* or Bordeaux Pine, the Weymouth Pine; also from the common Larch, and the most fragrant of all, from *P. Pumilio*, the Mountain Pine. The baths vary considerably in strength and in odour, according to the way in which they are prepared. The commonest way of making the bath is by adding to common water a certain quantity of the decoction got by passing steam through the young Pine tops.

TREE PLANTING ON A SMALL SCALE.

THE planter of trees on a small scale necessarily needs a greater variety of trees than one who plants extensively; and in the formation of plantations it may be as well to point out that, for the sake of immediate effect, there are various trees which may be employed that grow tolerably well for a few years, during their infancy and youth, upon soils that are not strictly appropriate for their full development. These will produce an immediate effect and clothe an otherwise bare situation. Handsome residences are often seen standing upon bare sites, unaccompanied by the necessary finish and adornment that tree growth alone can confer. Although suitability of soil should always be first considered with respect to the trees that are intended to stand permanently, yet by having recourse to a few quick-growing ones, the desired change can be very much hastened. With this end in view, the Poplar tribe will be found very useful, even if planted with the object of their being cut down when the more highly-prized but slower-growing trees have attained sufficient size. Of these Poplars, the Black Italian (*Populus monilifera*), or Necklace-bearing Poplar, as it is sometimes called, is one of the most rapid in growth; the Grey Poplar, too (*P. canescens*), attains a considerable size in a comparatively brief space of time, as will also the Canadian Poplar (*P. canadensis*). This latter will attain a height of 50 feet in twenty years, and will not only be high, but be furnished with a proportionate amount of branches. The White and Bedford Willows might also be associated with the Poplars. These Poplars are by no means favourites with many people, but their tall graceful shape serves as an excellent contrast to round-headed trees of a different habit of growth.

The fastest-growing trees are the Willow, Poplar, Alder, Horse Chestnut, and Lime; and these thrive best in moist land or near to water, but if the soil is deeply trenched, they will maintain a fair growth for some years, even on sandy uplands more adapted for coniferous trees. Upon good land, that is neither on an elevated situation nor in a low-lying district, surcharged with moisture, the broad-leaved trees, such as Ash, Oak, Elm, Beech, Birch, Plane, Hornbeam, Locust, Walnut, Sycamore, Spanish Chestnut, &c., succeed perfectly. Where the soil is thin and poor, and especially in cold and somewhat elevated districts, Conifers, such as the Stone Pine, Scotch Pine, Silver Fir, Larch, and Cedar, are the most appropriate trees; and to these may be added Spruce Fir, which succeeds best upon the lower slopes, where a greater share of moisture is to be obtained than in higher situations. Many of the Coniferae of comparatively recent introduction into Britain from North-west America, such as *Abies*

Douglasi, *A. amabilis*, *A. grandis*, *A. nobilis*, *Pinus Lambertiana*, and others, though planted during the first quarter of the present century, cannot even now afford examples of what they will become as timber trees in this country.

In ornamental planting on a small scale much may be done to produce a diversified effect by making choice of those trees possessing a varied and distinct appearance at different times of the year. For example, Lilies and Laburnums, Thorns (scarlet and common), and the Horse Chestnut have a beautiful effect in early spring, while the berries of others, such as the Mountain Ash, Cotoneasters, Thorns, and a host of others, produce quite an ornamental effect in autumn. The decaying foliage, too, of others in the autumn changes to deep yellows and glowing reds, such as the various American Oaks, Maples, Liquidambars, and Tulip trees, and produces some brilliant effects, particularly when the first frosts have tinted the foliage of most other deciduous trees.

In all ornamental planting evergreen shrubs should form an important part, and in skilful grouping these should be made to associate harmoniously with the deciduous kinds. Among deciduous trees of small stature, besides those mentioned, the Almond, Hazel, Cherry, Spindle tree, Willow, Service tree, Apple, &c., should be included, while in spaces where larger-sized trees can be used, the common and purple Beech, Horse Chestnut, Lime, and the varieties of the British Oak, as well as the American Oak, should have a place. Under the shade and drip of trees may be planted the Holly, Yew, and Privet.

A good deal of difference of opinion has been expressed at various times as to the best period of the year for transplanting evergreen shrubs of the kinds I have named, and this divergence, in my opinion, has arisen from different circumstances in those cases which have been cited, when the facts or results have been at variance. Without doubt, September is the best time to transplant Evergreens if they are to be removed only a short distance and the proper precautions are taken, as, at this time, the plant is not quite in a dormant condition, and the roots should not be allowed to get dry. For if the plant is quickly removed to the place where it is destined to stand, it will immediately throw out small rootlets, which will very materially help its future progress. If, on the other hand, the plants have to be packed, and are sent by rail a long distance, which is very often the case with those who purchase of a nurseryman, celebrated, perhaps, for some special kinds of Evergreens, winter or early spring would be the best time; but even in that case they will thrive better if they have been removed in the previous September with a view to preparing them for their final change. Frequent transplanting previous to removal is of great importance to young trees, a principle that is well understood in tree nurseries. W. H. A.

Forestry in Sweden.—The importance of forestry in Sweden, both from a financial and commercial point of view, is now fully appreciated, and the Swedish government seems to be particularly interested in the matter. According to a notice issued some time ago by the Department of Royal Domains, the services of forest engineers can, in general, be obtained gratis from the beginning of the year 1884. It is stated in the notice mentioned that means having been provided for paying forest engineers for the services of private owners of forests, notice is hereby given that either owners or occupiers of forests, or of such land as is suitable for being turned into forest, as well as agricultural societies and communal districts, can obtain the services of such officials in the laying out and arranging of forest culture, and for the necessary thinning of trees and the clearing away of natural underwood, as well as for the drawing up of plans for the methodical cultivation of trees, and to give advice and information in what concerns forest management. Those who wish for help from forest engineers must send written notice to the governor of the province, or to the Department of Royal Domains, together with a statement of the purpose

for which the service is asked, as also the place and the nearest hotel and railway station, and also for how many days the service is likely to be required. Blank forms of application may be had from the Department of Royal Domains from the governors of provinces, from agricultural societies, or from forest engineers. No expenses are to be paid by the applicant except for board during the time of the work, which is to be reckoned at five crowns a day, and payment according to a fixed rate of charges for maps and forest plans, which could not be made on the spot, but which the applicant may wish to have completed afterwards. As many of the agricultural societies of the kingdom have undertaken to pay the daily charge of five crowns on behalf of the applicants in their respective provinces, the services of forest engineers can generally be had entirely gratis.

TREES IN ASSEMBLAGES.

SOME trees possess but little interest unless they are grouped in masses of greater or less extent. A solitary Fir or Spruce, for example, when standing in an enclosure or by the roadside, is a stiff and disagreeable object; but a deep forest of Firs is not surpassed in grandeur by one of any other species. These trees must be massed in extensive groups to affect us agreeably; while the Elm, the Oak, and other wide-spreading trees are grand objects of sight when standing alone, or in any other situation. Groves, fragments of forest, and inferior groups only are particularly interesting in a landscape. An unbroken forest of wide extent makes but a dreary picture, on account of its gloomy uniformity. Hence the primitive state of the earth, before it was modified by human hands, must have been sadly wanting in those romantic features that render a scene the most attractive. Nature must be combined with art, however simple and rude, and associated with human life, to become deeply affecting to the imagination. But it is not necessary that the artificial objects of a landscape should be of a grand historical description to produce these agreeable effects; humble objects, indeed, are the most consonant with Nature's sublime aspects, because they manifest no seeming endeavour to rival them. In the deep solitary woods, the sight of a woodman's hut in a clearing, of a farmer's cottage, or of a mere sheepfold immediately awakens a tender interest, and enlivens the scene with a tinge of romance. Immense forests still overspread a great part of Northern Russia, through which it has been asserted that a squirrel might traverse hundreds of miles, without touching the ground, by leaping from tree to tree. Since the general adoption of railroad travelling, however, great ravages have been made in these forests, and not many years will be required to reduce them to fragments. In the south of Europe, a great part of the territory is barren of woods, and the climate has suffered from this cause, which has diminished the bulk of the streams and increased the severity of droughts. But Nature has established a partial remedy for the evil arising from the imprudent destruction of forests, in lofty and precipitous mountains, that serve not only to perpetuate moisture for the supply of rain to the neighbouring countries, but contribute also to preserve the timber in their inaccessible ravines. Were it not for this safeguard of mountains, the south of Europe would ere this have become a desert, from the destruction of its forests, like the Sahara, whose barrenness was anciently produced by the same cause. Most of the territory of North America is still comparatively a wilderness; but in the United States the forests have been so extensively invaded, that they seldom exhibit any distinct outlines, and few of them possess the character of unique assemblages. They are but scattered fragments of the original forest, through which the settlers have made their irregular progress from east to west, diversifying it with roads, farms, and villages. The recent clearings are palisaded by tall trees, exhibiting a naked outline of skeleton timber, without any attractions. Travelling in a forest, though delightful as an occasional recreation, is, when continued many hours in succession, unless one be engaged in scientific researches, very monotonous and wearisome.

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"This is an Art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—*Shakespeare.*

ROSE GARDEN.

T. W. GIRDLESTONE.

SELECTED NEW ROSES.

THE report of the National Rose Society, which has just been issued, contains on page 34 a list of Roses recommended by the committee for inclusion in the society's illustrated catalogue of select varieties. The list is not a long one, being made up of five Hybrid Perpetuals and five Teas; but this is only natural, as one great object of the society in publishing its catalogue is to protect its members, so to speak, from the flood of worthless varieties in cultivation, by recommending only what is first-rate in each section. The one way in which this object can be effectually attained is by deferring judgment until the verdict of a considerable number of skilful growers has been returned in favour of a new variety after two or three seasons' cultivation, for it is generally two, and sometimes three years before the true character of a new Rose is known. Consequently, it is impossible that a thoroughly reliable list should contain the names of Roses of more recent introduction than two years before the date of publication, and it may be observed that the edition of the National Rose Society's catalogue published in 1884 contains the name of no Rose introduced subsequently to 1882. The varieties now recommended include for similar reasons none introduced since 1884, not necessarily on account of the lack of first-rate novelties among those distributed during the two following years, but simply because growers have not yet cultivated these more recent Roses sufficiently long to be able to express a confident opinion as to their merits.

Of the ten varieties enumerated, it is satisfactory to notice that no less than four are of English origin, Mr. Bennett, of Shepperton, heading the list with that number, while Guillot contributes two, and Lacharme, Levet, Margottin, and Ducher have each provided one; and as the list in the report consists merely of the names of the varieties, it may perhaps be of interest to note a few particulars about these Roses which the committee of the National Rose Society are disposed to consider worthy of inclusion in the front rank.

Of the five Hybrid Perpetuals, Alfred Dumesnil (Margottin) was first sent out from France in 1879, but does not appear to have been generally purchased by the English nurserymen, so that it was not very widely distributed in this country the following spring. Consequently, but little was heard of it until the blooms shown by the few firms that had it, attracted attention, and it was thus quite two seasons late in getting known. At most of the leading Rose shows, however, during the last three years it has been well exhibited by the principal nurserymen, who are unanimous in recommending it; and, considering its somewhat disadvantageous start, it speaks well for its good qualities, that it should have stood sixty-fifth in the list of one hundred varieties that were most frequently exhibited in winning stands during the eight years from 1877 to 1884 inclusive. In habit the variety is not unlike Marquise de Castellane,

having robust, thorny wood: the flowers are large, with a fine deep petal, of a rich carmine colour, almost crimson, and they are very constant and freely produced both in summer and autumn.

Alphonse Soupert (Lacharme) was sent from France in the autumn of 1883, and consequently distributed as a new Rose in England during the spring of 1884. The habit of this plant also is inclined to be robust, though freer and taller-growing than the Castellane type; the flowers are very large, and of a deep, full rose colour, very freely produced, and very effective on the plant. The variety makes an excellent pot Rose, forcing admirably, and in May, 1885, it received a first-class certificate from the Royal Horticultural Society.

The year 1882 witnessed the distribution of several first-rate novelties, including Bennett's two Hybrid Perpetuals, Heinrich Schultheis and Lady Mary Fitzwilliam. The first is a vigorous-growing variety, producing very large flowers of a pleasing fresh rose colour, and quite distinct from anything else. As early as 1884 it had attained the position of eighty-sixth in the list of the hundred Hybrid Perpetuals most successfully exhibited during that year, while last season (1886) it appeared as twenty-ninth in the list of the sixty-nine Hybrid Perpetuals that were most frequently staged on the winning stands at the South Kensington exhibition of the National Rose Society. Heinrich Schultheis is a very fragrant Rose and perpetual, though the autumn blooms are often not very characteristic.

Lady Mary Fitzwilliam is a magnificent Rose, and were it only a little more vigorous it might fairly be described as the finest Rose—*bar Maréchal Niel*—in cultivation. It is certainly the finest Rose of its colour, surpassing both in form and size Captain Christy, Duchesse de Vallombrosa, and similar light-coloured Hybrid Perpetuals. Its habit of growth is of the Victor Verdier type, but rather more thorny, and though the growth is not very free, yet every shoot carries bloom both summer and autumn, and, practically, every bloom is fit for exhibition. When at its best it is the perfection of form, with a high pointed centre, surrounded by large petals almost white at their edges and shading to a rosy flesh at the base of the flower. Ninety-sixth in the 1884 list above referred to, Lady Mary Fitzwilliam last season came out ninth of the sixty-nine Hybrid Perpetuals staged on winning stands at South Kensington, being thus handsomely included among the twelve Hybrid Perpetuals most highly esteemed by exhibitors, while a bloom of it on one occasion certainly, if not more, was selected as the best Hybrid Perpetual in the show.

Rosieriste Jacobs (Ducher) arrived from France in the winter of 1880, to be distributed in this country during the spring of 1881. It is a useful and reliable dark crimson-shaded Rose of good size between Horace Vernet and Duke of Wellington, the latter of which it resembles a good deal in habit; the flowers are carried erect, are very constant, and very freely produced both in summer and autumn, the autumnal blooms being especially valuable on account of their brightness and good quality. In 1886 there were as many blooms of it on winning stands at South Kensington as of such established favourites as Duchess of Bedford, Duke of Teck, M^{de}. Victor Verdier, and Pride of Waltham; and in Mr. T. B. Hall's list of the hundred Hybrid Perpetuals which had afforded him most blooms for exhibition during the two seasons of 1884 and 1885 Rosieriste Jacobs stands thirty-eighth.

Coming now to the Tea-scented varieties, the list is headed by the most recent of all the selected ten, but at the same time one of the most charmingly attractive Roses yet raised, namely, Grace Darling (Bennett, 1884). This variety is fairly vigorous and hardy, having passed through the recent winter with but little harm; it is a most continuous bloomer, and it is thoroughly distinct. The flowers are of good size, and, if necessary, can be grown very large; in colour they are a most delicious mixture of lemon and rosy peach, and whether in the cut state or on the plant, whether in bud or expanded, whether grown on dwarf plants or on standards, are sure to please.

Hon. Edith Gifford (Guillot) came from France in the autumn of 1882, and was distributed here during the following spring. It is pretty hardy, and grows well, and as the upright thorny shoots carry the blooms erect, it is about the most useful and effective white Tea out of doors. It has been likened to *Devoniensis*, but it is much better in all ways, being freer, fuller, deeper, and with a far finer petal than *Devoniensis*. Guillot's other contribution, M^{de}. de Watteville, first sent out in 1883, is also a beautiful Rose. The white lemon-tinted petals, margined and washed on the outer side with tender rose colour, constitute a very distinct and charming flower of good size, and with a high-pointed centre. Both in 1885 and 1886 a box of this variety carried off the first prize for twelve blooms of any new Rose at South Kensington, and throughout the whole of last season beautiful examples of M^{de}. de Watteville were conspicuous at most of the principal shows.

Princess of Wales (Bennett, 1882) is a good Tea, not quite as vigorous as might be wished, perhaps, but not so slender-growing but what it can produce very fine flowers, in form not unlike Comtesse de Nadailac. In colour they are somewhat rosy-yellow on the outside with a richer yellow centre. This variety and the two preceding may all three be considered to rank among the best twenty-four Teas for exhibition, according to the record of the South Kensington Rose Show in 1886, for in the list of the thirty-three Teas and Noisettes most frequently staged in winning boxes on that occasion, Hon. Edith Gifford comes out eighteenth, Princess of Wales twenty-first, and Madame de Watteville twenty-fourth, a fact worth remembering now that there are classes arranged for twenty-four Teas or Noisettes, distinct.

Last of all comes the crimson Souvenir de Thérèse Levet (Levet), sent from France in the autumn of 1882, the only red Tea which is not either almost a pure China, or else disfigured by an underlying tint of dingy purplish colour. This very distinct and striking Rose has been well described as a dark red Niphotos, and it will not be easy to suggest anything that will give a better idea of its appearance. It is very free-flowering, both early and late, and blooms of large size are obtainable; while the plants have stood the recent severe winter very creditably.

Such, then, are the varieties now recommended for admission among the very select, and if, on the one hand, it be wondered that, of all the myriad novelties offered, only ten are found worthy of inclusion among the very best, yet, on the other, it is at any rate a matter for congratulation that of the Roses selected, nearly half should be varieties of English origin.

Rose Camoens.—In their extensive group of Roses at South Kensington, on the 10th inst., Messrs. W. Paul exhibited a bunch of this charming variety, which deserves to be largely grown wherever cut

Roses are in demand. The flowers are of a bright pure rose colour—that rose colour which has a yellow rather than a blue tint for its base—and they are produced perfectly true in colour and character under glass. Considering how good and free a pot Rose Camoens is, one would have expected to hear of its extensive employment in America, where these hybrids, whose character has been strongly influenced by a Tea-scented progenitor, are highly esteemed for the production of cut flowers under glass. For bouquets and button-holes, there are few Roses more popular with ladies than Camoens.—T. W. G.

ROSE PROSPECTS.

Rose prospects, on the whole, are good, in some places even brilliant. Without doubt, the long lasting winter, from December to May—and even May was ushered in in East Anglia with 7° of frost—has hit some Roses hard, and blighted some fair prospects among insufficiently-protected Teas and other choice Roses hitting cut-backs and dormant buds with almost equal impartiality. But, on the whole, the Roses have passed through the ordeal of unusual length rather than abnormal severity well, and there is a promise of a brilliant, though late, Rose harvest.

Seldom have Teas on walls looked more vigorous and healthy. Indoors, mildew has abounded, but out of doors all is clean as well as vigorous. In the open there is hardly sufficient foliage yet developed to form a nucleus for mildew; but this cannot be said of Roses on walls, which are growing freely, and are without spot or stain as yet.

A few new Roses, such as the Bennett, Lady Mary Fitzwilliam, and Her Majesty, have suffered severely from the cold, as well as the old favourite Lamarque, but apart from these the rank and file have wintered well. Unprotected or partially protected Teas have also been frozen back nearly to the root-stocks; but this is hardly an evil to Teas on their own roots, as they all ought to be out of doors and in. This last is a sweeping assertion, which experience justifies, as it has broadened and widened with years. A fig for the old tops of Teas in the open so long as the root-stock is safe and sound. The case is widely different on walls, as one of the chief reasons for growing Teas on walls is to get them into bloom in May or very early in June to fill up the blank that is apt to occur, where wall Roses are absent, between Roses under glass and Roses in the open. The old wood of Teas on walls will be in and out of bloom before the young shoots that burst forth from the root-stocks are showing their first buds; hence the importance of conserving the old shoots of Teas on walls to ensure an early and intermediate Rose harvest, that links together that of Roses under glass and in the open. We want a few more Roses in the style of *Maréchal Niel* and of various colours to add to the variety and ensure a more abundant harvest through the intermediate season.

At present the *Maréchal Niel* and the *Gloire de Dijon* are almost the only Roses of any substance that can be relied on from warm walls in the open through May. Safrano of both varieties, the common apricot-yellow and the so-called red, and *Isabella Sprunt* also form useful early buds for this first harvest of Rose beauty in the open air. But more Roses of the precocious character of the *Maréchal Niel* and a little hardier, if practicable, are much needed for furnishing a good supply of Roses from warm walls through May and the first few weeks in June. But for rosarians that have but room for one Rose on a south wall, there is no Rose to equal the *Maréchal Niel* in quality. True, it is rather tender and almost too precocious, as it needs exceptionally cold weather to keep it dormant after the end of April. But protection not only ensures its safety against cold, but prevents its premature excitement from heat, and thus confers a double benefit.

Planted on walls of all the different aspects, and also in different positions in the open, as dwarfs and standards, this King of all golden Roses may be had in bloom from the open nine months out of the twelve. But all this is by the way, as my chief

object in writing just now was to sound the welcome notes of a good time coming among the Roses. They are exceptionally late, and so are the grubs, and with anything like May weather after this date (the 10th of May), a brilliant season is in store for us. Dormant buds look healthy, and cut-backs are breaking with more than normal vigour, as if pregnant with exceptional fragrance and beauty.

D. T. F.

MERITS OF THE GLOIRE DE DIJON ROSE.

"HANTS" does well to call fresh attention (p. 414) to the many substantial merits of this old favourite. Its popularity can never match its deserts until every cottage, outhouse, or available wall is furnished with one or more of these Roses, and all who can grow Roses in the open have one or more dwarf standards or bushes of this queen among Roses. It is equally at home furnishing the only available yard of ground in the smallest garden of the cottager or the artisan, clothing the proudest mansions of the nobility, or climbing to the top of the highest church steeple. Indeed, some of the finest examples of this Rose ever seen by the writer were those clothing a church porch with a canopy of beauty, and disputing the possession of the roof of a church tower with the rooks. In the latter case the whole of the tower was embowered in Rose shoots and Roses from a single stem.

As a wall Rose or a clother of roofs of outbuildings, &c., this free-growing variety is without an equal. It grows with almost equal luxuriance and blooms with about the same freedom on every aspect, and by planting it freely on all one may almost cut its blooms from the open every day throughout the year.

On the whole, however, I find this Rose most useful on the two extreme aspects of south and north—the former to succeed *Maréchal Niel* on the same aspect, and the latter to continue a plentiful supply of Roses from the open throughout mild autumns and winters up to Christmas.

Two years ago we planted the north wall of a shed considerably overhanging by the roof. The overhanging roof is rather a disadvantage in summer, and involves the necessity for frequent heavy syringings to keep the foliage clean and the plants healthy. But as autumn cools down into winter, and cold rain, sleet, and snow fall, the protection of the roof is invaluable, and ensures many a late cutting of Roses and buds that could not be obtained under less favourably protected conditions. As the season wanes, the quality of the buds and flowers also fine down and improve. The flowers in losing size seem naturally to improve in form, and, what is more singular, deepen in colour; hence the popularity and decorative value of *Gloire de Dijon* Roses for a north wall in the late autumn and winter months. There are some who doubt or deny this improvement in quality in the late autumn and early winter. I would invite any such to try for themselves the culture of this Rose on a north wall. Neither is the *Gloire de Dijon* the only Rose thus largely benefited. *Souvenir de la Malmaison* is coarse almost to uselessness in sunny aspects under bright sunshine, and becomes almost delicate and elegant in the cool autumn tide.

D. T. F.

Some new French Roses.—In a box of nice blooms, received from Mr. J. L. Boyson, of Caen (Calvados, France), of some of the new French Roses now being distributed in this country for the first time, *Lévet's Hybrid Perpetual Madame Bois* confirms the favourable impression made by the fine blooms of it recently seen at Cheshunt. Of *Victor Verdier* family, this Rose appears to possess the good qualities of size, form, and fulness, in addition to being of an attractive and telling rose colour, of a shade between *Marquise de Castellane* and *Marie Finger*. Of *Lévet's* two *Hybrid Perpetuals*, *Madame Léon Halkin* and *A. Drawick*, the former is a good-looking, globular, very fragrant crimson Rose, of which Mr. Boyson thinks very highly, and the latter seems a promising addition to the very dark velvety-crimson Roses, being a well-formed flower, high in the centre, and quite

full; but wherein either variety differs from older sorts of similar colour it is not at present easy to say, for of all colours these crimsons are the most difficult to see in true character under glass. *Mdlle. de la Seiglière* (*Maindron*) is a globular Rose, of a delicate shade of light porcelain pink, the back of the petals paler still, and, though a seedling from *La Reine*, is certainly refined in colour. *Bernaix's Vicomtesse de Wautier* is a rosy Tea, in colour recalling *Madame Cousin* somewhat, and having a pointed bud with petals well twisted together over the centre; but the Tea-scented variety to which Mr. Boyson draws especial attention is *Princesse de Radziwill* (*Nabonand*), a fine deep flower, of a coppery red colour as in *Madame Lambert*, but with the petals recurved at the margin. If the blooms out of doors come as fine as that sent from Caen by Mr. Boyson, this variety will probably prove a valuable addition.—T. W. G.

THE HARDINESS OF TEA ROSES.

MR. T. W. GIRDLESTONE should give note of his locality. He is, indeed, fortunately placed if his Teas have not been subjected to more than 7° of frost this winter. There are few or no Teas that will not bear so much cold with impunity, but should the 7° be doubled, trebled, or multiplied by four, as it was on many occasions this winter, then there are comparatively few Teas that will bear it with impunity without less or more protection. Hence, I consider the 7° test between protected and unprotected Roses as practically useless. The majority of Roses may be trusted to endure 15° Fahr. with but little injury, but as the frost increases from 15° towards zero, then the Teas and other tender Roses begin to suffer severely or be wrecked by the cold. Were I sure that the frost would not exceed 10°, I should dispense with the protection of all Roses in the open. But as this is quite a utopian dream in East Anglia, where frosts of 15° or more are not unknown in May even, we must continue to protect tender Roses during cold weather if we would enjoy their beauty and fragrance to the full in the time of Roses.

As to the best materials for protection, I agree with T. W. Girdlestone that there is nothing like soil, provided the size of the Roses and their distance apart render earthing up practicable. This is not, however, by any means always the case. Occasionally, too, the roots are so numerous and so near to the surface, that it is impossible to earth the Roses up without rupturing many of them, and exposing many more in the bottom of the furrows. The fresh earth keeps the root-stock and base of the shoots cosy and warm enough, but the lacerated roots near the bottom of the furrows have a cold and cruel time of it. It matters little to the plants how severely the ridges may be frozen. So long as the earthen portions of the Roses freeze and thaw slowly in the dark, little or no harm is done. Thus Potatoes, if only covered with an inch or so of soil, may be frozen hard as stones and thaw again with impunity, provided always that both processes are completed without exposure to light or air. However, where Roses cannot very readily be earthed up with soil, *Cocao fibre* refuse, being light, porous, and almost a perfect non-conductor, is one of the very best protectors. Unlike *Bracken*, it need not be cleared away, as it forms a capital mulch for the summer as well as a protector; its lightness and cleanliness commend it highly for either or both purposes. In positions where there might be difficulties in wheeling it on, it could be carried to the Roses in bags or baskets; and ladies who have once had their Rose quarters made clean on the surface, and readily accessible in all weathers by a heavy mulch of *Cocao fibre* refuse, are likely to call for a fresh dressing annually. The Rose roots also seem to like the fibre; and although the manurial value is probably very slight, it conserves the strength of any other manures given, as well as efficiently husband the moisture of the soil.

Bracken fronds are also a most efficient protection, and if for dwarf Teas, these are supplemented by a few *Spruce* or *Yew* branches to hold the *Bracken* in position. The latter also form an addi-

tional protection of very considerable power in themselves. So much is this the case, that in districts where Braeken fronds are scarce, and these branches or others are plentiful, the boughs alone form a very efficient protection to Tea and other semi-tender Roses. Spruce boughs especially possess the unique merit of disappearing piecemeal through the dropping of their leaves or needles, and thus help to solve the most difficult problem of covering, viz., its removal without risk of injury to the Roses or other plants rendered abnormally tender through our artificial coverings.

D. T. F.

Pruning Marechal Niel Rose.—Referring to the inquiry of "V. M." in THE GARDEN (p. 414) I certainly should not hesitate to cut out the old wood to make room for the new, even to the extent of removing all the old if the young wood is likely to fill up the space, since the new growth will produce much finer flowers than that which is spurred back. It is not necessary to cut away all the old at one time; some of the branches may be removed now and some later on as the young shoots require the room. I never had this Rose renew itself from the base but once, and, strange to say, the second growth was, and is now, stronger than the first.—J. C. C.

FLOWERS IN THE HOUSE.

Under this head we propose, during the present season of flowers, to notice things, from whatever department, that are pretty and useful for the house. Any reader who will help us by sending fitting things, or a word about them, will oblige. The simplest things from the smallest garden, and even from the woods and fields, need not be excluded.

I SEND you a gathering of the Garland Flower (*Daphne Cneorum*). It is just now blossoming in profusion. I have some of it in a vase on my writing table in my room, and it scents the whole place. As you no doubt know, it is a little shrub which spreads to a considerable size. The one from which this was picked was, a short time ago, some 4 feet in diameter. Through rough usage about half of it has been destroyed. The remaining half is a mass of bloom.—D. J. YEO.

LILACS FROM M. BALLET.—We have often spoken of the way the French grow their Lilacs and force them, and how much more they make of this beautiful hardy plant than we do. The finest flowers that we have ever seen have just been sent us by M. Charles Ballet, of Troyes. There is Lemoine's double one, prettier than we expected, Lilae de Concel, and, best of all, Aline Mocqueris, one spike of which was 11 in. long. We are surprised at their beauty after four days of travelling!

THE PAU ANEMONE keeps well in water. Mr. Rawson finds it keeps admirably in London.

ANEMONE ROBINSONIANA cut in bud and placed in water to open will come of finer colour; a beautiful rosy glow stripes the blue.—M.

CACTUS DAHLIAS.—During the last few years these have become very popular, and certainly a gardener who has to supply cut flowers in quantity ought to grow them. To get them in bloom early they ought to be strong plants by the middle of May, or the season will be too far advanced before any blooms are fit for cutting, and no matter how early they begin to flower they will produce abundance of bloom till frost comes. They require a deep and rich soil. Our plan is to start the old roots in boxes of light soil in a light, cool house, so as to get them with sturdy growth, almost ready to show flower by the beginning of May, when they are set out of doors in the shelter of a wall, and a slight covering given until the middle of the month, when they are planted out. We take out large holes and put in half a barrowful of

rotten manure and fresh soil, then plant carefully, and put good stout stakes at once, as when grown strongly they become very heavy and are liable to get broken by wind unless very securely fastened. Constance is the best of the white varieties, and Juarezi of the scarlet varieties, the latter being a very strong grower. It is surprising how many blooms may be cut from one plant in a season if the blooms are removed as soon as they are fit for cutting.—J. G. H.

MARGUERITES AS CUT FLOWERS.—I question if there is any cultivated plant that can excel the Marguerite for quantity of bloom that a single plant will produce in one season, as they keep on growing and flowering as if no rest or cessation were needed. About twelve months since I planted out half a dozen of the large-flowered white Marguerite in a border of fairly good soil, and although they were only 6 inches high in May, they were at least a yard in diameter by October, and as perfect models as any trained show plants, although they had grown entirely in their own way. As they were covered with flowers and buds they were carefully lifted and placed in large pots, giving a good soaking of water and setting them under the partial shade of Peach trees, where by syringing daily they soon recovered from the check and began to flower freely, and by the time the leaves were all cleared from the Peach trees they would bear full exposure to sunlight. During the winter they were kept in a greenhouse and were never without some expanded blooms fit for cutting, and during the past two months they have been completely covered with flowers. As these Daisies are in such constant request for all kinds of cut-flower decoration, I feel sure that gardeners who have not yet grown them will do well to include them in the list of specialities for supplying the cut-flower basket, as in addition to the length of time they remain fresh in water, may be added the fact that, by employing flowers of such light and graceful character, it is well nigh impossible to make any arrangement they are employed in other than light and pleasing.—J. G., *Hunts*.

A FRAGRANT WHITE PINK.—Mr. Geo. Bolas, of Hopton, writes:—

What do you think of Clove-scented Pink Mrs. Sinkins grown in a light wooden frame from cuttings put in 4½-inch pots during November, plunged to the rims in pans, with the frame first partly filled with leaves and banked up with ashes? The latter were taken away in the middle of January and a good lining of stable manure was added. The result was in March eight to ten flower-spikes from each pot soon up to the glass. They have been giving a feast of lovely flowers during the last three weeks. These little items give a great charm to gardens of no great pretention. Other Carnations so treated are behaving in the same way, but are not in flower yet.

TOM THUMB VARIETIES OF NASTURTIUM.—Cuttings put in late in autumn in 4½-inch pots and kept from frost produce a blaze of colour in early spring in warm houses, and make a show at once for planting outside in the end of May.

DOUBLE CUCKOO FLOWER.—A beautiful plant, not so much grown as it deserves, varying in colour from nearly white to pale purple; the individual flowers like little lilac Roses, well worth close attention. A glass of it, with some double purple Crown Anemones, is very pretty; it has an interesting old-world look, reminding one of the flower-embroideries of our great-grandmothers.—J.

LATE TULIPS.—How seldom one sees in gardens some of the Tulips that are the very best for cutting. All who want the best for this purpose should be provided with Tulipa retroflexa, of beautiful form and of a clear, luminous-

yellow colour. Another most desirable kind is the one that comes from the Dutch nurseries, under the name of Silver Crown. Both these kinds have the pointed reflexed petals that give a singular grace to the shape of the flower, and a refinement of aspect that is wanting in the bolder, round forms of the greater number of the late Tulips, beautiful though most of them are.—J.

BROAD-LEAVED SAXIFRAGE.—A bold arrangement of this fine plant has a good effect in large rooms, especially if placed in large bowls of silver or white earthenware, or any large receptacle of quiet, simple form and colouring. Where it is grown in large quantities it is best to cut whole crowns with flower and leaves together. The heart-leaved kind is the most suitable, the leaves being handsomely waved at the edges.—J.

TIARELLA CORDIFOLIA.—This remarkably beautiful plant, with its foam-like flowers and beautifully formed leaves of a tender green, daintily flecked with tiny dark red spots, should be grown largely for cutting. Perfectly hardy and free growing, a strong tuft or two will soon make a good stock. It is best to cut out a whole crown or two here and there, as the leaves then group to best advantage with the flowers. If mixed charmingly in a shallow bowl with the large Forget-me-not (*Myosotis dissitiflora* improved), both enduring long, and appearing to grow and improve in the cut state.—J.

ROSEMARY.—Never so late as this year in coming into flower, but none the less welcome; its pale flowers, in perfect colour, harmonise with its dusky grey-green leaves. Good with many cut flowers, and of a rigid build that helps to support any of weak stem or drooping habit.—J.

POET'S NARCISSUS.—The finest single form of this sweet and lovely Daffodil, and the earliest, is *N. poetiens ornatus*. With branches of Sweet Brier it makes a delightful bouquet of sweet scent and fresh, spring-like colouring.—J.

EPIMEDIUMS.—Plants so distinct in flower and leaf should not be forgotten. The best of all is the handsome *E. macranthum*; the flowers in brilliant spikes of canary colour, and the leaves, some green and some bronze, on stiff, wire-like stems, of forms of remarkable beauty.—J.

MARSH MARIGOLDS.—The finest thing we have seen during the week in the house was a large vase of these flowers, gathered in a wood, placed on a little landing of a dark oak stairway. By day or night they seemed to have a new splendour.

MAGNOLIA LENNÉ.—This is very useful on a lawn. The blooms are as large as a goose's egg, and are of a rosy purple colour, and produced in great profusion. It also lasts well when cut. Flowers just to hand from Mr. Crook, Farnborough Grange.

DOUBLE POLYANTHUS QUEEN VICTORIA.—I herewith send for your inspection blooms of my double Polyanthus Queen Victoria, for which I received a first-class certificate at the Auricula and Polyanthus Royal Manchester Show in 1886. The plant is a seedling which came up in my own grounds. Not more than a mile from here was raised the noted Polyanthus Cheshire Favourite nearly eighty years ago. I have seen several doubles from Ireland, but nothing like the one sent.—WM. OWEN.

. A very bright and pretty thing.—ED.

TULIPA RETROFLEXA.—The beauty of the Wood Tulip, or more so. It may be a near relative. Mr. Hartland sends the Persian Tulip—a pretty little kind.

*

AOTUS GRACILIS.—Very pretty when cut with its long, elegant, and dense spikes, which are often over a foot long, covered with yellow and crimson flowers. Sent by Mr. Crook.

*

STREPTOSOLEN JAMESONI.—We figured this in THE GARDEN. It would be difficult to give an idea of its fine orange flame-coloured flowers. It is a very fine summer-flowering plant for the greenhouse, and will, do doubt, become popular on account of its free growth and free-flowering habit. We have not seen better specimens than those just received from Mr. Crook.

*

AMERICAN WOOD LILY (Trillium).—A beautiful thing—not plentiful enough yet for cutting, perhaps. We have not yet tried if it will keep long in a room.

*

ORANGE GLOBE FLOWER (Trollius napellifolius).—Fine plant for cutting, and in effect as good as our Marsh Marigold. As a plant for cut flowers, easy to grow in any moist soil, or in a ditch side, if there be no room to spare in the garden.

*

MISSOURI CURRANT.—Why do not people more often grow this pretty *Ribes aurea*, which is so fragrant and attractive, especially when cut at this time of year!—T. W. GIRDLESTONE.

*

THE OLD DOUBLE WALLFLOWER.—We are glad to see this from Mr. Hartland, of Cork. Rich dark in colour, not a bit like the German monstrosities we see so many of. It is a fine old plant, and we hope he has some thousands of it.

*

NARCISSUS INCOMPARABILIS SEMI-PARTITUS.—In the report of the Narcissus committee in the last number of THE GARDEN a double form of *incomparabilis semi-partitus*, presented as an occasional sport by Mr. Ware, is mentioned. I take the liberty to inform you that I have cultivated for some time a double semi-partitus, which has remained constant for several years, and which, I suppose, I can now consider well fixed. I send you a flower per parcels post; if it is not the same as Mr. Ware's form, it may be a similar one.—J. H. KRELAGE.

* * A fine open form, very pretty in colour.—ED.

*

We are herewith enclosing for your table a truss of *Rhododendron Aucklandi*. It is grown outside, and we think you will find it very beautiful. We originally received the plant from the late Mr. Mangles, of Valewood, Haslemere. We have sent no foliage, as we wished to avoid losing any wood-growth. As the young shoots start they are of a beautiful delicate rose-pink, and add a second season of beauty to the plant.—CHAS. SMITH & SON.

* * A very beautiful delicate colour.—ED.

Propagating Dracænas.—In addition to the various ways of propagating these plants mentioned by "T. B." in THE GARDEN, page 396, I find that if the tops of plants that have lost their bottom leaves, and become unsightly, are cut off and placed in bottles of water, they form roots very quickly. When rooted they can be potted in the usual way; the roots formed in the water take very freely to the soil after potting. When the bottles can be placed in bottom-heat the cuttings root quicker, but they

will do so on the stages or shelves of the stove. Large heads can be rooted in this way in a few weeks without the loss of a leaf.—R. G. G.

PROPAGATING.

SEEDLING FERNS.—After Fern spores have been sown, and the young plants commence to cover the surface of the soil with a Moss-like growth, they require to be carefully watched, as a kind of decay, induced no doubt by overcrowding, sometimes sets in, and will carry off numbers in a short time. Some kinds more readily fall a prey than others, but in all cases by far the better way is to prick them off as soon as the least signs of this decay appear, and in doing so keep away from the new pot any piece that may be the least affected. The soil in which to sow the spores, and also that for pricking them off in, is much better if it can be baked before use, as such treatment will destroy all vegetable and animal life, and a little creeping Moss often does great damage by growing faster and gradually choking the young Ferns. In pricking off as well as in their first potting, most Ferns will grow better if the soil be put in very lightly, instead of being pressed down firmly. An allied class of plants to the Ferns, viz.:

SELAGINELLAS, are, generally speaking, of easy propagation, but still there are a few that do not increase very readily. These are the dwarf cuspidate kinds, of which *S. involvens* may be taken as an example. This sort rather suggests some dwarf-growing Conifer, and it may be increased in the same way as they are, that is to say, by taking cuttings of the shoots, and dibbling them into pots of sandy peat. Of course, the majority of the Selaginellas can be increased by division, but in all cases it is as well to bear in mind that a humid atmosphere greatly assists the formation of roots, and whether divided or simply put in as cuttings, they are in both cases greatly benefited if kept rather close till root action recommences.

PELARGONIUMS of the show, French, and fancy classes that are needed to flower early next spring should be put in without delay, as when struck as soon as this they may be grown on steadily, and in this way a sturdy habit is ensured. The best cuttings are formed of the short-jointed shoots, of which a few are frequently produced towards the outside of the plant, and if cut off carefully they are not missed, and consequently the plant is in no way disfigured. Of course, where it is desired to get as many plants as possible from one particular specimen, it may be cut down after flowering and made into as many cuttings as it conveniently can be, but the above remarks apply only where there is a quantity of flowering plants whose blooms are so much valued that they cannot be cut down yet. These short, spur-like shoots should have one or two of the bottom leaves removed, and then be dibbled into pots, about four cuttings around a 4-inch pot being a very suitable number. The pots should have a few broken crocks in the bottom, and the soil best suited is a sandy loam with a slight admixture of leaf-mould. After the cuttings are put in and watered, they should be placed on a light, sunny shelf, and though they may flag a good deal and lose the greater part of their leaves, they will strike just as well as if shaded, and are much less liable to grow up weakly. A good deal of the after success depends upon the selection of the cuttings, and guarding against their becoming drawn during any of the stages of their growth.

THE ROSEY JASMINE (Mascarenhasia Chrnovi-ana), of which a coloured plate was given in THE GARDEN a few years since, is by no means an easy subject to propagate, for if cuttings are formed of the young shoots they are very apt to decay, while if allowed to get too old they will stand for months without rooting, and perhaps die at last. I have had the greatest measure of success by taking as cuttings the shoots when they are about half ripened—that is to say, just as they commence to get woody in texture. The cuttings are then dibbled around the side of a pot 3 inches or 4 inches in diameter, the soil used being about equal proportions of loam, peat, and silver sand. The pots must

be well drained, and when the cuttings are inserted, placed in a close propagating case in the stove. After about a month they should be plunged in a gentle bottom heat, to encourage the formation of roots. Where there is no propagating case at hand, the cuttings may be covered with a bell-glass; and a very useful method when other appliances are wanting is, in the case of cuttings requiring to be kept close, to take the pot in which they are and drop it into a larger one, filling up the space between the two pots with sand or soil. The larger pot must be deep enough to allow of a pane of glass being placed over the top without crushing the cuttings; and of course these close pots will need attending to in the matter of watering, shading, &c., just the same as a propagating case—which, indeed, they really are.

TILLANDSIAS, VRIESIAS, and most other Bromeliaceous plants can be increased to a certain extent by means of division, or by detaching suckers, but of some, seeds are occasionally obtained, and when such is the case they can be raised in an almost unlimited quantity, for the seeds of many kinds are very minute and germinate well. I have raised a large quantity of the beautiful *Echmea fulgens*, of which almost every seed must have grown. The seed was sown as soon as ripe in pans of sandy peat, the top portion being passed through a fine sieve, while the bottom soil was rather rougher and more fibrous. The surface being well watered the seed was at once sown thinly thereon, and owing to the wetness of the soil it directly adhered thereto. A slight covering of dry sand being sprinkled over the seeds, a pane of glass was laid on each pot, and allowed to remain on till the young plants made their appearance. As soon as they could be conveniently handled they were pricked off in much the same kind of soil as before, and some placed in a close case made far more rapid progress than those that were kept in the ordinary atmosphere of the stove.

ALOYSIA CITRIODORA (the Lemon-scented Verbena), common though it be, is a plant that many fail to strike in a satisfactory manner, yet if a certain method be followed it will root readily. The plant intended for propagating from should be placed in a little heat, and will then soon push out quantities of young shoots. These shoots must be taken in their soft and succulent condition, and, being without delay dibbled into pots of light soil, should be kept close till rooted, which will only occupy about a fortnight. If they are then gradually hardened off and potted into rather light rich soil they grow away at once without any check.

CEANOTHUS.—We employ some of the *Ceanothus* for flowering under glass at this season, and find that the shoots which are then produced afford a ready means of propagation, for they strike root without difficulty. The time to take them is just as the succulent stage is passed, and they should be kept close till rooted. At the same time they are rather liable to decay if kept too close or too heavily shaded, so that errors in this respect must be especially guarded against. They should be potted off as soon as struck, for nearly the whole of the growing season is still before them.

PRIMULA SIEBOLDI, which every year at this season attracts a considerable amount of attention, is one of the easiest of all the Primulas to increase, as pieces of the roots grow so readily, even if cut up very small. The best time for the purpose is in early spring before they start, but they will also grow now, though they will not be so strong by winter as if struck earlier.

ALLAMANDAS can all be propagated without difficulty from cuttings with the usual treatment of many stove flowering plants, except *A. grandiflora*, which curiously enough succeeds best when grafted on one of the other kinds, such as *A. Hendersoni* or *nerifolia*. Sidegrafting is the method usually followed, the scion consisting of a moderately firm shoot of the current season's growth, or even a single joint will be sufficient. In any case care must be taken that the union is as perfect as possible, and if tied securely in position and kept close no grafting wax or other covering will be required. T.

STOVE AND GREENHOUSE.

T. BAINES.

CEPHALOTUS FOLLICULARIS.

(THE NEW HOLLAND PITCHER PLANT.)

THIS is one of the most curious and interesting little plants in cultivation. It is the smallest of all the Pitcher plants. Botanically, and also in its appearance, it is widely different from any of the *Nepenthes*, which latter genus is usually looked upon as the representative Pitcher plants. It also differs from any other of the insectivorous plants. In *Nepenthes* the pitchers are mostly produced at the extremities of the leaves, being an extension of the mid-rib; in the *Sarracenia*s the pitchers are simply the leaves, which, for more or less of their length, are hollow and distended; but in *Cephalotus* the pitchers are independent of the leaves, and are supported on stalks that spring from the stem of the plant. The pitchers are beautifully formed, with a lid similar to that of *Nepenthes*, but hooded; the mouths of the pitchers are armed with a row of strong hooked spines, that prevent the egress of the insects that are allured within them by the fluid secretion which they contain. When the plants are strong and grown under the influence of sufficient light, the pitchers assume a blackish brown colour, almost as dark as ebony. They are large in comparison to the size of the plant and leaves, in a strong example attain a length of about 2 inches.

The plant, when in good condition, produces crowns or suckers freely from the main stem, and its increase is effected by separating these. They are best when taken off in spring, severing them close to the stem. At the time named the suckers will generally be found to have produced roots. Care must be taken to secure these without their being injured. The best material to grow *Cephalotus* in is one half good fibrous peat and one half Sphagnum, both chopped into small bits, adding some crushed charcoal and sand. Very small pots will be required at first. These must be well drained, and the potting compost pressed firmly about the base of the stem, giving water when the operation is completed, so as to moisten the material fairly. The little pots should then be plunged in others two or three sizes larger, filled with Sphagnum, putting a small bell-glass over each plant. Place in an intermediate or moderate stove temperature close up to the glass, and shade when the weather is sunny. Here they will soon get established and will form roots freely; now give a little air by tilting the glasses on one side. It will be best to keep the plants in an intermediate temperature during the ensuing winter. As early in spring as growth commences move them to pots a size or two larger, plunging, as before, in others that are bigger. The Sphagnum used for plunging must from the first be kept constantly moist. By attending to this the moisture will be absorbed by the pots containing the plants, so that the soil will be in less danger of getting dry, a condition that must not be allowed either during summer or winter, as this *Cephalotus* partakes much of the nature of our British Sundews in needing to be always more or less moist at the roots, and kept wetter during the season of active growth than when dormant. As it is desirable to get the plants on so that they may attain size and strength with as little delay as possible, it will be well to keep them during the second summer in intermediate warmth, tilting the glasses higher so as to give more air. As the season advances the bell-glasses may be dispensed with altogether, but in this case the plants should be stood close against the glass at the end of the

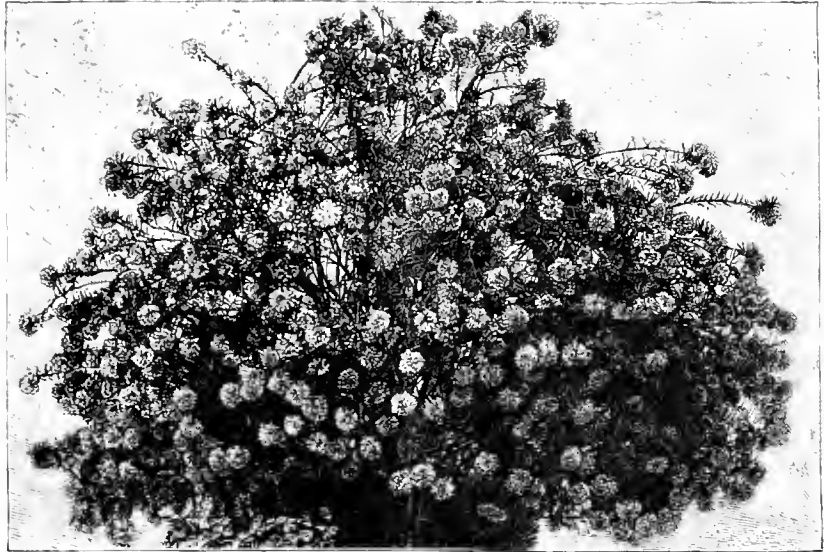
house away from where air is admitted, so that they may have the benefit of a still atmosphere. So situated the plant always did the best with me, though I have seen it in good form when stood close to the front lights where air was given; but I cannot speak as to whether the plant in question was continuously subject to such conditions or was temporarily stood where it received a direct current of air. But to give the pitchers the deep rich colour that is so essential to their appearance, the plants must have a place as near the glass as they can be got. The influence of light that comes through the upright glass at the end of a house in colouring this and some other plants—such, for instance, as *Sarracenia*s—I have found to be more effectual than that which is communicated overhead through the roof.

It often happens that this and other highly interesting plants that do not succeed anywhere or anyhow, are found to do better in some particular position in the house where they are grown. The observant cultivator will endeavour to find out such positions and not fail to note the effects. If there is one thing more than

turn yellow and fall off, after which the plants are of little value.

PIMELEA SPECTABILIS.

THIS plant, of which we here give an illustration, may now be seen flowering profusely in Mr. Williams' nursery at Upper Holloway. It was introduced to this country from the Swan River district of Australia nearly fifty years ago, and has always been a favourite with growers of New Holland plants. The genus belongs to the Daphnoid family (*Thymelacacee*), and contains numerous handsome species, which are alike useful in the conservatory or for exhibition purposes, as they travel well without bruising. This plant is a strong, yet compact grower, a profuse bloomer, and of tolerably easy culture. The soil best suited to this plant is a mixture of peat and loam, in the proportions of about three parts of the former to one of the latter; to this should be added sufficient sharp sand to make the whole feel gritty, whilst thorough drainage is indispensable. After flowering is over the plants should be cut back tolerably hard, in order that they may be well furnished with foliage at the bottom. Potting



Pimelea spectabilis. Engraved for THE GARDEN from a photograph.

another which cultivators have given insufficient attention to, it is the widely different influences that light has on plants when it reaches them through the glass at different angles.

As the plants increase in size they necessarily require more root room, yet a 4-inch pot is large enough for a full grown specimen consisting of several crowns; when this size is attained each plant will produce pitchers that will form a closely packed circle all round outside the leaves. The plants should be syringed overhead daily through the growing season, and, as already stated, must never have their roots dry. After the first or second season when the suckers are taken off and established, the temperature of a warm greenhouse will be more conducive to the plants continuing in a healthy, thriving state than if more heat is used, for though the progress is quicker yet the growth is softer. It is necessary to keep a continual look-out for aphides, which often attack the plant, getting on the undersides of the leaves, where they are sometimes not noticed until much harm has been done. If the parasites remain undisturbed for only a short time they cause the leaves to

should be performed just after the stems begin to put forth young shoots; the soil should be made very firm, and water must be carefully supplied until the roots begin to get established in the new material. Just at this time a slightly warmer and moister atmosphere will be beneficial, but when somewhat established the plants may be removed into the greenhouse again. During the earlier growth the shoots should be pinched off once or twice to keep the plants bushy, but this stopping of the growth should be discontinued after the month of July, or they will not have sufficient time to ripen up and form flower-buds for the ensuing spring. *P. spectabilis* is characterised by its linear-oblong, somewhat glaucous, smooth leaves. The flowers are produced in large woolly white heads upon the points of all the shoots, and they last in full perfection for a considerable time. The variety *rosea* is rather a stronger grower than the typical plant, and the flowers are all tipped with rosy pink, thus rendering it very distinct and a fit companion for the species. G.

Erica Cavendishi.—The beautiful yellow flowers of this Heath cause it to stand out con-

spectuous from all other members of the genus, and as yellow blossoms are (except those of the *Cytisus* and *Coronilla*) by no means very prominent in the greenhouse at the present time, it is on this account very attractive. This *Heath* is of a good, sturdy, free-growing habit, and its constitution is such that it will succeed under the usual treatment accorded to the general run of hard-wooded plants. The compact, bushy growth and handsome dark green foliage of this *Heath* render it a very ornamental Evergreen, irrespective of flowers. The neat little bushes of it now brought into Covent Garden Market are good illustrations of successful plant culture.—H. P.

DISA GRANDIFLORA, VARIETIES AND TREATMENT.

MY friend "Delta," recounting his success with *Disa grandiflora*, makes one or two remarks in THE GARDEN (p. 411), which in the interest of cultivators of this fine plant call for notice. I rather suspect I am the friend who recommended him to break it up, a practice which he does not approve. But he either mistakes what was meant, or he argues on too slight an induction. It was not meant that they should be needlessly divided, but only when the pots had become quite full of roots and growths, which with me always happens the second season at farthest. After that, if left undisturbed, I invariably found that they suffer. I once grew a plant without dividing until it occupied a 14-inch pin, but the growths made for the edge, and the older parts of the plant in the centre died off. This was Nature's way of effecting a breaking up. I would advise "Delta" to think twice before deciding that separation is wrong, because the pot-fal which he did not separate last autumn is stronger now than those which he did. My experience is that it is a plant that likes plenty of root room, and that pots are very preferable to pans, as affording greater abundance of drainage, in which the roots love to ramble, and, at the same time, ample potting material. The best result as regards strength of spike is obtained by one strong plant in an 8-inch pot.

In all this "Delta" and I are probably at one when we understand each other as to what breaking up means, and the degree in which it is to be practised. But I fear my friend and I are more really at variance in his estimate of the relative values of *D. grandiflora* *superba* and what is sometimes spoken of as the *Glasnevin* variety. This latter he says is "very inferior in the quality of its flowers," and he doubts "very much whether he shall care to increase his stock of it." That the *superba* variety is a shade or so deeper in colour I at once admit, but nothing could be farther from the fact than for anyone to suppose that the so-called *Glasnevin* variety is hardly worth culture. The idea would be ludicrous to anyone looking at a bunch of the two varieties in full flower. Old florists like my friend and myself, who have had our eyes sharpened by *Auriculas*, can at once distinguish the difference; but I know that I have found some difficulty in convincing outsiders of its existence. Surely, then, when the difference in colour is but slight, and the *Glasnevin* variety is found by many to be robuster and of easier culture, it can never fail to be justly considered one of the most beautiful and valuable plants in existence. I may add, in order to guard against misconception, that I grow both varieties, and find them to do equally well under similar treatment.

Clophran, Dublin.

FREDERICK TYMONS.

Soil for Azaleas.—Like most other gardeners, I have held to the firmly fixed idea that peat was the correct thing for *Azaleas*, and there can be no doubt but that they are grown to the greatest perfection in peat alone; but there is such a vast difference in the quality of peat in different parts of the country, that I feel sure, unless one is a good judge of soils, that the plants in many cases are literally starved. Several instances have lately come under my notice of exceptionally healthy and free-flowering collections of *Azaleas* that have been grown in soils quite different to the orthodox mixture. In one case I was struck not only by the quantity, but also by the quality of the bloom on some old

Azaleas, and asking the person in charge what kind of soil they were potted in, he said about half peat and half good stiff loam, and certainly the difference in the appearance of the plants since they had been repotted was extraordinary. They were not grown in one of the places where a regular *Azalea* grower was employed, but where a jobbing gardener came once a week, frequently to find some of the plants require soaking from being so excessively dried up. Possibly some large growers of these gorgeous flowers can give a little information on the soils which they find produce the best results, for I must own that my faith in peat alone has been rudely shaken of late, and many others besides myself would like to know whether they can substitute something more lasting and satisfactory.—J. G. *Hants.*

MANURE WATER FOR CAMELLIAS OUT OF FLOWER.

WHETHER we count the mere numbers or estimate the gross mass or bulk of *Camellia* blossoms, we must be almost equally impressed with the enormous strain they exert on the plants. Blooming, as they often do, in succession for four or five months at a stretch, the plants must be almost exhausted of productive force by the time the last blooms fade. Hence the importance of supplying stimulants to the roots, as their heads make a fresh start into wood-making.

This is also the only proper time to prune *Camellias*. By contracting the area of their tops through the removal of weakly and the cutting back of straggling shoots, the growing force is concentrated and virtually strengthened. With the advent of fresh growth above, the roots also make a new start underground. They are thus prepared to make the best use of all food presented to them, whether in a liquid or solid state. Hence this is the best season for furnishing *Camellias* with larger pots or new borders. But whatever compost may be provided for *Camellias*, its feeding properties are speedily exhausted. Neither is it prudent to give the roots very rich soil, for the richer the soil the sooner will it be virtually consumed and its mechanical texture broken down. The latter is by far the most important factor in such long-enduring plants as *Camellias*. Given a good mechanical medium and sufficient drainage to preserve the roots in robust health, it is the simplest thing in the world to supply them with food when needful.

All this is of the more moment, as *Camellias* are by no means gross feeders, except during one short period of the year. From the time the flower buds are set and fairly formed until they are fully unfolded the plants feed very sparingly. Stimulating food during this long period proves mischievous, and is one of the most fruitful causes of bud-dropping. Grown in rich composts, *Camellias* perforce are often too highly fed during eight or nine months out of the twelve, and this plethora of food when it is not needed is one of the most prolific sources of jaundice and other diseases. But during the period of active growth it is well-nigh impossible to over-feed *Camellias*. The plants do so much in such a limited time, that they need to be fortified by abundant supplies of food. *Camellias* during the short period of growing not only recoup themselves from the effects of previous exhaustion, but add greatly to their size and form, and considerably develop their bloom-buds for the following season. They also form new roots as well as extend their top-growth, and the vigour and health of both mostly depend on the abundance, richness, and suitability of the food provided. Another element of great importance has to be taken into account. It is of almost vital importance that the food should be readily absorbed and promptly assimilated, and converted into such products as shoots, foliage, flower buds, for the time, as we have already seen, is short, and the period during which *Camellia* roots can freely or greedily absorb food is shorter still, the time of maximum consumption of food probably not greatly exceeding a month or six weeks. Hence, should fresh solid manure be given, but little of it will be sufficiently soluble to be absorbed during the season of abnor-

mal root-bunger or activity. Unabsorbed manure in pots is always a source of danger, as it tends to injure or destroy the texture of the best soils. The roots may positively starve in a virtual dunghill while the manure is preparing for use.

For all these reasons liquid manures are best for *Camellias*. If not too strong, these are absorbed at once and converted into branches, leaves, and flower-buds before solid manures are sufficiently broken down to be used at all. Any excess, too, is run off through the water, and little injury is done. As to the sort of liquid, closet water, house sewage, liquid formed from pigeon, sheep, and cow manure, soot, and guano have been found the most suitable. The most striking results in verdure and vigour of growth were obtained by the use of closet water very much diluted with rain water that fell on a contiguous outbuilding. In less than a week the whole character of an entire house of *Camellias* was changed by its judicious use, and before their growth ended there was hardly a trace of a pale leaf in the entire houseful, though the collection was characterised by a semi-jaundiced shade of colour previous to the use of the liquid manure. The next best manure water for *Camellias* is that made from soot in the ratio of a bushel to twenty or thirty gallons of water. The soot should first be converted into paste—no easy matter—then incorporated with the water, left to settle for twenty-four hours or more before use, and drawn off clear.

HORTUS.

AURICULAS.

I HAVE read the remarks by "R. D." in THE GARDEN (p. 413) upon *Auriculas*, old and new. It must be pleasant to "R. D.," as it is to myself, to see the interest in these beautiful spring flowers not only sustained, but increased. The exhibitions in London, Manchester, and Edinburgh were very successful. In the Scottish metropolis the room where the show was held was crowded with visitors. Cannot our Irish friends get up an exhibition in Dublin? It would increase the love for the *Auricula* there, which seems to be declining at the same ratio as it is increasing in England and Scotland. The Rev. F. Tymons does not write hopefully of the present and future of floriculture in Ireland. I do not quite agree with "R. D.'s" estimate of green-edged *Auriculas*. I cannot recommend *Trail's Anna* at all; it has been grown in our collection with the greatest care for ten years, but it, like Mr. Simonite's *Talisman*, has not fulfilled its first promise of good quality; in fact, there are but two green-edged *Auriculas* to be depended upon to place in a collection of six at a good exhibition, viz., *Prince of Greens* and *Rev. F. D. Horner*. *Rev. George Jeans* and *Imperator J* threw out as entirely untrustworthy. The best grey edges are *George Lightbody*, *Alexander Meiklejohn*, *Lancashire Hero*, *John Waterston*, *Frank Simonite*, and *Richard Headley*. In white-edged flowers I do not predict very great things of *Reliance*; the tube is too large, and it is altogether wanting in quality. Conservative increases very freely, but requires good treatment, as the plant is very small when fully developed. *Smiling Beauty*, *Acme*, and *John Simonite* are the best of the white-edged varieties. Mr. Horner's new varieties will not only add brilliancy to a weak class, but they will quite revolutionise it. *Maggie* is the best white yet seen, north or south. The tube is a rich deep yellow. I have heard it described as "glowing gold;" the anthers are bold and heavy; paste pure white, dense, broad, and quite round; ground colour quite black; edge of the densest and purest white yet seen. The flowers last long in beauty.

Amanda may be termed a new departure; the tube is quite yellow, and it is the only violet ground yet introduced with a deep yellow tube. It has a good white edge, which also lasts well, as the plant exhibited in London had been in flower for three weeks.

In self-edged varieties "R. D.'s" selection is the best that could be made under the circumstances, but in six years more I hope to see most of them weeded out from every good collection. I hear that *Heroine* (*Horner*) is likely to be distributed this year, probably through Mr. Simonite. Growers will

not be slow in raising from its seedlings which cannot fail to be great improvements on all the old sorts. "R. D." has omitted one of poor Mellor's best flowers from his list of selfs; it is named Negro, and was very good here this year. It cannot be expensive, as it was sent out two years ago at half a guinea.

Dulcis is one of the best of Mr. Horner's new selfs; it would beat Heroine but for its paste, which is not quite so good, because not so broad, as that of Heroine. It is in this latter point that Heroine excels. In Ellen Lancaster and some of the older sorts the paste is far too narrow.

Rubra is a rich, dark velvety red, and if we add Mrs. Horner as a violet self, we have three new sorts recently exhibited of surpassing excellence.

I would urge upon all new beginners the importance of obtaining the very best varieties to start with—never mind the price. They are really the cheapest in the end. It is easy to raise seedlings from them; but to begin raising seedlings from the sorts named by "R. D." would be to court failure. The young grower would find himself in the year 1877, not 1887, and would have to work at the least for ten years before he could reach the point we have now arrived at. Surely it is better to pay five shillings or so more for a plant and be in the same age as one's contemporaries.

In reference to the alpinas, the same remarks also apply. Some of those named by "R. D." were raised more than twenty years ago, and are now quite out of date. Further, it is much easier to obtain good varieties from seeds. I have raised a thousand seedlings from green-edged Auriculas in an effort to improve a weak class, but as yet have only obtained one good variety. Two years ago I raised from seeds 250 plants of a single alpine cross, and out of that number I have saved forty really good sorts, as good and many of them better than the parents. The alpine varieties are also very hardy, and form excellent colonies and groups in the rock garden. J. DOUGLAS.

Crassula jasminæa.—This is an extremely pretty little greenhouse plant, and one that will remain in flower a considerable time. It forms a dense, close, branching mass about 6 inches or 8 inches high, and each shoot being terminated by a cluster of white blossoms, the whole plant is quite a mass of that tint. It is nearly allied to the well-known Kalosanthes coccinea, and the individual flowers much resemble each other in shape, but the colour is quite different, as well as the entire habit of the plant. It has been, I believe, known in this country for a long time, but it is only within the last half-dozen years that it has been extensively cultivated by one or two market growers, and thus quickly became popular. Like most of its allies, this *Crassula* is a plant of easy culture, for cuttings will strike root without difficulty, provided they are not over-watered, and from their succulent character they need to be kept pretty dry during the winter, and also in a light position.—H. P.

Lantanas in bloom.—The *Lantanas* certainly possess one strong claim to recognition, viz., their long period of flowering, for under favourable conditions they will bloom more or less for three parts of the year, and their blossoms are at all times very attractive. We have some little bushes in 6-inch pots that were wintered in a structure kept at an intermediate temperature, and they are now completely studded with their clusters of bright-coloured flowers. Though so attractive on the plant, the strong smell which pervades the whole of them, especially when bruised, is against their being employed in a cut state, at all events where they will be closely inspected. A noteworthy feature with regard to the blooms of *Lantanas* is the great change of colour which takes place after they have been opened for a day or two; for instance, some will, on opening, be bright yellow, which changes to deep pink. As one cluster will contain flowers in all stages of development, the gradation in colour is thus rendered the more pronounced. *Lantanas* are plants of the easiest possible culture, the treatment accorded to *Fuchsias* suiting them perfectly, and they strike root just as easily. The cuttings must

be formed entirely of the young growing shoots, and if kept close they quickly root. Red spider is very apt to attack them, but an occasional syringing will keep it in check. A few good varieties are *No Plus Ultra*, orange when first opened, changing gradually to magenta-purple; *Favourite*, salmon-red, changing to purplish; *Pluie d'Or*, light yellow; *Distinction*, bright orange-red; *La Noire*, white; and *Magenta King*, purplish magenta.—H. P.

GREENHOUSE RHODODENDRONS.

THESE are very handsome plants for the decoration of the greenhouse and conservatory during the spring months, and they are so easily grown that anyone might manage to cultivate them. The Himalayan group comprises all those with large flowers, such as *R. Dalhousie*, *Countess of Haddington*, *exoniensis*, *Veitchianum*, &c. They are not expensive plants, and their foliage is at all times very beautiful. They will succeed in any part of the greenhouse, either on the sunny or shady side of it, and they do not require to be placed so close to the glass as some plants do, and when they have made their growths, if space is then required in the greenhouse, they may be placed out of doors. I fancy the buds set quite as well out of doors as they do in the greenhouse. Even as foliage plants some of them are very ornamental, *R. Edgeworthii* for instance. Some of the stronger growing species make excellent conservatory plants if they can be planted out in a good deep border of turfy peat, and if this is not over-plentiful a little yellow loam may be mixed with it. For pot culture we drain the pots well, as we expect to give them plenty of water at the roots, and unless they are well drained this does not pass freely away. For the very small, fine hair-like roots of *Rhododendrons* become compacted so closely together that I have known water stand for some time on the surface. A good plan is to mix with the potting soil a little broken charcoal. Light, fibrous peat torn up by the hands is the best material in which to pot them; a very little loam added is useful, and a small quantity of decayed manure or leaf-mould is beneficial. The same treatment applies to the *R. javanicum* group, except that it requires a rather warmer temperature all the year round, and especially in winter. There are many very handsome varieties of this group now in commerce, and some startling additions are being made this year. The varieties with trusses of flowers shaped like a double Balsam—*R. balsaminiflorum* vars. *album* and *aureum*—are now being sent out; also the buff-coloured *R. President*. It is in its way quite distinct and remarkably pretty. I have had ample opportunity of watching the development of these plants, and can testify to their free vigorous growth. Another excellent characteristic is this, that they can be propagated quite easily from cuttings. J. DOUGLAS.

Veronica Hulkeana.—This New Zealand *Speedwell* is very different from most of the species which are natives of that region, but it is none the less beautiful, and, like the other members of the genus, is of very easy culture. When planted in a warm, sunny border, it will survive most winters around London, though it is frequently severely injured, but further south it may, like the rest of its class, be accounted quite hardy. Apart from this mode of treatment, it readily lends itself to pot culture, and with us where it has been wintered in a greenhouse is now in full flower. It is a plant of rather erect habit, and the blooms, which are borne in terminal branching panicles, are of a very pleasing shade of pale lilac. It can be readily grown into neat little flowering specimens in pots 5 inches or 6 inches in diameter, and furnishes a pleasing, and at the same time, uncommon tint among greenhouse plants. It has been known in this country for many years, but is still quite uncommon.—H. P.

Magnolia fuscata.—In answer to your correspondent "D. T. F.'s" question in *THE GARDEN* (p. 442) of your last issue with regard to the temperature best suited to the successful cultivation of the above-named shrub, I may say that all it requires is protection from frost, and that I have always found it thrive admirably and bloom abundantly when grown in the ordinary greenhouse.

Anyone visiting the temperate house at the Royal Gardens, Kew, will find a fine bush of this most delightfully scented shrub planted out therein and perfuming the house for a long distance round with its exceptionally powerful fragrance. As to what your correspondent Mr. Burrell says as to the growth of this shrub, I can only speak from my own experience thereof, which is confined to pot-grown plants and the fine specimen above referred to in the temperate house at Kew, which though it has evidently been there for many years is now only about 5 feet in height, though I should say nearly 2½ feet or 3 feet in diameter, which proves it to be a slow grower. W. E. GIMBLETON.

Hovea Celsi.—This is one of the most lovely of the New Holland plants; that alluded to in *THE GARDEN* (p. 112) must have been a striking object in the greenhouse or conservatory. It has a tendency to become of a rather straggling habit as it increases in age, and tying the shoots down and over each other it forms an object not pleasant to contemplate. The best way is to keep the plants close to the glass, shade as little as possible, and admit plenty of light and air.—J. DOUGLAS.

DARWINIAS.

THIS is a small genus belonging to the family of Fringe Myrtles. All the members here enumerated are extremely beautiful and popular. The species which we here refer to are somewhat Heath-like in general appearance, of free-branching habit, and when grown into specimens, or even moderate-sized plants, are very useful for conservatory decoration. *Darwinias* require care to grow them well, and both care and attention to keep them in health when they have attained to specimen size. In potting, use good fibrous peat, broken up rather roughly, plenty of clean, sharp sand, and a small portion of light loam. The new soil must be pressed very firmly, avoiding injury to the roots. We prefer them to be rather pot-bound than have a great quantity of unused soil about their roots. Let the crown of the plant stand higher than the sides of the soil, so that no water can remain round the neck of the plant. The drainage must be carefully attended to, and water and air administered judiciously. Respecting temperature, we cannot do better than refer our readers to the hints upon the natural surroundings of these plants given under the genus *Gompholobium* in *THE GARDEN*, April 30, p. 394. We have previously remarked that *Darwinias* are free-branching plants; they, nevertheless, when young must be frequently stopped during the growing season in order to become well furnished with lateral shoots. This being accomplished, and the plants having become well balanced, only the tops of the stronger shoots will require stopping, and this should not take place after the middle of June if flowers are required early the next season. Very little shade is necessary for these plants, and they will be all the better for full exposure to the sun and air through the months of July, August, and September if the last month remains fine. This exposure thoroughly ripens the wood and causes the flower-buds to set, whilst the involucres by this treatment become more highly coloured. After this remove them to the greenhouse, which must have a dry atmosphere with a free circulation of air without draught. They are known also in gardens by the names of *Genetyllis* and *Hedaramas*. The following are the most showy kinds:—

D. TULIPIFERA.—This is a robust, Heath-like plant, attaining a height of from 2 feet to 4 feet, erect, and much branched; leaves opposite, sessile, oblong-obtuse, dark green on the upper side, ashy grey beneath; flowers in dense heads, terminal on all the shoots (in well-grown specimens)—these are, however, small and unattractive, but the large ovate, highly coloured involucres which surround them are very attractive and persistent; the ground colour is white and pale straw colour, flaked and streaked with crimson. It comes from Western Australia, and blooms during April, May, and June. It is also known as *Genetyllis macrostegia*.

D. HOOKERIANA. known also by the name of *Genetyllis fuchsoides*, is a more slender plant than

the preceding; otherwise it resembles it in general appearance; stems reddish brown; leaves sessile, linear-oblong, dark green above, pale below; involucre terminal, pendulous, bell-shaped, deep red, and, like those of all the species, very persistent; but it is bad policy to allow them to remain long enough to exhaust the constitution of the plant, as weak growths and very few flowers the following season will result. It blooms during April, May, and June. Western Australia.

D. FIMBRIATA.—This is a charming small-growing species, its soft, rose-coloured involucre forming a beautiful contrast to the other species. It has not, however, found so much favour amongst plant growers hitherto as it really deserves, perhaps on account of the fashion for decided colours, which this species lacks. It is a slender, dwarf-growing plant with terete branches, and small, sessile, obtuse leaves, which are ciliate at the margins and dark green; involucre terminal, pendulous, bell-shaped, about an inch long, beautifully fringed round the mouth, and of a uniform soft rose colour. It blooms during May and June. South-west Australia. W. H. G.

FUMIGATING.

JUDGING from experience, the art of fumigating is one of the simplest possible; but, judging by the elaborate machines or utensils patented and sold for the benefit of those who must fumigate, it seems to be exceedingly complex. It may be possible that some plants need exceptionally well-strained smoke ere it comes into contact with them; but still I am not sure that the danger, if there be really any, lies so much in the nature of the utensil from which the smoke passes as from the nature of the material which is consumed. We almost universally employ Tobacco paper or rags. Now, pure Tobacco at 3s. 6d. per lb., and then of a refuse form, and, as facts have shown, one-half water, is rather a costly material, and far too rapidly consumed; rag I have found dangerous even to such hardy things as Roses, but that may have been accidental. Still, I greatly prefer good paper; but that, too, differs appreciably in quality. I have used some which rendered existence within the smoke intolerable for but a moment, whilst others have proved remarkably mild and innocuous. Without doubt the capacity of human beings to endure existence in a house under fumigation or otherwise offers a pretty fair test of the merits of the material consumed; still, even the best of Tobacco paper is relatively cheap and so easily employed, that there is no excuse whatever for having aphid in a plant house. Very likely my experience of the process of fumigation is an exceedingly limited one; still, there is not much difference in the effect let the conditions be what they may. When intelligently conducted, of course, some things will bear more smoke than others, but those are points well understood by competent gardeners. Of late my chief experience has been confined to a large span-roof house devoted to Roses. The house is imperfectly constructed, and from the ridge the smoke escapes rather freely, hence it is needful that the house should be filled with smoke quickly to ensure a good smother for some fifteen or twenty minutes. My most useful utensil for this purpose is an old galvanised iron foot-bath, holding about a peck; this has a few holes in the bottom. The process is simple enough. A quantity of cotton rags is burnt to form tinder, and as soon as the flame is over, some Tobacco paper is added slowly until enough is laid in for the requirements of the house. Then I lay over the top some damp Moss, this latter serving at once to cool the smoke as it is emitted, and to press the paper down as consumed. Combustion is even and steady, but a big volume of smoke is quickly emitted, and the house soon full of the vapour. Nothing could be simpler, and because the draught is slow, there is no danger of flame bursting out. I prefer this trivial contrivance to the most costly patented apparatus, and when the material burnt is good it is always most efficient. Such a plan can be followed by any amateur, and inflicts upon him only the smallest inconvenience, as there is no reason whatever for

entering the house once the paper is properly ignited until the door is opened to allow the smoke to escape. I received the other day an elaborate utensil patented specially for fumigating. It resembles a travelling tinker's fire-pot. It is of sheet-iron, stands on a tripod, has a false bottom, in which to place red-hot coals; and in the receptacle above, in which the Tobacco paper is placed, a funnel in the centre having holes in it. This is intended to promote draught. There are also what may be called air-shafts fixed on the outside of the barrel, through which air can pass to the inside. The whole is surmounted by a lid, whilst around the top of the barrel are numerous holes out of which the smoke can escape. The thing is doubtless of an ingenious nature, but seems needlessly elaborate. I tested it against my foot-bath, and found that it was less effective in throwing out a body of smoke quickly, the funnel inside interfering with combustion at first, and then later promoting so rapid a draught, that flame burst out twice, and on the second time I removed the thing altogether. Possibly I am incapable of duly appreciating the true merits of this and similar contrivances, but that is my fault. Still, some other persons may be of my opinion. A. D.

Dwarf German Scabious in pots.—These are very useful when grown in pots for winter flowering. Seeds may be sown about the middle of May, and when the plants are large enough they may be grown on and finally potted in 8½-inch pots. If grown out of doors all the summer and then placed in a cold frame, and brought into a warm house when the days become short, dull, and damp, the fire-heat helps them into flower. The variety grown by Mr. Roberts at Gunnersbury Park is dwarf and free-branching, makes nice specimens in pots, and produces very fine and handsomely formed flowers. Some of the dark varieties are remarkably good, and a packet of seed will yield an excellent assortment.—R. D.

Beaufortia splendens.—This is among the best of the Bottle-brush plants, as these Australian shrubs are commonly called, and so beautiful is it, in common with several others of the same class, as to make one long for a return of these plants to popular favour. All the different hard-wooded greenhouse plants, beautiful though they be, are now under a cloud, but the time will no doubt come when they will be generally grown. The neat habit of this *Beaufortia*, and the fact that it will flower freely in a small state, are great points in its favour; but still it is by no means the only desirable member of this class, as mention may be made of *Metrosideros*, *Melaleuca*, and *Callistemon*, one of the best of this last being *C. rigidum*, a large-growing kind that requires a good-sized conservatory for its full development, and when this can be afforded it the large clusters of glowing crimson-coloured stamens make a goodly show, and not only do they remain in beauty for a considerable time, but a succession is often kept up for months. Seeds of several of this class are at times imported from Australia, and, generally speaking, they retain their vitality well, and germinate without difficulty. A light open soil in which peat predominates is a very suitable compost in which to sow the seeds, and from their minute character they must not be covered too deeply. Cuttings of the half-ripened wood will strike if put in sandy peat and covered with a bell-glass, but they will all remain some time before they root. In common with most other plants, those raised from cuttings flower more freely in a young state than seedlings.—H. P.

SHORT NOTES.—STOVE AND GREENHOUSE.

Woodlice in stove.—I have a stove and everything is being destroyed by woodlice. They are destroying everything, and the more I destroy the more seem to come. Can any of your readers advise as to the best way of getting rid of these pests?—LEES.

Theropogon pallidus.—This is a pretty little plant from the Himalayas, that will grow and flower well in an ordinary greenhouse. It forms a dense clump of grass-like leaves—indeed it bears a considerable resemblance to an *Ophiopogon*, while the blooms are much like those of the Lily of the Valley, not only individually, but also in the way

in which they are borne. The flowers are of a pale purplish hue. When seen in the shape of a specimen bristling with flower-spikes, it is both an interesting and a pretty plant.—H. P.

SEASONABLE WORK IN PLANT HOUSES.

AMARYLLIS.—The cultivation of these fine bulbs promises to become as general as at one time it was exceptional. The present race of Ackermann and Leopoldi hybrids are better growers and more certain bloomers than the species and varieties of these plants that used to be within the reach of ordinary cultivators, and when once a few really good varieties are obtained the means are at hand for securing seed, from which, at the least, varieties that are quite good enough for decoration may be relied on. For though with *Amaryllis*, as with most plants that cross freely, new kinds that surpass the best already in existence are not to be looked for as an everyday occurrence, still there is this in favour of seedling-raising with the plants in question, that where there is the opportunity of saving seed from good varieties the seedlings forthcoming may collectively be reckoned upon as good enough for decorative use. Where it is desirable the time of *Amaryllis* flowering may be accelerated or retarded considerably so as to have them in succession, but in most cases the bulbs that have flowered latest will now shortly be out of bloom and be making their growth. During this time intermediate warmth suits them better than either a high temperature on the one hand, or ordinary greenhouse treatment on the other. To do justice to the plants they must have plenty of light; short, stout, leathery leaves are essential to the bulbs attaining the full amount of strength. Through the growing season the syringe should be used daily; without this red spider is likely to be troublesome, and the presence of this little pest is highly injurious, as if it is allowed to get ahead it invariably causes the foliage to lose its vitality sooner than it should.

IMPATIENS HAWKERI.—In appearance, so far as habit of plant and the form of the flowers are concerned, this new sort is much like *I. Sultani*, but the colour of the flowers is different and much more telling than the older kind. It is more than likely that *I. Hawkeri* will be found one of the most useful plants for the decoration of greenhouses and conservatories that has appeared for some time. Its easy propagation and the quickness of its growth are much in its favour; the smallest bits when newly struck and potted off will flower, but, like all quick-growing subjects that are soft and fleshy in their shoots and leaves, the plants must from the first be kept close to the glass in a light house or pit so as to keep their growth stocky and short-jointed, as if at all drawn the flowers are fewer and the whole appearance of the plants indifferent. Plants of this *Impatiens* if wanted to be grown up to a considerable size only require proportionately larger pots and more head room, but in most cases small or medium-sized examples will be the most serviceable. To keep up the requisite stock a few should be struck at intervals all through the spring and summer. The plant is said to come from the South Sea Islands, and as such, in common with other things that hail from the same quarter, will require to be kept warm in winter and spring, but it frequently happens that plants that will not do without warm treatment in the dormant season and during the early part of the growing period will bear a greenhouse temperature from midsummer until the nights begin to get cool, provided they are not subjected to cold draughts through being carelessly placed near where air is admitted. Not unlikely this beautiful Balsam will stand a temperature of this sort in summer, in which case it will be doubly useful.

JASMINUM GRACILLIMUM.—It necessarily follows that large, full-grown examples of this charming plant, such as are obtainable by turning them out in a bed, will yield the most flowers, but to ensure a succession a sufficient number of medium-sized plants are better than one or two large specimens, especially when they are grown in pots, so as to admit of their being placed in more or less heat as becomes necessary. Young plants that

were struck from cuttings early in the year should be pushed along in a brisk-growing temperature, moving them into larger pots as these are needed. Stop the shoots so far as necessary to ensure the plants being fairly furnished with side branches, for, though more inclined to a bush-like habit than others of the genus, still, if left to itself, the growth is thin and straggling. Keep the plants well up to the light, giving a moderate amount of air in the middle of the day, with a thin shade when the weather is sunny, so as to get the benefit of that warmth after the lights are closed and the blinds run up, accompanied by a moisture-laden atmosphere. The growth that is made by the plants in a house that admits plenty of light in the two or three hours that follow closing in the way indicated is worth all that they make in the rest of the twenty-four hours. T. B.

FLOWER GARDEN.

PRIMULA SIEBOLDI.

THE editor regrets that this beautiful Primrose is not more usually seen in gardens planted out. Whilst sympathising in that expression of regret, I may add that I feel some surprise at not seeing it generally grown as frame plants in pots for greenhouse decoration also. Outdoors, in good sandy soil, such as rock plants, and specially Primulaceæ delight in, Siebold's Primrose should do well, the chief requirements being good drainage, deep cool soil, and some shelter from winds. No doubt the herbaceous habit of the plant militates against its outdoor cultivation, because when the foliage is gone it is out of sight, and soon out of mind. It is worthy of trial, however, whether plants kept in pots in cool frames during the winter would not turn out well in the spring before the bloom-stems were up. In snowy or mudly rainy winters the crowns suffer from excessive moisture, and being so close to the surface are in more danger than are those of many other things. But if some little care is needful with this Primrose, some ample reward is found for good culture later, no matter how conducted. Nice pots or clumps of Sieboldi, or of its progeny *Hermia*, blue; *grandiflora alba*, or *Snowflake*, white; *laciniata*, red, and many others, are indeed lovely both in foliage and flower. I think the flowers of *laciniata* present most acceptable matter for bouquet making or vase decoration, the colour of the flowers, under artificial light, standing out with striking effect. If grown for exhibition I should like to see them in 12-inch pans, but for that purpose the grower should have an ample stock of each kind from which to select some two dozen or so of the strongest rhizomes or crowns when dividing them in the autumn. Such pans well looked after would give almost masses of beautiful flowers set in a bed of handsome foliage, and thus become for the time literally the handsomest of all exotic Primroses. I prefer pans to grow the crowns in for the purposes of propagation, because in these they find more room, have ample soil depth, hence less pot-area exposed to the sun and wind, and are easily watered. Of course, in breaking up the pan clumps in the autumn, it is easy to select the best crowns for special pot-culture, whilst all the weaker crowns can be replaced in pans in fresh soil for further development. A cool frame and an ash bottom seem essential requisites for successful culture in pots or in pans. I must apologise to Mr. Douglas for not having made myself conversant with the change in the *Auricula* show class devoted to Primula species. I consider the change in shutting out two plants or more of some of the most showy or effective of Primulaceæ to have been a mistake. Of effective forms I name specially Sieboldi and its varieties, *obconica*, *floribunda*, *japonica*, and a few others when well done; then *denticulata*, *cashmeriana*, and lots of others having small flowers may be termed pretty; whilst *scotica*, *minima*, and similar pignies may well come under the head of microscopical, as their charms can only be found upon close inspection. In making up classes at flower shows for the gratification of the general public

effective kinds only should be chosen, but for botanic purposes no doubt the minute-flowered kinds have exceeding interest. In the case of Primroses and Polyanthuses in pots, Mr. Douglas would perhaps hardly desire to see collections of wild varieties, because they would give so little that was beautiful or attractive. A. D.

THE LAYIAS.

THIS highly ornamental genus of annuals, natives chiefly of California, has now been made to include a number of plants well known in gardens at the present time under other names. The Layias, without exception, are a class of annuals that should be included in every selection, as well for their neat habit of growth as for their beauty and free-flowering character. They commence to bloom soon after the beginning of summer, giving a continuous succession until autumn. Most, or perhaps all of them, are of a more or less trailing habit of growth, and when grown in large patches have a very striking effect. Where exposed to winds, &c., the plants should be tied to a few short stakes or pegs to keep them steady. Few annuals are more use-



Layia elegans.

ful for covering permanent bulb beds or patches of bulbs in the mixed border. They can be sown in the open air about the end of March or beginning of April, and give little or no trouble, except thinning out where they are growing too thickly. We have also found them extremely useful as cut flowers.

Amongst those grown in gardens at the present time, *L. elegans*, represented in the annexed cut, takes a first place. It belongs to the same section as *L. glandulosa* and *L. heterotricha*, to both of which, indeed, it is very nearly allied. It grows about a foot or so high, compact, bushy, producing in profusion throughout the season its handsome flowers. The ray florets are of a fine soft yellow, tipped with white.

L. glandulosa, recently introduced, is a very handsome kind, in habit and other respects resembling the above, but with pure white flowers $1\frac{1}{2}$ inches in diameter. *L. platyglossa*, known as *Callichroa*, light yellow, with whitish tips; others, such as *L. Douglasi*, *chrysanthe-*

moides, *calliglossa*, &c., are all distinct enough to claim a place in the border devoted to annuals. They all ripen seed freely. K.

SPRING FLOWERS AT PANTON, BERWICK-SHIRE.

The soote season, that bud and bloom forth brings,
With green hath clad the hill and eke the vale.
LORD SURREY.

THE most enjoyable period of the year is approaching, for the Larch has assumed its mantle of tender green, and the earliest buds of the Beech, Chestnut, and Plane are bursting into leaf. In the mornings and evenings the woods and groves resound with the voices of many birds, amongst which may be heard the flute-like notes of the blackbird and the mellow strains of the thrush, intermingled with the joyous and oft-repeated songs of the chaffinch and the willow wren. At intervals the chorus is joined by the blackcap, which has now returned from the south, and is varied by the soft cooing of the cushat and the cawing of the rooks at the distant rookery.

Nature inanimate employs sweet sounds,
But animated Nature sweeter far,
To soothe and satisfy the human ear.

The most favourable time to walk in the garden amongst the spring flowers is either on a fine calm morning, when the dew with which the plants have been refreshed during the night is still on the grass, or on a quiet evening when the sun is getting low and shedding its mellow light through the trees. Then the delicate colours of the alpine plants can be seen to perfection, for when the sun is high and pours down a flood of light, the soft tints of these flowers are partially obscured.

Spring flowers have the best effect when they are grown in large clumps, and on this account it is desirable to save seeds from as many kinds as possible, so that they can be raised in quantity and numbers planted together in one spot. While referring to this subject it may be mentioned that the introduction of a hive of bees to the garden has a perceptible effect in causing many spring-flowering alpine plants to produce seed which would not otherwise do so.

The weather for the last few weeks has been very changeable and unfavourable for spring flowers, which have suffered much from frost during the night and the cold east wind during the day. Hail-storms have likewise been frequent, reminding one of the lines of the old Scottish poet, William Dunbar—

Yistirday fair sprang the flouris;
This day that ar all slane with shouris.

But, notwithstanding the ungenial weather, a great many spring flowers are now coming into full bloom; and although most of the Narcissi, such as *Horsfieldi*, *maximus*, and others, are going past, their places are being taken by others, amongst which may be mentioned the Duchess of Westminster, *J. B. M. Camm*, and several of the poetical section, including *p. ornatus*, which is one of the finest. On the rockery *N. juncifolius* and *N. muticus*, from the Pyrenees, are in full flower, as well as various white Daffodils, *N. cernuus plenus* being conspicuous for its lasting qualities. Several kinds of Muscari may be seen flowering amongst the stones, including *M. atlanticum*, *Heldreichii*, *moschatum*, *neglectum*, *Stenacheri*, and *Szovitzianum*. One of the most distinct and lovely flowers is *Fritillaria Meleagris alba*, and near a clump of it are to be seen *F. pallidiflora* and *F. armena*. The rarest alpine at present in bloom, however, are *Androsace villosa*, which is like a little grey cushion covered with white stars, and *A. ciliata*, a somewhat similar plant, with rosy crimson flowers, and which is described by Baekhouse as "one of the most beautiful of all the Androsaces yet discovered." The Androsaces above mentioned are from the Pyrenees, and were procured through the kindness of a lady in the county who lately visited these mountains. *A. carnea* and *A. Lagerri* are likewise in bloom. *A. glacialis*, of which there is a large tuft, has not yet flowered. A fine early *Veronica*, from Froebel & Co.,

is *V. satureifolia*, which is at present covered with its blue flowers.

G. MUIRHEAD.

Paxton, Berwickshire.

RAIDS ON WILD AND OTHER FLOWERS.

MR. COLEMAN'S timely and vigorous protest (p. 415) shows that these raids still continue. They are alike antagonistic to the spread of botanical knowledge and the development of some of the most alluring features of semi-natural landscapes. The raiders are little better than robbers, whether dressed in rags or in broadcloth. If anything the latter are the more bold, and difficult either to restrain or punish. It is many years ago since my early attempts to multiply summer plants in a wholesale way in pleasure grounds and woods were checked and partially frustrated by the wholesale pilferings of plant stealers. Enormous quantities of Snowdrops, Daffodils, Primroses, Forget-me-nots, Windflowers, Valley Lilies, &c., had been propagated, put out, and partially naturalised. So far, everything promised the success of wild gardening on a large scale. The object was twofold—to link formal on to natural gardening through these and other plants, as well as to light up the home woods with a prodigal wealth of beauty and of fragrance. Hardly, however, had the birds and rodents got used to the new garniture of their homes and agreed to let the strange plants alone—and this takes some time—than the raiders began their work of destruction among the flowers and plants. Seas of golden Daffodils that rippled with golden-crested waves to-day were found flowerless on the morrow. Great groups of Valley Lilies that filled the demesne with fragrance one day, were scentless, because flowerless, the next. And a similar fate awaited Snowdrops, Golden Aconites, Windflowers, Primroses, Wood Hyacinths, Tulips, wild Orchises, &c., &c. The flowers were stolen in handfuls, basketfuls, barrowfuls, cart and carriagefuls. Yes, incredible as it may appear, one of the first thieves caught was a lady, who had ordered her carriage to stop on the outskirts of the home woods, got in, gathered quantities, and was just off with a load for some church festival when caught in this act of sacrilege.

Wild flowers! Surely these are free to be plucked, or torn up by the roots by all. Such is the popular fallacy which pervades high and low in many parts of the country. And hence it is not the flowers alone that are taken, but the plants likewise. Men and women come in fustian and broadcloth, cottons and silks, with bags, sacks, baskets, and barrows, spades and trowels, pounce upon, dig up, and carry away one's favourites. Again and again has our wild garden been impoverished and marred by these impudent marauders and thieving raiders. Huge groups and patches of uncommon and common types of Primroses, including *P. japonica*, Snowdrops, Daffodils, Narcissi, Forget-me-nots, Daisies, wild Orchis, Peonies, Anemones, &c., have been subjected to such heavy raids until few have been left. Few things are more discouraging than these cruel raids on our favourites, and there seems no sufficient remedy. Catch the raiders in the act, and abuse or an apology, according to the status or character of the offenders, is all you will receive. Unless you are very firm indeed there will be no word about restitution, nor the slightest chance of recovering your property. I caught a lady once who added a huge basketful of choice *Rhododendron* blooms to her other booty, and though I saw her off the grounds with not a few remonstrances, she kept fast hold of her booty and walked off with it.

Neither the morality of the classes nor the masses recognise any right to the possession of so-called wild flowers, nor of garden ones that the taste or genius of the cultivator may have increased to such an extent as to be massed with them in woods or wild gardens; and the law does no more for their protection than public sentiment or morality. Our legislators have passed laws to protect not a few beasts and birds and fishes, some of them of very questionable utility, such as hares, rabbits, chaffinches, and sparrows, and it might hardly be too much to request them to protect our wild flowers

from the attacks of those wholesale raiders who, either from mere greed or the love of gain, are threatening them with destruction in many quarters.

There are also other ways of destroying semi-wild flowers besides stealing them root and branch. The annual removal of their flowers and foliage in a rough manner or at an unseasonable period and the trampling down of their leaves, as described by Mr. Coleman, result in growing weakness, sure disease, and certain death. Pity it is that the public cannot go, see, and admire natural beauty as they do fine pictures and perfectly chiselled sculpture without dreaming of becoming the possessors of the masterpieces of either Nature or art. The mere craving for possession is as vulgar and selfish as it is suicidal. Within the domain of art it can only be gratified by sacrificing the pleasures of the many to the gratification of the very few. In the field of Nature each flower and plant-grabber leaves the landscape so very poor, that finally the fair face of Nature is stripped bare of all its beauty, and thus the charms of our natural or semi-natural landscapes are totally destroyed.

One of the most potent causes of this wholesale destruction of plants and flowers is founded on the exaggerated importance attributed to mere mass or numbers in decorative arrangements. That mass is might, has long been accepted as an axiom in science. Not this, however, but the exact converse is true in matters of taste—the lighter the touch, the more sparse the material, the more exquisitely beautiful the room, church, hall or table arrangements as a rule. And yet we see carriage and cartloads of flowers and foliage crowded into our churches, public buildings, and houses at Christmas and other festivals, dinner parties, balls, and harvest thanksgivings, and to get these masses together, meads, woods, pleasure grounds, gardens, glass houses are stripped bare. The results, as might be anticipated, are very much as if the artist were to exhaust his paints on the canvas and craze for more as the *siue qua non* of his masterpiece. And so under or over some of the most pretentious floral decorations it might be written, the more prodigal the waste of flowers the greater the paucity of taste. An infinity of time, labour, material have been wasted, woods, gardens, meads stripped bare, and the results, artistically like that of the artist who should exhaust all his colours on his canvas, worse than nil. Instead of beauty there is deformity, the legitimate product of grasping greed, vulgar display, and vitiated taste. No wonder if the ponderous table decorations prove more fruitful sources of nightmare than the lateness of the dinner or the richness or abundance of the viands. — D. T. F.

— I have been surprised to read Mr. Coleman's account (p. 415) of the damage done by the public to trees and flowers in his parks. Ladies and their children taking the liberty to "load their carriages" with flowers and Hawthorn "unmercifully torn from the trees" is, I admit, sufficient to cause any gentleman to shut his gates on the public for ever, but I hope and believe such practices are quite exceptional, and one would not expect to hear of such vandalism among the more rural population of the south, where the "masses" are supposed to be more mild-mannered than they are in the north. Hereabouts, where we have to deal with scores of thousands of "trippers" from the so-called worst districts of Lancashire and Yorkshire (colliery and manufacturing), to whom one of the largest woods and parks in England is open throughout the year, I must say that nothing has ever struck me more than the general good behaviour of the visitors, especially of the working classes. I may say that we never call in the aid of the police, and a summons for damage or trespass I have not taken out for nearly three years. Any watching needed our own woodmen do, but their orders are not to be officious or intrusive in any way; no watchers are employed except on great gala days, when many thousands are scattered over the park and wood-drives, and where there are much game and deer near. Yet when the Bluebells, the Hawthorn, and other wild flowers are out, and numbers of beautiful wild Ferns growing everywhere, you may walk two or

three miles from any of the stations through the wood, meeting a steady stream of people all the way, on foot or in carriages, and not one with a flower or twig in their possession. What we fear most is fire to the dry Brake, caused by occasionally careless smokers. Otherwise, the public seem to realise and appreciate the privilege of free access, and do their best to preserve it by assisting to promote order and good behaviour on all occasions. I notice even that when the Blackberries and Blaeberrys are ripe and temptingly within reach, it is rare to find any visitors going off the drives and footpaths to gather them without permission. The whole parks are studded with Hawthorns, many of them much valued on account of their age, but if they were to be as unmercifully torn to pieces as Mr. Coleman's are, they would soon disappear, and the wonder is that where such things are so unwisely tolerated, that has not happened long since. — J. S. W.

Primroses, single and double.—Will some of your correspondents kindly tell me the right time to sow Primrose seed, the after treatment of the plants, and how long after sowing the seed it will take to establish them so as to have nice sturdy specimens that will throw up fine spikes when planted for spring bedding. They are wanted to flower early so as to be taken up after flowering to make room for summer bedding. I may say that they are required to be planted in a very exposed situation where we get the full force of easterly winds, and where two-thirds of double Daisies and Forget-me-nots are completely killed each winter with the cold and frost. Also what is the difference between the climate here and the south of Devon, where Primroses flourish planted out in autumn for flowering in the spring? — R. G., *The Gardens, Coldra, Monmouth.*

Border Auriculas. These are now in fine bloom, and the wonder is that they are not more generally grown, for they are as hardy as the Primrose and the colours are rich and varied. They are capital subjects for lifting when in bloom, as, if carefully done, they will not drop a leaf, and as soon as the flowers fade they may be planted out again. We grow them on borders close to a wall, where the soil is light and dry. By putting on a good dressing of manure when they are divided and replanted after flowering they make luxuriant growth, and flower profusely every year. They are also subjects that do well in towns, for even in the narrowest streets and most unlikely places for finding healthy plants one frequently comes across a windowful of really good Auriculas, that not only live, but thrive and increase, and are much prized by the owners. The best way to get up a stock of varied colours is to buy a packet of seed, sow at once, and keep moist until the seedlings are large enough to prick off into pots or boxes, and keep them in a cold frame through the first winter, and in April prepare a nice piece of soil and plant out 1 foot apart each way. Keep the soil stirred frequently and water freely in dry weather, and little other care will be required until the following spring, when they will push up very strong flower-spikes, and may be lifted carefully and potted at once. Give a good soaking of water to settle the soil and shade from bright sunshine. The perfume from these lovely flowers is most agreeable, and I feel sure that if owners of gardens could get over the idea that they need pot culture all the year, they would be much more grown than they are now. — J. G., *Hants.*

Aubrietias. In some notes on hardy plants, "K." alludes to *Aubrietia Leichtlinii* as the deepest hued variety. I saw this kind in bloom in the Kew collection of hardy plants at the Auricula show and thought it represented exactly a seedling form of violacea such as I have here in quantity, and not mere small pieces in pots, but large clumps or masses blooming with wonderful profusion. *Violacea* and its progeny, curiously enough, however, show just the obverse character to *A. Leichtlinii* in respect of the fact that, whilst the latter is said to make its blooms fade with age, those of the former invariably deepen in colour with age, and yet growing out in

the open without shade or protection. What blue Lobelias are in giving a mass of colour in the summer, a violacea is in the spring; indeed, whether in beds, borders, or on rockwork open to the sun, these deep-coloured Aubrietias are wonderfully effective. Whilst purplish violet is the prevailing hue of the flowers of violacea, some of the seedlings give a distinctly reddish or approaching to maroon tint. I think by determined selection it is possible that in time we may have a genuine bright red-flowered Aubrietia. Nothing seems to distress Aubrietias more than lifting and dividing them, but, of course, that work must be done sometimes, and is best done in October. The plants are, however, wonderfully recuperative, for I have seen them, after being apparently half killed by the winter, break up densely from the roots and make large clumps. My plants are blooming this year later than usual partly for that reason, and partly because all hardy plants are blooming late. It cannot be too well understood that Aubrietias come freely and true from seed.—A. D.

Daffodils.—One feels almost a sense of relief in the knowledge that the Daffodil season is nearly over. Under ordinary circumstances it is easy enough to keep out of the reach of the craze by growing a few of the best kinds only, and those as ordinary hardy garden flowers. But those compelled to attend the London spring shows, and those at South Kensington especially, cannot repress a sense of intense uneasiness, deepening into disgust, at the repetition time after time of long lengths of Daffodil flowers duplicated *ad nauseam*, certain exhibitors seeming anxious to excel each other in the extent of their displays. That this soon becomes intensely wearying and monotonous is evident, and it is feared must tend to keep away visitors who cannot endure so much of the Daffodil colour. It is difficult to see what possible good to the gardening world can result from all this hair-splitting and refining, whilst the most useful intelligence to ordinary gardeners, viz., a list of a score of the very best kinds for all ordinary uses, seems to be withheld. If M. de Graaff has many more to follow of such fine forms as those which he exhibited on the 10th, not a few of the fancied kinds now seen so abundantly at South Kensington will soon be ousted. It was amusing to note that whilst the Daffodil committee were gravely discussing some knotty point as to breadth of trumpet or scape, the floral committee should have voted two or three first-class certificates to M. de Graaff in as many minutes.—A. D.

— I still adhere to the opinion that in order to flower the tenderer Daffodils to perfection in a cool soil and climate, we must plant the bulbs shallow; deep planting produces growth, but no flowers, comparatively speaking, and I have now no doubt of this from actual experience with the best sorts. I leave theorists to reconcile the facts, but of this I am certain that in cool places and soils deeply planted bulbs flower but sparingly, if at all, and *vice versa*. What, by the way, is the experience of your readers with Daffodil Sir Watkin? I bought a few of the first flowering bulbs from an undeniable source and they have bloomed well, but for size and show the flowers are utterly eclipsed by Daffodil Horsfieldi, which, with its grand foliage, large and conspicuous flowers, ought to head the list among the yellow Daffodils. It has many good qualities, being a good grower, hardy, and one of the very freest bloomers anywhere. It stands out among all others wherever grown.—S. W.

Wild and garden Primroses.—Growers in the south evidently do not know the capabilities of the common Primrose under all conditions, or they would not write of it being the "weakling" of the family, and of its inability to face the sunshine. Hereabouts in a cool midland climate, and in many other places where I have seen the wild Primrose growing in England and Scotland, it flourishes on open sunny banks and in grass fields, as well as in the woods; but it is under garden culture you see it at its best, and where roots two or three years old produce flowers in great profusion. Young plants two or three years old, I admit, do best, but I have stools from five to nine years old on the grass

and thousands that have been divided and redivided, for we have them almost by the acre on the grass and borders and all the very best strains, as well as the wild Primrose, which is undoubtedly the most vigorous and hardy of the lot. The varieties are endless and the colours superb, and you cannot plant too many; keep dibbling in and you will have your reward. Our older plantations are ablaze with flower, and we have not long sown our annual bed of wild Primroses on a sunny border. As to the wild Primrose, you never see a big plant of it wild; they are all small and none appear to grow old, but in the garden they live and grow like Horse Radish, making leaves nearly 1 foot long, and flowering in proportion.—J. S.

FANCY AURICULAS.

THE fancy Auriculas, as they are termed, appear likely to form a permanent place in our Auricula exhibitions. Raisers of seedling Auriculas of the show type are aware that among their seedlings will appear some of such nondescript character, as to prevent their being placed in any one of the four sections of show varieties, and yet they are far too good to be thrown away. Thus we get edged flowers which, instead of having the black or violet body colour found in the green, grey, and white-edged sections, are golden, with gold overlaying the grey edge, or buff; or they may be self-flowers, but having shaded edges, as in the case of the alpine. Many of them are extremely pretty, as was shown by the collection with which Mr. J. Douglas took the first prize at the recent Auricula show. Now, the self Auricula of the florist must not have a shaded margin; it should be of one distinct tint of colour, and in this respect be unlike the alpine varieties, which should properly have shaded margins. Thus it is that if self Auriculas come with the golden tube and circle of white paste, and beyond this a distinctly shaded instead of a self-coloured margin, it must go into the fancy class. I am taking the rules of the florist as they are, and so long as they are recognised they must be respected by exhibitors. Thus it is that I am trying to show what is meant by a fancy Auricula. I have this season raised several nondescript forms that are highly attractive, and will go under the head of fancies. The term "fancy" has a wide application, because the pretty faced varieties as well as the double Auriculas can be shown with them.

I have said that the self show Auricula should be one-coloured, anything in the way of distinct shading being considered a disqualification. I have also said, in contradistinction to this, that the alpine Auricula should have a shaded margin. At the Auricula shows in the north of England a self-coloured alpine Auricula (and Mr. Turner has raised and put several of these into circulation) is put aside, and shaded forms preferred. That is the old rule in relation to this class of flowers. But in the case of the Auricula exhibition held in London, self-coloured flowers are admissible, and are shown and awarded prizes. I have shown Mr. Henry, Colonel Scott, James Fowle, and other unshaded flowers, and taken prizes with them. It is a little curious that the northern and southern practices should differ, but so it is.

It is sometimes said that the florists lay down hard-and-fast lines of arbitrary character. If a body of floral enthusiasts like to unite together and lay down certain recognised laws, under which they exhibit their flowers, they have a perfect right to do so. That an adherence to these laws on the part of raisers has resulted in greatly improving our show Auriculas, there can be no doubt. This was made abundantly evident at the exhibition on the 26th ult. Such a heritage of new flowers as we have seen during the last four or five years was never before bequeathed to one generation, and not a few of the older flowers must of necessity fall out of cultivation in consequence.

R. D.

Anemone coronaria.—When this Anemone is treated as an annual (and this is the best way of growing it), there must be no further delay in sowing the seed, otherwise the plants will be too weak

to flower during the winter, and when sown it must have regular attention in the way of watering in order to induce quick germination. For this reason I like to sow the seed in boxes and to place them in a cold frame until the plants are large enough to bear transplanting, and it is surprising how well they do after they are planted out. One reason for this is, I think, that the plants have more room, as when they are sown where they are to flower they come up in bunches owing to the difficulty in separating the seed. When the plants are raised under glass they should be about 2 inches high before they are moved; they will then lift with a good number of roots, and if they are put out in dull or showery weather they quickly take hold of the soil and make vigorous growth by the end of October. The past two winters have been too long and too cold for them even in the west of England, but in moderate winters they do well and amply repay for the labour they involve. When the seed is sown in the open it should be sown in drills 1 inch deep and a foot apart, and to assist the seed to germinate the bed should be shaded in some way. This covering must be removed as soon as the young plants appear. Where they come up too thick, they should be thinned out as soon as they are large enough to handle. Where these plants are expected to flower during the winter and early spring, the bed requires to be in a warm position. A south border sheltered by a high wall is the best place they can have.—J. C. C.

Primula nivea.—Of all the hardy species of Primulas, I find *P. nivea* the earliest to flower. I grow some specimens in 1½-inch pots that come into flower in my Auricula house almost as soon as the quickening influences of spring are felt. As soon as the plants go out of flower, they are divided and repotted into small pots and plunged in a bed of Cocoa fibre for the summer. If I want a few extra sized specimens, I cut away the shoots near the surface, and these make excellent cuttings; the plants soon break into numerous shoots, and when repotted they grow fast, and make capital specimens by April. I have never yet succeeded in seeding this little gem. I have tried fertilisation of the flowers both with its own pollen and that from other allied forms, but as yet without success. All lovers of spring flowers should find a place in their gardens for this lovely snowy Primrose.—R. D.

Sparrows and flowers.—I send herewith the heads of Primroses as picked off by the sparrows. When they do attack a plant they generally do not leave a single head on it, and the bare stalks and leaves are all that are left. I have not observed this attack on Primroses before this season, though they have attacked Crocuses, but not so badly as some have complained of. Can any reader suggest a remedy? An iron collar round the plant has hitherto saved them from attack.—CHAS. WM. COWAN.

* * * Sparrows are an unmitigated nuisance in more ways than are generally suspected. Apart from their destruction of flowers they drive away the more beautiful insect-eating birds. By bat fowling, and in every way, gardeners should do their best to reduce the numbers of sparrows. Their nests made about garden buildings and houses should be regularly destroyed. Mr. Cowan sends us a box of Primroses which have been nipped off by these pests.—ED.

Old r. young Wallflowers.—That the winter has left its traces upon these there can be no doubt. We grow a great many here annually, and I had a lot of two-year-old plants in different positions in the garden, and the frost has completely destroyed them. Fortunately, in the flower garden proper I had only young plants, and scarcely one of these has failed, but, on the contrary, both the plants and individual blooms are extra fine. I always sow the seed in the first week in May on a well-prepared seed-bed, and prick them off as soon as large enough, a foot apart each way, and keep a sharp look-out that they do not suffer from want of water, else they lose all the bottom foliage, and they are then anything but fit for a flower garden. So managed, they make good plants by the end of October, at which time they will be ready to be transferred to the positions in which they are intended to flower.

taking care to press them firmly into the soil. There is nothing, to my mind, more charming now than these flowers. Beds of yellow, edged with *Myosotis*, and the Blood-red, with edges of the white and variegated *Arabis* are simple, yet the effect produced is grand and the odour delightful. I am quite aware of the extra work it entails, and how the soil is robbed, but these little difficulties are always easily got over and soon forgotten by the energetic and interested operators.—W. A. Cook.

Venus's Fly-trap (*Dionaea muscipula*).—This ought to find a place in every collection of hardy plants as well for the beauty of its flowers as for their curious appearance. In the neighbourhood of London, where the climate is not one of the most genial, this plant has stood out in the open air for a number of years, with only a broken bell-glass over it, and this has been used more as a protection against birds than against frost or cold. In the summer it sends up in long succession its numerous spikes of large white Saxifrage-like flowers. It is growing in peat in an artificial bog bed, and appears perfectly at home. Every second year it is lifted and divided, the plants being dibbled in singly, as the frost has a tendency to push them out of the soil owing to their shallow roots.—K.

Crimson velvet double Primrose.—This king of all the double Primroses does well in Mr. Samuel Barlow's garden, at Llandudno, planted out on a turf bank facing the north. It is a cool and moist position, and this and other choice Primroses find a congenial home there. A hole is dug out in the bank, the Primroses are then planted with suitable soil about the roots, and there they have established themselves, kept cool by means of the Grass which grows up around them. But that some of the choice double Primroses are delicate is a fact; even such a successful and enthusiastic gardener as the Rev. F. Tymons, who grows a large representative collection near Dublin, terms some of them "miffy." Possibly this is owing to the fact that certain sorts are very scarce, and have to be propagated severely in order that the necessary stock for sale may be obtained. The method of planting out permanently is a good one; in this way the varieties can recover constitutional vigour, and in course of time form offsets, and so propagate their kind. But only a few have the convenience for doing this.—R. D.

Tulipa Greigi.—This is the showiest and most striking of all the species of Tulips we have yet seen in cultivation, and although it is said to be somewhat shy in blooming, it fully makes up for this deficiency by its unusually large and handsome flowers. I think it is one of those Tulips that should be left alone as much as possible, as it does not flower until the bulbs have assumed a fair size. A light, rich, sandy, and well drained soil seems to suit it best; in plenty of sunshine and about mid-day when the flowers are full open it looks more like a *Paeony* than a Tulip. The segments are about 3 inches long, and rather more than half as much broad, vivid red, with a black blotch near the base. Even when not flowering it may readily be known by the black blotched or spotted leaves, which are so unlike any of the other garden species. It will soon become plentiful, as we saw it the other day growing freely in a market garden.—K.

Laced Auriculas.—Mr. Douglas is kind enough to refer to me as having introduced and improved laced alpine Auriculas, but having now dropped them, the first part of this statement is correct; the latter is not so. We have simply given over any attempt to name and divide the best kinds, because it is found easy to perpetuate good strains through seedling, and seedlings are easily raised. Did circumstances permit, I should prefer to sow seed as soon as ripe, as I do *Polyanthuses*, and house the young plants in frames during the first winter. By so doing really strong-blooming plants would be assured the second spring. As it is, I sow under glass in April and now have hundreds of seedlings, but they grow slowly, as do all Auriculas, and will hardly be ready to dibble out into the open ground for another month. A large number of plants, carrying several crowns, are blooming now in the open field, and display as perfect markings as if in

pots; but, of course, under hot suns and parching east winds such as just now prevail, can hardly preserve their flowers so long as could be wished. That is, however, more an accident than otherwise, because these large plants were all replanted during the winter, whilst another lot of border or self alpines, left unrenewed, blooms profusely. If the Auricula Society continues to exist, I trust it will be able soon to establish a special class for half-a-dozen laced alpines, and thus specially encourage one of the most charming sections of Auriculas. It is evident that until such is the case little encouragement is given to naming and propagating the best forms. Mr. Douglas refers to the self-coloured alpines as self-edged—a curious combination of terms. The colour in a self alpine is the ground, and as it is the same throughout it is not edged. Really in alpines the only edged flowers are the laced section, the edges being clearly defined and very distinct from the ground.—A. D.

SALES OF HOTHOUSE PRODUCE.

MESSRS. J. W. DRAPER & SON write as follows: Up to the present we regret that the introduction of English cut flowers and fruit to our Public Auction has not proved a success, the main reason being the entire lack of judgment and system in packing; a regular report as to the current rates of home produce of this class is therefore scarcely practicable. We included such goods merely as an adjunct to our auction sales of French and other Continental consignments, and without any idea of great emolument; we feel, however, that the absence of method and care on the part of the English senders is somewhat discouraging. We have sent several the following hints. If these are carefully studied and carried out, we may hope for better results in due time. To-day we sold best English Strawberries, packed in accordance with our directions, at 4s. 6d. per lb.

SALE DAYS.—The sale days are Mondays, Wednesdays, and Fridays. Goods should be sent for these days only, and despatches so regulated that consignments arrive prior to 10.30 a.m., at which hour our sales commence.

PACKAGES.—Neat wooden boxes (shallow rather than deep) of uniform size to be used. One kind of fruit or flower to be packed in each box. Mixed or miscellaneous packages seldom do well. N.B.—The boxes are sold with the goods, and are not returnable.

PACKING.—Choice flowers, such as Roses, Gardenias, Camellias, &c., should be carefully selected, not too fully blown, and packed between sheets of wadding in single layers, i.e., a single layer only in each box. At all times it is necessary that particulars of the number of flowers in each box be marked on the lid, or on a slip of paper under the lid. Strawberries, Peaches, and other indoor fruits should not be sent in punnets, but be sorted, as to size, and placed carefully in single layers in shallow boxes, a sheet of wadding over and under, so that damage through friction or oscillation may be obviated. Separate boxes properly marked with finest selected and seconds ought to be sent; the price given for the first-named generally pays for the trouble of grading. As with flowers, a slip of paper with weight or number must be enclosed. Special attention is called to this. To save expense in carriage and for convenience in travelling two or three boxes may be corded together so as to form one package.

ADVICE OF CONSIGNMENT.—Postal or (if too late) telegraphic advice of each consignment should be sent; when this is neglected trouble and complication often ensue.

To ensure success it is requisite that the above details are carried out. After the primary trouble the system becomes easy, and the advantage of method will be appreciated.

Plants for bees.—In answer to J. Smith, who inquires as to the above in THE GARDEN April 23 (p. 370), the following will be found useful plants to grow: Mignonette, Wall-flowers, *Arabis* of sorts, *Sedums*, *Crocuses*, *Hyacinths*, *Cine-*

arias, single *Primroses*, single annual *Chrysanthemums*, *Larkspurs*, *Musk*, *Heaths* (hardy varieties), *Sweet Williams*, *Narcissi*, *Stocks* (single), *Corn Flag* (*Cyanus*), *Nasturtium*, *Candytuft*, annual *Phloxes*, *Heliotropes*, *Borage*, *Clarkia pulchella*, *Nemophila insignis*, *Aubrietias*, *Poppies* of sorts, *Gilia tricolor* (various) and *alba*.—R. G.

GARDEN FLORA.

PLATE 597.

LIMNOCHARIS HUMBOLDTI.*

WE have not many water plants that equal this pretty floating *Limnocharis*, whether considered as a fit companion for Water Lilies, *Nelumbiums*, and such like large aquatics, or as a suitable and easily managed plant for small aquaria. Treated liberally and allowed plenty of water room, it soon covers a large space with a carpet of disc-like shining green leaves, thickly studded with bright yellow blossoms; in tubs, large bell-glasses, or small tanks it is equally happy if allowed plenty of sunshine and a temperature of about 70°. The most valuable point about *L. Humboldtii* is its never being out of flower if only allowed to go on growing. At Kew it may be seen flowering all the year round, and along with the Water Lilies it is specially attractive all the summer through. It is impossible to reproduce on paper the attractions of this plant, but the beauty of the flowers are shown. These are very fugitive, opening in the morning and withering before the day is over, but they are developed so abundantly and in such quick succession that this is scarcely noticed. Wherever tropical water plants are grown this *Limnocharis* should find a place.

There are only three or four species known, two of which are in cultivation, viz., the above and *L. Plumieri*. The latter has erect leaves, the blade oval in shape and about 6 inches long, and the stalk three-sided, purplish at the base, and about 1 foot long. The flowers are produced on an erect scape, six or eight in a head or umbel, and they open generally two together; they are yellow, and about half the size of those here figured. *L. Humboldtii* is perennial, the other annual. The genus is related to *Alismas*, *Sagittarias*, and *Butomus*, and is found in streams and ditches all over South America. *L. Humboldtii* was introduced to Kew and the Liverpool Botanic Gardens in the same year, viz., 1833.

These plants require stove treatment, and should be potted in rich soil, submerging the pot in water kept at a temperature of 65° to 70° in summer and not lower than 55° in winter. If grown in tubs or small aquaria, fresh water should be added every day. W. W.

The Slough Nurseries.—At the present time there is in these nurseries such a feast of *Pelargoniums*, pot Roses, *Azaleas*, and *Carnations*, that all who are specially interested in these classes of flowers and that can conveniently have a look in will be well repaid for their pains. I had but an hour at my disposal, so that it was literally a run through, but for all that the pleasure derived was immense, for I have been feasting on the sight ever since. Lovers of show *Pelargoniums* that have bemoaned the fickle-mindedness of the horticultural public, because of the waning popularity of their favourites, by a visit now would have their enthusiasm raised to the highest point by seeing these at Slough, the fancy section in particular. All are models of skilful cultivation, but this section fairly captivated the writer—small pots, deep green vigorous foliage, and flowers of indescribable perfection. In an indirect manner I gathered that the cultivation of show *Pelargoniums* is not, as it once was, a financial success; all the more honour, therefore, is

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due to the sons of the late Mr. Charles Turner, who for the reverence they bear for their late honoured father still continue the cultivation of his especial pets. The place once famous for elephantine specimens of Azaleas now knows them no more, but their place is better occupied by what are called half specimen plants, some 3 feet or a trifle more in height, to almost as much in width, and, like the Pelargoniums, flowered to perfection. Pot Roses I will not attempt to describe, for they will probably be otherwise reported on by the time this note appears in print, as on the day of my visit they were being prepared for a London show. Tree Carnations are grown by the thousand, and it is no exaggeration to say that many hundreds of plants are now in full flower, and scores are cut daily for bouquet-making. Auriculas have passed the meridian of beauty for this season, but there are still hundreds of plants in good flower, and these will shortly be succeeded by limitless numbers of Pinks, Picotees, and Clove Carnations, for which these nurseries have been famed for years, and by present appearance are likely to continue to be for many years to come.—W. W.

FRUIT GARDEN.

W. COLEMAN.

PACKING TENDER FRUIT.

PEACHES.—As much of the choice early fruit now grown is destined to travel to large towns, but principally to London, during the season, the art of perfect packing is quite as important as the art of growing, and yet many there are who lay the foundation of disappointment and annoyance before the finest examples of their skill leave their own premises. But few Peaches as yet have been gathered, but soon they will be plentiful, and as nine-tenths of these probably will have to travel hundreds of miles, not only by rail, but under the tender care of delivery companies, a few words upon this matter may be of use to some who have not had much practical experience. Peaches, it must be understood, are grown and managed for two distinct purposes, and although eventually all of them are supposed to reach the rich man's table, they require equally distinct modes of management. Growers for market gather as soon as the fruit has attained its full size and colour, and, although hard to the touch, in this condition it can be packed to travel safely, and arrives in the best possible condition for the fruiterer. It does not rest with me to prove whether these Peaches are better or worse than others that are allowed to become nearly ripe before they are gathered, but one thing is quite certain: they must be sent off in this state, otherwise they will have to be forced upon the market often in a damaged condition, when the consignor will be a considerable loser.

Private consumers, notably the owners, expect their fruit to arrive in perfect condition and fit for immediate consumption. Many of them have shrewd business managers about them who can greatly assist the grower, but the majority push the ripe and unripe to the front, hence the importance of making a careful selection, and packing in a way that the most tender examples shall arrive without spot or blemish.

PACKING MATERIALS.—Bran, wadding, and Moss are generally used for packing purposes. All cannot obtain Moss, but those who can will find this the safest, cheapest, and best, as it is soft, elastic, and never heats in the boxes. Bran, on the other hand, sinks in bulk when shaken on the journey. Moreover, it is liable to become heated, when a disagreeable flavour is imparted to the fruit. If this does not happen, unless very firmly pressed, the Peaches and packing separate, the latter settles to the

bottom of the box, and the contents arrive in a bruised, and possibly a worthless, condition. Extensive fruiterers, the best of all judges, are equally dead against cotton wool or wadding, as this also becomes moist, hard, and heated on long journeys during very hot weather. Assuming, then, that good ground Moss can be obtained, a plentiful supply should always be kept on hand, and the more it is beaten with sticks when not too dry, the better will it be adapted to the purpose. As regards boxes, they should be of uniform length and breadth, as several can then be corded together, the depth being regulated by the size of the fruit they are intended to carry. For my own use I have them made of stout half-inch deal, 14 inches in width, 24 inches in length, and 4½ inches deep, with lids in one piece, which should be lightly nailed down, but tightly corded, legibly labelled, to be met at the terminus. This is an important matter, as Covent Garden dealers will send a porter to any railway station in London, in preference to trusting this class of fruit to the delivery carts.

GATHERING AND PACKING.—Having quite recently described the best mode of detaching the fruit, I will in a few words explain my method of packing. Early morning, when the fruit is cool, is the best time to gather, the slightest pressure with the fingers being carefully avoided. Arrived at the packing room with each Peach resting on a square of silver paper, the boxes are prepared by lining the sides and ends with paper, allowing the half of each sheet to hang over the sides, for turning over when all is finished. A good layer of Moss is then placed in the bottom of the box; the Peaches, divided into firsts and seconds, are then neatly folded in the squares, the box is tilted on the right and packing is commenced at the left hand end. I then shake more Moss along the left hand end, place the first Peach in the corner, keep it in its place with the left hand, follow with more Moss and fruit until the first row of four is finished. Having introduced more Moss to form a division, the process is repeated until the box is full; each Peach is then resting in a soft nest of Moss an inch from the bottom and about the same distance apart. More soft elastic Moss is then gently, but firmly pressed in, firmness, it must be borne in mind, being the keystone of success; a good layer is then spread over the top, the half sheets are turned over, and the lid is nailed down. A little experience is needed in laying on the last layer of Moss, which should be somewhat higher than the sides of the box, as security depends upon every part being equally full, decidedly firm, and yet elastic. These remarks apply to fruit intended for market, but when large ripe Peaches have to be packed for immediate use they should be gathered a day or two before they are wanted. Great care must be observed in moving them, as the slightest pressure with the fingers is followed by a bruise, and an extra quantity of Moss must be placed beneath them. The folding of these and all tender fruit should be performed on a sheet of wadding, and every Peach should be packed apex upwards. Nectarines can be packed in the same way in boxes of the same size, as all can then be corded together for security.

FIGS.—Large ripe Figs require even more care than Peaches, and for this reason the boxes should be somewhat smaller. Good Moss or soft paper shavings answer best for these, but instead of enclosing them in tissue paper each fruit should be neatly folded in soft, dry Vine leaves and papered afterwards. This precaution is very important, as the Fig, owing to the tender nature of the skin and the abundant

moisture which it contains, soon absorbs the paper, when separation at the end of the journey is not only difficult, but detrimental to the appearance of the fruit. Packing in the boxes is precisely the same and equally simple, always provided the materials are soft, elastic, and perfectly free from moisture.

Pear Beurre Rance.—At the spring exhibition in connection with the Bath floral fête held on the 11th inst., prizes were offered for a dish of Pears, and Beurre Rance took all three prizes. Excellently well preserved and plump samples shown by Mr. J. Hooper Taylor were awarded the first prize. Mr. Taylor said he had kept the fruit in such good condition by hanging them up by their stems in a cool closet. The fruits shown were taken from a standard, and they were remarkably well flavoured; indeed, it is said the flavour is better from standards than from trees against a wall. Beurre Rance is a valuable dessert Pear for winter, and keeps in good condition until May. Two or three other varieties of Pears were shown—unnamed—but were decidedly poor in comparison with Beurre Rance.—R. D.

Fruit prospects.—The Apple trees generally are in a promising condition; old ones are in many cases literally covered with bloom; middle-aged and young trees are not so heavily laden as I have seen them. Apricots are wonderfully well set, especially the Musch-Musch variety. The Moor Park is also good. The following sorts of Plums are set well; Belgian Purple, Early Prolific, Washington, Dymond, Pond's Seedling, Purple and Yellow Magnum Bonum, Green Gage, Guthrie's Gage, and Orleans, but I do not think it safe to reckon upon a crop of Plums before the middle of June, for although I have noticed they have set well in previous years, the number of fruit has sadly diminished by midsummer day. Amongst Pears there is a fair crop set on young trees against south walls. Old trees have plenty of bloom. The sorts which have set the most fruit at present are Josephine de Malines, Brockworth Park, Williams' Bon Chrétien, Doyenné du Conice, Marie Louise, and Beurre Diel. Peaches have also set abundantly; Cherries are late in opening; Raspberries on our cold soil have come through the winter well; Black and Red Currants promise to be abundant; there is a fair show of Gooseberries, but not enough to make a heavy crop. Altogether the season's fruit crop at the middle of May promises well, and if we can get fair weather to tide us over the next three weeks, I do not think we shall have to complain of the want of fruit in the west of England this year.—J. C. C.

The bloom crop.—Whatever may be the favoured products of other countries, certainly few can compete with us in elements of beauty when all our varied fruit trees are in profuse bloom, and were no fruit crop to follow, the flowering period, with all its wealth of colour and beauty, would be some reward. We are now in the midst of the Plum, Cherry, and Pear bloom—all white, but still very charming. Of these, without doubt the chief elegance is found in the long-stemmed, graceful drooping Cherry bloom, which, almost always profuse, let the after crop be what it may, is this year singularly abundant, the long branches being hung densely with clusters of flowers. Plum bloom, if insignificant singly, is yet effective in the mass, and as some kinds of Plums are early and some late, the flowering period is rather prolonged. Pears have the advantage when in flower of a nice backing of foliage, which materially assists to display the snowy whiteness of the bloom. If last, certainly most beautiful, comes the Apple bloom, none the less charming that it gives more of colour after the abundant snowy hue of the trees preceding. In an unopened condition some of the Apple blooms show the richest colours, and may then challenge comparison with those found on other hardy trees. When it is all open and in that rich profusion which will be seen everywhere this season, a mass of delicately tinted beauty is found such as can hardly be excelled in any other country. Happily, there is abundant evidence that our sole reward for the cultivation of hardy fruit trees will this year be

found not in bloom alone, but also in an abundant crop of fruit of all kinds, assuming, of course, that all danger from late frosts is over.—A. D.

VINES AND GAS TAR.

If your correspondent "W. I. M." had read my notes carefully before criticising them he would not have needed to "hazard an opinion" as to my being in too great a hurry to tie the laterals down, for I think I made it plain that those only on the Vines which had been dressed gave me any trouble, and that I had others under my charge at the same time. To relieve his mind as to my knowledge of the great care required when tying down laterals, I may tell him that I was taught the mysteries (!) of that process nearly twenty years ago, and have had considerable experience in that way since.

"W. I. M." unconsciously strengthens my case when he draws attention to the fact that the laterals of Alicante and other strong-growing late kinds are especially liable to break off, for the Vines which were dressed were in my early and mid-season houses, and consisted principally of Hamburgs. My late house—a large one in which were several Alicante and other strong-growing varieties, never required or got any of the dressing, as it was nearly a new one and no bug had found its way there. These Vines never gave me any trouble, and it was this fact that led me to think, as I do, that the dressing was to blame.

We are told that nothing is needed but "tar and clayey water in equal proportions." Where is the lime? That used to be an important factor, and, as I think, a dangerous one. Still, it was recommended, and I was attacking the mixture as a whole, and have no experience with any modifications of it. Perhaps the tar will follow the lime after a while, and we shall have nothing left but the dirty and harmless clay.

On "W. I. M.'s" own showing, the mixture is, as I called it, a failure, for it will not do all that was claimed for it, as it does not kill all the bug. I do not think many gardeners will accept his statement, that of Gishurst and gas tar compounds, the latter is the "least liable" to injure the Vines.

I should not think of advising the use of paraffin as a "winter dressing" for Vines, but it is an excellent thing when used, as I advised, for bug in (apparently) isolated cases; for I believe there is generally a colony where one can only see a solitary specimen, and the paraffin spreads and destroys all the insects within reach. Of course, it, like gas tar, requires to be "intelligently" applied.

I have tried, and do not like, the plan of suspending the Vine rods "lower than usual," for though they may be brought up again, it is a tedious and difficult thing to do, especially where the wires are rather close together.

Your correspondent merely repeats me when he says that "any dressing powerful enough to kill them [bug] also damages the Vines;" but anyone in reading his criticism of my letter would be led to suppose that I had asserted the contrary. I was most careful to point this out, and to show that our winter dressings must be supplemented by strict attention in the growing season. In fact, a large portion of "W. I. M.'s" letter is a mere repetition of what I wrote.

A word as to red spider. I have managed many vineries, modern as well as ancient structures, but I never yet found one in which spider could not be kept down; and I think there is no better proof of radically bad management than to see Vines with their foliage badly disfigured by spider. No other insect, with the exception of thrips in enormous quantities, can sap the life of Vines so thoroughly as this pest does, and the sooner any structures in which spider cannot be kept down are razed to the ground the better—if the fault is in the structure.

Chelsea.

C. T.

SHORT NOTES.—FRUIT.

Ornamental Apples.—I should recommend "W. R. R." to plant the following sorts, viz., Beauty of Kent, Gravenstein, and Lane's Prince Albert. The two first named bear

very large clusters of white blossoms, with just a tinge of pink on the outside of the petals. We have some bush trees of these sorts that are now quite a sight. The last mentioned sort bears clusters of bright crimson coloured buds, which make the trees very conspicuous.—J. C. C.

Cucumber Purley Park Hero.—Perfect fruits of this are about 15 inches in length, spineless, of a deep bright olive-green colour, and perfectly symmetrical throughout, with scarcely any handle. It represents a very fine type, and it will be found of great value both for table and exhibition purposes. A brace of fruit staged at the recent Bath show appeared to be as perfect as Cucumbers could well be.—R. D.

Vines bleeding.—Would some experienced Grape grower tell me the cause of my Vines being so wet every morning, causing them to continue dropping until the sun dries them, through which it has brought mildew? I ceased syringing a week ago. The buds are just bursting. I give plenty of air during fine weather and shut up in the afternoon about 3.30. What would remedy this evil?

P'ZZLED.

*** The cause of your Vines bleeding is no doubt brought on by late pruning, and results from the pores not having time to heal over and close up before the sap begins to move. Many plans have been tried to stop this bleeding, such as applying paint or knotting, sealing-wax, &c., but in most instances they have failed, and the result therefore must be left to Nature to cure. If mildew has attacked the Vines, heat the hot-water pipes, but not a flue, and paint them with the sulphur mixed with water, or dust the sulphur all over the Vines, and in the course of a few days wash it off with rain water. ED.

Summer-pruning Currants.—Those who have not yet given the plan of summer pruning or pinching out the growing tops from Currant bushes a trial should do so without delay, as it is while in the full flush of growth that the operation must be done to be successful, for if not done until the wood gets hard and requires cutting it had better be left altogether, as by that time the under leaves will have been so blanched by the dense top growth that they will fall off when fully exposed. We go over our bushes directly the leading shoots are about 6 inches long and pinch the tops out; the lower leaves then get strong and remain on the bushes all the season, and the buds at their base get very much stronger than if all the strength were allowed to rush up into the wood, which at the winter pruning will be cut off. There is really very little winter pruning to do if summer pruning or pinching is attended to, as the young wood that is left gets so completely covered with flower-buds that one is loth to cut any of it away. Red and White Currants are apparently the most benefited by close pruning, but black varieties are also much improved by stopping the leading shoots that are as high as they are intended to be left for fruiting, the young growths from the base for supplying new fruit-bearing shoots being left intact. It is simply a question of concentrating the forces of the bush on fruit or useless wood production.—J. G., *Hants.*

SEASONABLE WORK AMONG FRUITS.

ALTHOUGH sharp frosts have prevailed, the weather having been unusually dry, fruit blossoms so far are quite safe, and crops of all kinds up to the present date are extremely promising.

PEACHES have set a profusion of fruit; the trees are remarkably clean, and being well furnished with leaves cautious cultivators may now look forward to full crops which will require much thinning. Where fishing-nets have been used for protecting the flowers, some, if not all of them, should be allowed to remain, as we never know what a night may bring forth, especially since our springs have been swallowed up by winter. My best wall, coped with broad boards and covered with three thicknesses of netting, has thrown off 12°, 8°, and 11° of frost, and not a single flower has, I believe, been injured. These nets are removed, one at a time, at short intervals, but the copings remain till June, when they also are taken away to let in the light and air and to give the trees the full benefit of rain and dew. The most important work here is dis-budding and washing with plenty of pure water, as many a newly-started colony of insects can be

broken up by this agency alone; and all must admit that a stitch in time often averts the use or abuse of dangerous insecticides. Owing to the lateness of the season I have only just commenced dis-budding, and this operation is carried on in a very careful way. First of all, we take the foreright shoots and thin out the clusters; then, following the Seymour system, nearly all the breaks from the lower sides of the shoots are taken; and, finally, those on the upper sides are thinned or pinched to two or three leaves in preference to laying the young fruit bare. By adopting this plan the most delicate trees do not feel the check; neither do sharply root-pruned trees come to a dead stand after they have exhausted the stored-up sap. It is yet early to think of much thinning, but doubles and triples may be reduced to one, naturally the best fruit and inferior fruits may be rubbed off after the trees have thrown off, or by washing have been divested of, the remains of the flowers. Many people living in cold districts commence pegging or tying in the shoots at a very early stage of their growth, but I prefer allowing them to make some progress before anything of the kind is attempted, as many a tender shoot is injured by the slightest pressure. Moreover, a half-abandoned growth, until we have true summer weather, is favourable to the free flow of sap, and certainly to the rapid development of the fruit.

PEARS AND CHERRIES, Morellos excepted, are now in full bloom, and a grand sight they are. Clean, healthy, and bold, I never recollect seeing these walls more promising. A profuse bloom is not, however, always the best earnest of heavy crops of fruit, as it is by no means unusual for such floriferous trees, especially in dry seasons, to exhaust themselves. Early, very early in the season I drew attention to the light rainfall, and suggested timely watering. The dry weather continues, and those who have looked well to the roots, not only with water, but with light warmth-admitting mulching, will most likely reap their reward. Very early wall-trained Plums and Pears are now forward enough for pinching, but beyond checking gross foreright shoots, this excellent protection to the fruit should be allowed to remain until all danger of frosts has passed away. This delay must not, however, be carried too far, as timely pinching is the best and surest mode of checking luxuriant growth and converting wood into blossom buds. Greengages and Coe's Golden Drop with us, thanks to the bullfinches, are thin, and this reminds me that a keen observer once said that these birds gave preference to the buds of choice varieties, whilst common sorts in close proximity remained untouched. How far this may be correct, I am unprepared to say, but certain it is that the best sorts of Plums and Pears here have suffered most. A continuance of this dry weather may bring a plague of aphid almost before the fruit is set; the best preventive is winter syringing at short intervals with soapsuds, and again as soon as the young fruit commences swelling, but black fly is not so easily kept in check. Tobacco water applied in time is perhaps the safest and best remedy, but more than one dressing or dipping must be applied, otherwise it will be a source of annoyance throughout the season. Tobacco powder is sometimes used; indeed, the names of insecticides are legion, but the most common fault is delay in their application. Yet another set of marauders about this time the fruit grower must hold himself prepared to do battle with, and as these, the Apricot and Plum grub, do not succumb to insecticides, hand-picking and crushing with the finger and thumb must be closely followed up. Their work of destruction does not last long, but unless timely and determined steps are taken the ruin of the finest crops is certain. Last, but not least, we have the Gooseberry caterpillar, a most voracious destroyer. Many remedies, some of them poisonous, consequently dangerous, have been recommended, but, applied in time, there is nothing better than light dustings of freshly slaked, but cool lime. If with some force this is cast upon the ground and into the centres of the trees, the fine particles will rise through the foliage, and if they do not instantly destroy they will dislodge, when the extra quantity of lime on the surface will prevent them from rising again. All these remedies are excellent in their

way, but the use of them might often be prevented by the timely and bountiful application of pure water, which not only cleanses and invigorates the foliage, but breaks up the homes of insects before they have time to gain a firm foothold.

Turning to the open quarters, there exists but little doubt that fruit trees of all kinds, especially those which have been root-pruned or transplanted, would be greatly improved by a warm and steady rainfall. If this were to continue for twenty-four hours and mild nights followed, trees now in arrear would very soon redeem the time they have lost; if, on the other hand, rain does not come, watering and mulching must not be neglected. One good soaking is more effectual than repeated dribbles, and water from open ponds or tanks is better than the most copious supplies from underground mains.

RASPBERRIES AND STRAWBERRIES, two moisture-loving subjects, must not be overlooked, as dryness at the roots is one of the most common causes of failure. Like all other fruits, these are unusually backward, but the latter, especially young plantations, are now throwing up very strong trusses of flowers. These naturally give fruit of the finest quality, but plantations of the preceding year produce the greatest quantity. If extra fine fruit from either is wanted, timely thinning and supporting, to keep the berries up to the sun and safe from slugs, must be resorted to. The best spring mulch is fresh stable litter, always provided it is not too heavily charged with ammonia, and this should be placed amongst the plants before the young leaves and trusses become too prominent. The manurial properties it contains then get washed down to the roots by rain or artificial watering, and becoming bleached and sweet it forms a cheap and suitable surface for the fruit to rest upon. Old plantations which lost many of their leaves are still backward, and although the trusses no doubt will be plentiful, it is not unlikely they will be weak. To these we give liberal dressings of old Vine border soil, and dust the surface with soot before it is raked down into the stools in March. On cold borders this dressing answers better than manure, as we find now surface roots strike into it at once, and whilst making the stools distasteful to slugs, the soot acts as a powerful stimulant.

NEW PLANTATIONS may still be made either from the reserve beds of last year's runners or from forced plants. Many people use the latter, take one or at most two crops, and then trench them. I do not, however, care for them, for, independently of the fact that they are more or less weakened by forcing and the check which follows, they invariably carry with them spider or mildew, or perhaps both, and unless they are extremely well planted, mulched, and watered they compare unfavourably with maidens of the same age. The usual practice of raising generation after generation from old plants, if not in the original beds, certainly on the same kind of soil, must tend to degeneration, but when those plants are enervated by forcing, by parasites, and insects the constitution must suffer. This in a great measure may be averted by propagating every year from young plants which have been put out in new soil and divested of their maiden trusses before the flowers open. By adopting this plan none but fertile plants are used as stock parents; all their strength is thrown into the runners, which, as a natural consequence, are much earlier than others from fruit-bearing plants. To those who would carry Strawberry culture to its very highest point let me commend change or exchange of runners, as Potato growers exchange their seed, and I venture to say complaints of wearing out will be few and far between.

FIGS.—Where Figs have been hard hit and time has been allowed for doubtful shoots to declare themselves, a careful examination of the trees should now be made, and if it is found any of the points have been killed they should be shortened back to good buds to ensure young growths for next year's fruiting. Those left must then be nailed in close to the wall, and the better to hasten the swelling of the young fruit, light mulching, followed by copious

watering with warm water, must be brought to bear upon the roots. Wall Figs do not require an extensive root run, but the wall paths, high and dry, should be full of firm, well-ripened fibres, the drainage should be ample, and their food should be plentiful enough to ensure perfect maturation of the fruit without producing a gross habit of growth. In extra snug quarters, where the let-alone system results in good annual crops of fruit, the removal of all damaged shoots should not be neglected, as masses of half dead wood impede the circulation of fresh, warm air, and throw out weak, useless spray, whilst cutting back to a good bud will result in a shoot, from which fruit in due time may reasonably be expected. When this has been done a few barrowloads of half rotten manure may be cast over the roots, and an occasional watering that will reach the lowest depths will set them right for the summer.

THE ORCHARD.—Newly-planted trees will still require attention, not only with water, but with an extra supply of loose, non-conducting mulching. Necessarily this need not be very rich, as properly prepared stations should foster good growth when the roots have taken a firm hold of the soil, but the season having been so dry the wood buds cannot get beyond a tuft of small leaves, which will harden into fruit buds where this timely assistance is withheld from them. When standard trees are planted on deeply trenched stations and the supporting stakes are driven down into the firm subsoil, the soil sometimes settles and drags or strangles the roots. In this way many good trees are ruined not for the season, but for all time, and thorough planting being an expensive operation, all these defects, trilling in themselves, should receive speedy remedy. Of the three evils—wind-waving, chafing against the stakes or strangling—the first is the least, but all can be avoided by the use of two stakes instead of one—an inexpensive item in any district. Hay bands, as a rule, are twisted round the stakes before the trees are tied, but, unless they are cradled for security from young stock, rough Moss, which is less palatable, answers better.

Newly grafted trees must also be examined. The mechanical part of this work being satisfactory, success in a great measure depends upon the perfect exclusion of air, especially from large branches carrying two or three grafts until such time as the union is complete. The best of grafting clay in the best of seasons sometimes cracks, and as this generally happens soon after the work is finished, now is the time to replaster with a rather thin composition of stiff clay and cow manure. Another important matter will shortly claim attention, and that is the American blight or woolly aphid, not only on old-established trees, but on others previously clean that were grafted a year or two ago. This troublesome pest not unfrequently is carried into healthy orchards with grafts from a distance, and although it does not make much progress the first season, the second favours its rapid development. Careful grafters cleanse their scions before they insert them; those who neglect this precaution should lose no time in dressing every tree with an insecticide that will destroy it. Half a pint of gas-tar or a like quantity of paraffin added to a gallon of the thin stopping just recommended and well worked in with an old brush above and below the division will be found a safe and never-failing remedy, or Gishurst compound, pure and simple, will answer equally well. The fact that American blight produces canker has been disputed, but I have ample proof that the wounds which it produces are exactly like canker and certainly not less injurious. Orchard prospects in this locality are very promising, and so far the trees are clean and free from blight. Twenty-four hours' rain from a warm quarter would now be a godsend not only on dry soils, but upon every orchard throughout this part of the country. W. C.

Tomatoes well grown.—Mr. Gilbert sends us very good specimens of his Tomatoes grown in small pots, both foliage and fruit. Better could not be. We hope he will not forget the old red, which, treated as well as the new var. etc., would be a better and handsomer fruit. So many are grow-

ing Tomatoes now that we should be pleased to have some details of his way, size of pots, &c.

KITCHEN GARDEN.

W. WILDSMITH.

WEEDING, HOEING, AND MULCHING.

THESE are three essentials of good cultivation, and, as regards the first, I consider the most common-sense way of looking at the matter is that, since it is impossible to have a good vegetable crop and a weed crop off the same ground at one and the same time, therefore the weeds should be destroyed as soon as they are discernible, or, at any rate, before they are of sufficient size to at all rob the soil of any of the properties that ought to be solely appropriated by the vegetable crops. To this end it is necessary that one's mind be thoroughly imbued with the importance of the subject; then will be found ways and means of doing the work, however short-handed we may be—I mean in reason, and where hands are allowed in something like reasonable proportion to land under cultivation. If these conditions cannot be afforded, then the next most profitable plan of culture would be to reduce the amount of ground, and do that well, and grow on it but one crop at a time, and by thus giving no quarter to weeds, the probabilities are in favour of at least as heavy a crop of vegetables from reduced ground as from a much larger plot which—of necessity from lack of labour—must be weed-infested. But the remark will no doubt be made, any and every crop is liable to get overrun with weeds. Yes; but the fault does not lie with the weeds, because they can at all times be destroyed; and the second phase of our subject, namely—

HOEING, is the best way of effecting their riddance, and, better still, of preventing their appearance, and, still better, of assisting growth, which the loosening of the surface soil does by rendering the ground the more easily susceptible of atmospheric influences. Nor are these the only merits we must attribute to hoeing, for the practice is indispensable to the obtaining of the highest results in the cultivation of all crops that have to be grown so close together, that the third phase of our subject, namely—

MULCHING, cannot be carried out. Of course, in respect of all crops to which mulching can conveniently be applied, hoeing is unnecessary and mulching is a necessity, if the highest order of cultivation is the aim; no matter what the character of the soils may be, the practice is alike desirable and beneficial for the heaviest as for the lightest, for if applied to the former it prevents the soil cracking or fissuring open to the injury of the roots, and for the latter it renders artificial watering unnecessary in the driest seasons. But I am forgetting, by pre-supposing that the best material for mulching—long stable manure—is plentiful, which is not the case in every place (it is not here), but when it is, we use it in preference to any other, and after it is done fall back on the short Grass from lawn mowings, and when thus reluctantly compelled to use such material, a sprinkling of soot or some kind of artificial manure is first applied, and the Grass over this. For Peas, Beans, Celery, Globe Artichokes, and large breadths of Cauliflower, we have come to regard the application of mulching of the utmost importance.

Broccoli growing.—Your correspondent "J. S. W." tells your readers that it is not "men" that I want to grow Broccoli, since I can find any number of cottagers that grow vegetables better

than one-half the gardeners of the country, which is perfectly correct, and I have not one word to withdraw from the sentence, because I can prove the assertion. I asked "J. S. W." a simple question—Would he call a Broccoli hardy when only thirty-eight plants die out of 1215? "J. S. W." answers the question, I should presume, by saying that it is not one or two frosts which kill a Broccoli, but a spell of continued frosts. Surely in all conscience sake we have had that continuation this winter, and still the Broccoli lives! "J. S. W." says probably they have been covered up a portion of the time, but I say not one iota of protection has been near them. The description of Chou de Burghley taken from Backhouse's catalogue is an accurate one. Although I have never mentioned the fact that a Broccoli head is enclosed in the Cabbage, I nevertheless know it to be a fact that when Chou de Burghley is running to seed in the spring it shows a small Broccoli, which personally I have never mentioned, for the simple reason I did not think it worth while. The description given is not of my writing, but a testimonial, of which I have received a great number. —R. GILBERT.

Hardy Broccoli.—Mr. Gilbert, in THE GARDEN (p. 375), says that I am mistaken in supposing that crowbar-planting of Broccoli is not generally practised by market growers, and cites an instance in support of his argument that happened thirty years ago in Kent. Well, I have seen a good deal of market culture of both vegetables and fruit in Kent, but never had the good fortune to see the crowbar in use, so that it has made slow progress. It matters little by what implement they are planted provided they are put out on firm ground in an open, sunny spot and not drawn up in the seed beds, or by overhanging trees or pent-up, walled-in gardens, for if they are grown under these conditions an average winter will destroy them. I do not think that the gardens at Burghley are a fair sample of the kind of kitchen gardens that are attached to the country residences of English gentlemen, and therefore the fact of Mr. Gilbert being able to grow short-legged Broccoli does not prove that the average run of gardeners are incapable of growing good Broccoli. Why should a man who is a gardener be less able to grow Broccoli or any other vegetable than a cottager? Mr. Gilbert was too hard on gardeners, for they can only be expected to do the best with the means at their disposal, and I have seen hundreds of gardens so overshadowed by trees and enclosed by walls, that it would puzzle the most accomplished grower to keep his crops from becoming drawn up and leggy. Gardeners have enough to contend with without their own brethren making matters worse.—J. GROOM, Gosport.

Early Potatoes.—Whilst early Potatoes are being lifted in Cornwall from under glass, and their earlier breadths outdoors are so forward as to suffer severely from late frosts, here, in the neighbourhood of London, except in extra warm gardens, early Potatoes have made no sign, and with the nights still so cold and mornings so frosty, it is just as well they are beneath the soil. But it is evident that this lateness in growth means late cropping, and thus the prospects of market growers in obtaining a profitable return are very poor indeed. Early Potatoes will come in this year only after the market has been glutted with the produce of warmer climes, and the edge taken off from the public appetite for new Potatoes. As a result, whilst we shall doubtless see a big crop, having regard to the great breadths which have been planted, we shall also see very low starting prices. If that prospect would induce growers to allow their crops to remain a few weeks longer in the soil to further increase and mature, growers and consumers would gain. We have had, and shall have, for the next two months a sterile time in market gardens, and something is wanted to turn into money. Thus necessity drives many growers to rush up their Potatoes long before they are fit for lifting, if, indeed, only a bushel per rod of decent ware can be obtained. As the selling price will probably not exceed 2s. 6d. or 3s. per bushel, early Potatoes hold out no great prospect of proving remunerative. By its early and considerable cropping

qualities, Beauty of Hebron has almost monopolised market ground. It is an excellent Potato for eating when grown on Middlesex soil, but, like all immature Potatoes, has little flavour when so early lifted.—A. D.

KITCHEN GARDEN NOTES.

PEAS.—Our first batch are now in flower; they were sown in pots and planted out. The first sowing made in the open border early in February will not be in flower for ten days or a fortnight, the little extra labour that sowing in pots entailed will therefore be rewarded by our being able to pick a fortnight or so earlier than otherwise would have been the case. The first to open flower was Veitch's Extra Early, Sutton's Ringleader only a day or two later, and Laxton's William the First a week after Extra Early, but the high quality of William the First more than compensates for the few days longer it takes to come to maturity. Another sowing of late kinds is now to be made—sorts, British Queen, Ne Plus Ultra, and Latest of All. Successional sowings have been staked, and mulching put on a yard in width and about 4 inches thick; this keeps them in an equable growing condition; consequently we hardly know, from practical experience of having to battle with mildew, how difficult it is to exterminate that parasite when once it has got a firm hold. The cause of it is invariably the result of a check to growth, and the most general cause of such check is drought. Moral—dig or trench deeply, manure freely, sow in trenches, and mulch as soon as staked.

RUNNER AND DWARF FRENCH BEANS.—The first sowing of dwarfs has come up well, and is already thinned out to about 9 inches apart, and soil has been drawn well up to them as protection in case of frost, and having a good supply of Yew spray, this will be laid over them should it be deemed necessary. A small sowing of Canadian Wonder will now be made each week up to the end of June. The second principal sowing of runners we have just made on ground recently occupied with Brussels Sprouts, so that deep cultivation was a necessity, for there is no crop—not even Peas—that so effectually impoverishes the ground as does this variety of the Cabbage tribe; but it is only just to add that the produce afforded is adequate to repay the maximum amount of impoverishment.

LETTUCE AND ENDIVE.—A small sowing of Lettuce is now made about every ten days, and sowing is done where the plants are to mature, as transplanting does not pay during the summer months, for plants so treated quickly run to seed. A moist, half-shaded position, if the soil be fertile, produces the finest, most crisp, and juicy Lettuces during the summer months, but ground being limited we have more frequently to make it a makeshift crop, and grow it on the Celery ridges between the rows of Peas, amongst fruit trees, and, in fact, on any bit of spare ground. White Cos varieties are most favoured, for under all conditions of cultivation they are more generally tender and juicy than any of the Cabbage varieties. We have now sown Endive, Green Curled and the Broad-leaved Batavian on a west border, and the plants are intended to mature there, and as soon as large enough to be thinned out we shall make a successional sowing in the same way as Lettuce, the two being quite on a par in respect of resenting transplanting in the summer-time. The sudden burst of sunny weather rendered watering of lately transplanted Lettuce of the utmost importance.

PARSNIPS.—These are of sufficient size to be thinned out, but the ground has got so hard that we shall have to wait for a shower before it can be done. We thin out to from 10 inches to 12 inches apart, and the rows are 18 inches asunder, which in good ground is not a bit too much. As soon as thinning out has been done the ground between the rows will be hoed as deep as non-injury to the roots will admit of; another hoeing immediately prior to the tops of one row touching that of its neighbour will be all the cultivation needed for the remainder of the season.

TOMATOES.—The plants being strong, in 5-inch pots, and well hardened, have this day (11th inst.) been planted out, a few of them on suitable places against the walls of houses and pits, but the bulk occupy a large space of the best west border we have, and which is well screened from the north-easterly winds that oftentimes do serious damage to some of our early vegetable crops, and, profiting by such mishaps, we never fail to note the positions in the garden on which the wind has least effect. The plants are 36 inches by 46 inches apart, and to each a stout stake is placed to which the main stem is secured as growth progresses. The ground is moderately rich, and each plant is set, as it were, in a shallow basin, so that in case of excessive fertility, when additional stimulus may be requisite, manure water will be the more readily applied, and meantime the depression in ground will ensure that, whatever rainfall there may be, a full share of it will descend directly to the roots. The varieties planted out are Earliest of All, Reading Perfection, Hackwood Park Prolific, and Trentham Fillbasket.

RIDGE CUCUMBERS.—These we have now planted on ridges, the foundation of which consists of about one-third long litter and the remainder short Grass, the mowings from the lawn. The soil is principally the siftings from the potting shed, a few barrow-loads of leaf soil and droppings being mixed with it. The bottom-heat now registers 86°, and is steadily declining, else we should not have ventured to plant. The bulk of litter and Grass is of sufficient depth to warrant the hope that the heat will not decline to a less degree than 70° (and probably not lower than that the whole of the season) before the plants have gained sufficient strength and root-run, after which they will do right well if the temperature does fall a little lower than that. The plants are at present protected with handlights, but by the end of the month, when we expect to be quite safe from frost, these will be taken away, for the plants resent coddling. "Slow and sure"—that is, slow, vigorous growth, then sure and free fruiting—is a certainty, of course all other items of culture being duly attended to. The more important of these are the keeping of the plants well supplied with water, the foliage clean and free from insects, and the growths so regulated by frequent thinning and pegging that it may never be necessary to cut away a large quantity of leaves and growths at one time, and thus cause a check to growth that frequently ends in gumming and canker. W. W.

HOEING.

WHEN walking through a market garden a few days ago my attention was arrested by a man hoeing. He knew his business, and he did it thoroughly and conscientiously. There was no mere skimming of the surface with him. He bent his back, keeping his hoe handle almost horizontal; and, striking the hoe down into the soil sharply, he drew it towards him to the length of 18 inches or so, loosening the soil thoroughly to the depth of two or more inches. This I thought was doing his work in a proper manner, and the crop among which he was hoeing could scarcely fail to be benefited by the operation. I remember Mr. George Paul once telling me that he encouraged his labourers in his nursery at Cheshunt to hoe deeply, by paying them a kind of premium, and he found deep hoeing of great advantage during a dry summer, ground with a loosened surface not giving out so quickly as that with a hard and unloosened surface.

The hoe serves other purposes than merely that of chopping up weeds. This is important, because the soil produces a crop of weeds naturally, and that in spite of the old tradition that it does so because a curse rests upon it. The earth is a bounteous mother to man, producing a very large part of his most wholesome food, and is therefore very much more of a blessing to him than a curse. Tillage is of the first importance; the better the soil is tilled the more generous are the crops, and one of the most important details of tillage is hoeing.

But, in addition to chopping down weeds, the hoe loosens the surface of the soil, when by reason of heavy rains it has run together on the surface

and become baked by the sun. As Glennly puts it, the pores of the soil become closed up, and the hoe remedies this. And this observant gardener remarks, in using the hoe, "work straight before you, slicing the earth, as it were, by drawing the instrument to you with a pressure towards the ground, thereby cutting off everything that comes in its way; and if you wish to stir the earth a little deeper, turn the corner of the implement a little, when the same pressure makes it penetrate deeper. You put the hoe to the ground a foot or so before your advancing foot, and draw it close to you. This is the operation, too, for thinning crops of Turnips, Carrots, Parsnips, Spinach, and any other produce that is sown too thick. You cut up all but sufficient to grow, and those you leave at proper

operator, and therefore he does not tread upon the fresh stirred soil. But there are several degrees of hoeing. The principal one is to keep the surface soil loosened, and market gardeners especially, who may be said to rush crops through the ground in their eagerness to secure and market them, are fully alive to its value. Good culture is one of the main springs of success. R. D.

FERNS.

W. H. GOWER.

ODONTOLOMA.

This genus comprises about half-a-dozen distinct species, which are by some authors placed



Odontoloma repens.

distances." As a matter of course, the hoe has to be applied with care in the case of young crops not long through the soil. As yet the young plants have but a slight hold upon the soil, and care must be taken not to disturb them, or they will be in danger of being burnt up by the sun. A careful hoer works by common-sense rules, and avoids mistakes of this kind. Among young fruit trees, Roses, &c., the soil may be stirred deeply without fear of harm, because the crop is well established.

There is one objection to the ordinary garden hoe: he who uses it has to tread upon the ground he has just stirred. It is different with the Dutch hoe, because it is used by being pushed from the

with Lindsæas, and by others with the Davallias; from the former, however, *Odontoloma* is distinguished by its sori being punctiform, whilst in *Lindsæa* it is linear and continuous, and they differ from *Davallias* in having the pinne developed on one side of the mid-rib only. Other known species which, although handsome and desirable ornaments for our plant houses, have not yet been introduced to cultivation are *O. pulchella*, *Parkeri*, *hymenophylloides*, *tenuifolia*, &c.

O. REPENS, the subject of our illustration, known also as *Davallia repens* and *D. hemip-*

tera, is an epiphytal plant, having a slender, creeping sarmentum, or root-stock, producing linear pinnate fronds, a foot or more in length, the pinne being about half-an-inch long, developed on one side of the mid-rib only, dentate on the edge, and bright lively green in colour. This plant is seen to the greatest advantage when grown in a suspended basket. It enjoys strong heat and a moist atmosphere, and should be placed in soil composed of fibrous peat and *Sphagnum* Moss, through which should be disposed some rather large pieces of charcoal. In potting or handling this plant, care should be taken that the points of the rhizomes, which are very brittle, are not broken. It may be readily increased by dividing the root-stock with a sharp knife in early spring, just before the young fronds push up. It comes from various islands in the Indian Seas.

Todea pellucida.—If I was asked to name a Fern which would give the least trouble to its possessor, and yet be always in a satisfactory condition in a sitting-room, it would be *Todea pellucida*. It will thrive either in a warm or cold room with subdued sunlight or in constant shade, and requires little or no water after it is once properly planted, always looks green and refreshing, and is a source of constant interest to a plant lover. I have a plant in my sitting-room which now nearly fills the glass shade which covers it. Seventeen months ago it was a small plant with some five or six fronds, and was then planted in the pan which now holds it and covered with the glass shade. It has never had a drop of water since, in any form either to root or frond, and the shade has never been taken off, and yet it is in the most flourishing condition. The glass or terra-cotta pan in which the *Todea* is to be planted should be prepared as follows: Put an inch thick of *Sphagnum* (or Moss of any kind if *Sphagnum* is not to hand) all round the sides and bottom of the pan; half fill it with clean broken potsherds or bits of broken brick; on this put a thin layer of *Sphagnum* or Moss; then fill up the pan with a mixture of pounded potsherds (or bricks will do) and fibry peat broken up small, leaving it a little high in the middle; in this insert the plant of *Todea* and finish with a thin surfacing of *Sphagnum*; give a good watering with a fine Rose sufficient to saturate the whole mass; then put on the glass shade at once. Put the Fern case in the window or on the table of the room where you wish it to be, and it will prove a source of pleasure for many months, and require no further care till the glass shade becomes full of fronds, when it will be necessary to take off the shade and cut away some of the oldest fronds, or to begin again with another small plant.—ROBT. LLOYD, *Brookwood*.

A PROTEST.

TO THE EDITOR OF THE GARDEN.

SIR,—Some nurserymen, supposed to be innocent persons and good citizens, sometimes grievously afflict their customers in certain little ways.

1. They send me plants with names horribly written, often in pencil. A label sent out by any methodical nurseryman should be such as would last a season through. It is not always convenient for me to label my plants permanently as they come, and I frequently find plants so labelled that the words cannot be read a few weeks after the plants arrive.

2. They send plants "to compensate for carriage," not knowing whether I want the said plants or not. In this way I get plants which I do not know, and therefore do not care to sacrifice space for, also some that I dislike!

3. They often take it on themselves to add to my order, and to send things not ordered in place of those that are desired.

4. Instead of giving the name of the plant they give the number kept, unfortunately for

me. for reference in their books. This is an impertinence which the bestowal of a catalogue occasionally containing the corresponding names does not atone for. Our sweet and reasonable system of naming plants is so loved by us all, that we resent being kept off by numbers! Foreigners are very fond of the number trick.

5. Some few soil shrubs packed without any moist material about the roots, so that in dry weather they are injured or killed. It is easy to so pack any plant that it may travel for days without letting the moisture escape from the roots.

6. Cases of officiousness, well meant, but misapplied. I order *grandiflora*, and the nurseryman writes, "You ordered *grandiflora*; we have substituted *grandiflora superba magnifica splendens*, a much finer variety, which we feel sure will give satisfaction." Now, *grandiflora* is the right size, and of a beautiful soft rose colour, which perfectly satisfies my eye, while the so-called improvement is a coarse-looking flower of a virulent magenta colour which I abhor. E. X.

TREES AND SHRUBS.

SHRUBS FOR ORNAMENTAL PLANTING.

THE STAFF AND SPINDLE TREE FAMILIES are known in our shrubberies by two genera of plants, both of which have representative species from abroad as well as native. Most of these, among other good qualities, have showy fruit in autumn.

CELASTRUS SCANDENS (Climbing Waxwork or Bitter-sweet) is well known as a beautiful native vine, clean in appearance, rapid in growth, brilliant in autumn with the orange and scarlet of its fruit, and cheerful with glossy foliage all summer. Considering the rather limited number of our hardy ligneous climbers, it is strange that this attractive vine is not more freely used. *Celastrus articulatus* and *punctatus* are species from Japan that grow still faster, have broader leaves and fruit much earlier than our own. The fruit, however, comes in smaller clusters and is less showy. All of them do best in strong soil, but it should be remembered that some of the vines do not have female flowers, and therefore bear no fruit. Planters should be sure to procure female plants.

EUONYMUS ATROPURPUREUS (the Burning Bush) is a shrub some 6 feet to 8 feet high, found along streams from New York to the Carolinas, with dull chocolate flowers in late June, and bright red fruit which hangs on well into winter. Trained to a single stem it assumes a neat, round-headed form which is most attractive.

EUONYMUS AMERICANUS (Strawberry Bush) is a low shrub with inconspicuous flowers, but brilliant scarlet fruit. This, too, is known as the Burning Bush further south, and grows some 6 feet high. With us it is low, half trailing, and admirable for covering rocks or clambering over banks. The variety *obovatus*, from rocky woods in Pennsylvania, is a slender, trailing Evergreen with long, narrow leaves and scarlet berries.

E. ELATUS (the Winged Spindle Tree) comes from Japan and forms a dense head, rarely more than 3 feet high. Its flowers, too, are dark and lustreless, but the early fruit is of bright red, and the foliage turns to orange and scarlet in autumn. There seems to be two varieties of this species, one of which has much more marked "wings" than the other.

E. VERRUCOSUS is so called from the warty appearance of its branches—singular dark-brown excrescences on the green bark. It comes from Austria and Hungary, and grows 8 feet or 9 feet high.

E. NANUS is a beautiful low Evergreen, resembling somewhat in appearance *Daphne Cneorum*. The purple flower clusters are rather pretty and abundant, and the pod which follows is of a bright rose colour and opens to show a deep orange berry. It grows

rapidly, will do well in a somewhat shady and dry position, and makes a most effective addition to the list of trailing or creeping plants for banks and rocks.

E. LATIFOLIUS, from Germany and France, is a small tree in habit, and about the best of the whole family. The leaves are broad and glossy, the flowers greenish white, the fruit large and brilliant and hanging on long stems. This species should not be crowded among other shrubs, but allowed to develop its beauty as a single lawn tree.

E. RADICANS is a climbing species from Japan that clings to wood or stone by rootlets like those of the climbing *Hydrangea*, and in its home it is found with this plant and the *Ampelopsis* covering the walls of temples. The variegated form, with white markings in the leaves, forms a neat edging for walks when clipped. It does not do well under the drip of trees.

E. SHEOLDIANUS is also from Japan, a glossy Evergreen with greenish white flowers, and fruit which does not reach maturity here. It does well on the south side of rocks in well-drained soil, as a half trailing plant. Mr. Falconer writes that with him it becomes a dense hemispherical sub-evergreen bush and a very handsome garden plant.

E. JAPONICUS in many varieties are evergreen shrubs, some with leaves variegated with white and yellow markings. Here they are not quite hardy, but south of Washington they flourish in the open ground. A species from Japan called *yessoensis* promises well, but has not yet fruited.

E. EUROPEUS (European Spindle Tree) is a large shrub, reaching in some varieties a height of 20 feet, and has rose-coloured and orange fruit. It is more liable to insect attacks here than other species. The wood has been used for spindles and knitting needles from the earliest ages. It is also used for piano keys, cups, pipe bowls, and as charcoal for artists. It has many varieties, one with white fruit, another with purple, another with green, one with much broader leaves than the species, and one (*E. c. var. nana*) that grows scarcely more than 2 feet high in the form of a miniature Lombardy Poplar. J. DAWSON, in *Arnold Arboretum*.

Exochorda grandiflora.—There appears to be numerous forms of this very excellent plant in cultivation in gardens, all of which vary more or less in the size of the flowers. The majority of the specimens we have seen belong to the small-flowered form, the large one being apparently more rare. It is a most useful plant for a wall, and, if kept trimmed properly, makes a fine covering, being at the present time a sheet of pure ivory-white and green. Although a good wall plant, it makes a handsome isolated specimen, the pretty twigs giving it a grace of its own, not surpassed by any other flowering shrub we are acquainted with.—L.

Fabiana imbricata.—This pretty flowering shrub is hardy in favoured spots in the south of England, and will survive most winters against a wall around London, but, generally speaking, is seen at its best when grown under greenhouse treatment, and so treated it is now in full flower, and at the same time very attractive. Though it belongs to the Order Solanaceae, the whole character of the plant is widely dissimilar from its common allies, for it bears a great general resemblance to a Heath, not only in habit and foliage, but also in the flowers, which are tube shaped and pure white in colour. It remains in flower a considerable time, and is altogether a very pretty greenhouse shrub of easy culture.—J.

The double-blossomed Cherry.—Cherries everywhere appear to be flowering with great profusion this season, and this floriferousness characterises the double Cherry also. Here, at Ealing, in two of our forecourt gardens, there are very fine specimens, and the oldest of the two, a tree perhaps of forty years' growth, is a marvellous example of floriferousness. The blossoms are in crowded wreaths, so closely are they set on the branches that they realise the poet's description of being "heaped up in happy plenteousness." The specimen looks as the naked trees did nearly five months

ago, when the light, feathery snow gathered on their branches and encased them in a garb of perfect whiteness. The blossoms of the double Cherry are snow-white. The plants should always have full space to develop their branches when planted; no neighbouring trees should be near them to interfere with their natural growth, or hide them from view.—R. D.

The flowering Currant as a hedge plant.—I lately saw a hedge composed of this plant, and a splendid sight it afforded, covered as it was with its drooping racemes of flowers, which had a very rich effect, and rendered it at once a striking object as well as a capital fence. The plants had been pruned closely in when first planted, and as growth had been freely made the leading branches had been allowed to make each year just sufficient young wood to produce a crop of blossoms. The form of the hedge was perpendicular with a flat top. The upright growth at the sides admitted of the bunches of blossoms hanging in a natural manner. One annual clipping, and that during the winter months, is all that was found necessary to keep the hedge within prescribed limits.—E. M.

Viburnum plicatum.—This Japanese species of Guelder Rose is well fitted for growing in pots and flowering under glass, for with ordinary care and attention it will in this way bloom well every year, and the large clusters of pure white flowers form not only a prominent feature, but will remain in beauty a considerable time. Besides being very ornamental when grown in this way, it also forms a very handsome plant for training on low walls, as in such a situation it will flower well, but as an open bush it seldom blooms in a satisfactory manner. One point worthy of notice with regard to this *Viburnum* is that it will bloom in a smaller state than the common Guelder Rose, which last, however, is from an ornamental point of view second to none. *V. plicatum* is by no means the easiest of the genus to increase; indeed, cuttings do not strike readily, so that the better way to propagate it is by means of layers. T.

Magnolia Campbelli.—It is much to be regretted that there should exist two serious impediments to the successful cultivation of the above-named handsomest of all flowering trees known to temperate climates, as all must admit who have seen the splendid portrait of it given by Sir Joseph Hooker in his fine work on the trees and plants of the Himalayan region. These impediments are, first, the extreme brittleness of its timber, which renders its main stem (even when of so considerable a size as between 40 feet and 50 feet in height) liable to be snapped in two by any violent gale of wind, even when in by no means a specially exposed situation and when surrounded by high trees. This catastrophe happened this spring at Laklands to Mr. Crawford's second largest specimen, 36 feet of the main stem, carrying numerous flower-buds, being thus unfortunately broken off, to its owner's great grief. The second is that, from its time of flowering taking place at least six weeks too early for our uncertain climate and before there is a vestige of foliage on the tree, the beautiful flowers, being unprotected by any calyx, are liable to get caught and have their lovely roseate petals blackened by such late frosts or a continuance of harsh easterly winds as we have had this spring. I have recently been informed by Mr. Crawford that, though his finest specimen has over 100 buds this spring, he fears that none of them will open for the above-stated reasons.—W. E. GUMBLETON.

SHORT NOTES.—TREES AND SHRUBS.

Weeping Hemlock Spruce.—In a letter, Mr. S. B. Parsons, Flushing, Long Island, speaks very highly of his Weeping Hemlock Spruce. This tree appears to be very little known in our country. He says his specimen is now a picture.

Prunus Pisardi.—Although this *Prunus* is thoroughly distinct all the summer, it is never more so than in the spring just as it is unfolding its leaves, which are of a soft purple colour. This shrub is very conspicuous when associated with green-leaved deciduous trees. Towards the autumn the red coloring of the under-side of the leaves appears to assume a stronger tone. It is certainly a desirable tree for the shrubbery, and is said to bear purple-coloured flowers.—J. C. C.

Deutzia crenata flore-pleno.—This double form of the favourite *Deutzia* is a valuable open-air shrub. It is of graceful habit, assumes a large size, and in May or early in June it becomes a complete mass of snowy flowers. Before these wither they become of a purple hue. The plant ought to be included in all collections of early summer-flowering shrubs. Our largest specimens are about 7 feet in height, as much through, and they have been very pleasing objects when in bloom ever since they were 18 inches high.—CAMBRAN.

Spirea Thunbergii.—Of all the small shrubs I have grown, I know of none more beautiful in winter than this *Spirea*. Its real beauty is not fully developed, however, till the plant is at least three years old. The spray is small and delicate, and prettily recurved. The leaves are about 1 inch long, and very narrow and Willow-like. The plant is quite dwarf, and rather solidly furnished, except it be thinned out. To my mind, it is a most beautiful object when covered with its tiny white flowers very early in the spring.—M.

Pyrus sinensis.—Just now, when so many kinds of *Pyrus* are conspicuous by reason of their showy blossoms, this species furnishes an additional attraction in the shape of the rich bronzy red tint of the expanding foliage, which feature causes it to stand out distinct from all its associates. It is a somewhat sturdy growing, medium-sized tree, reaching when full grown a height of 20 feet or thereabouts. Though it is one of the earliest of all the *Pyruses* to burst its leaf buds, the foliage is in the autumn retained very late. The flowers are, like those of most of its class, pure white, and stand out very conspicuous against the bronzed foliage. *Pyrus salicifolia* affords a direct contrast to the last named, for the young leaves are of a hoary whiteness, which causes it to be very noticeable wherever planted.—T.

Berberis Aquifolium as a specimen.—It may not be generally known what a capital plant grows as a specimen upon the Grass the common Mahonia makes. Seldom do the commoner kinds of shrubs, both evergreen and deciduous, have a chance to show their natural beauties under the most favourable conditions, being generally planted in some out-of-the-way corners. I lately saw growing upon a small lawn in front of an amateur's residence a bush of this *Berberis* fully 5 feet high and about 7 feet through. It had not been pruned in closely to form a dense bush, but the branches had grown in an upright manner, each one at a distance from its neighbour sufficient to allow of the full development of the foliage, and for the display of bloom. The lightness of the whole bush, contrasted with the rich green foliage and golden-coloured blossoms, rendered it at once a conspicuous and noteworthy object.—E. M.

Rubus deliciosus. Mr. William Thompson, of Ipswich, was, I believe, the first to advertise seed of this pretty shrub. It was from his seed that I raised several plants, retaining two for my own garden and giving away the rest. The method of increasing the plant by cuttings of the current year, as recommended by your correspondent "T." in THE GARDEN (p. 104), will, I doubt not, answer the purpose, if the method adopted for Currants and Gooseberries has not hitherto proved successful. The seeds of this shrub, like those of many other perennials, are hard-coated, and have to lie a long time in the ground before they will germinate. I sowed my seeds in a pot in the usual way, and having filled up the little space at top with silver sand, I buried it in the ground in a sheltered spot. At the end of twelve months I raised it to the surface and removed most of the sand, and about the middle of May the plants appeared. Having a small quantity of the seed left, I sowed it and treated it in the same way, but it was two years before the seed germinated, and this I have no doubt was owing to the seed having been kept a longer time. Some old seed of the *Mimulus cupreus* that I had had in the house for several years was sown in a pan by the side of some new seed of the same species. The plants from the latter soon appeared, but there were no signs of vegetation in the vacant space till about six weeks afterwards, when the little plants were seen in profusion, the seed having been sown rather thickly. Hard-coated seeds are better sown as soon as possible after being gathered. Treated in this way, I have found the seed of the Dog Rose to germinate freely after being in the ground sixteen months.

They make good stocks for budding when well grown and of sufficient strength.—B. S.

ORCHIDS.

W. H. GOWER.

ORCHID SHOWS.

DURING the past few years it has become the custom with several of the large London nurserymen to hold exhibitions of these plants in their own establishments, to which their patrons and the public are cordially invited, and there can be no doubt but this practice has considerably tended to popularise Orchids, and to increase a taste for them. In this way the display of bloom far exceeds that possible to produce at any ordinary exhibition; the plants can be seen in a more natural manner, in many instances in the houses, and under the conditions in which they are grown; thus exhibited there is no necessity to resort to the practice of transferring numerous small flowering plants into one pot in order to make up a huge mass of sufficient size to enable the exhibitor to carry off the prizes competed for, which not only led to erroneous ideas, but too frequently resulted in heavy losses through the death of plants subjected to this treatment; again, as a far greater number of species and varieties can be seen and studied in this way than could possibly be brought together in any flower show, the benefits to the lovers of Orchids is proportionately greater; moreover as these exhibitions are continued over several weeks, they are convenient to those who may be unable to gratify their tastes on any one particular day on which a flower show may be held. At the present time two of these Orchid exhibitions are now on view, viz., at Mr. B. S. Williams, Victoria and Paradise Nurseries, Upper Holloway, and at Mr. Wm. Bull's, King's Road, Chelsea; in each of these establishments several hundreds of varieties of Orchids are now to be seen, whilst many hundreds of plants go to make up the sum total of the display.

In Mr. Williams' nursery, a large Palm house, 100 feet in length, is devoted to the exhibition of Orchids alone, these plants being backed by the beautiful greenery of large Palms and Cycadaceous plants, whilst smaller Palms and graceful Ferns are judiciously inter-mixed, and which combine to make up a perfectly enchanting and fairy-like effect. Notable in this display are large examples of *Vandas*, for which this nursery has become famous, such forms as Dr. Paterson's variety of *V. tricolor* and *V. suavis* *Hrubayana* being specially prominent; *Laelia purpurata*, with its large and showy white and purplish violet flowers being very conspicuous. These are associated with numerous exquisite varieties of *Cattleya Mossiae*, *C. Mendeli*, *C. Aelandiae*, and the yellow and fragrant Tulip-like blooms of *C. citrina*, which cannot by any means be induced to grow upwards, but which invariably creeps downwards, its large flowers hanging in the air like huge golden pendants. To these must be added the rosy mauve *C. Skinneri* and the magenta-flowered *C. Lawrenceana*. *Odontoglossums* contribute largely to the display, the lovely and popular Princess of Wales's plant (*O. Alexandrie*) being represented by hundreds of spikes, and in almost endless variety. Other members of this genus of Mountain Orchids now blooming are the chaste *O. Pescatorei*, various forms of *O. Andersoni*, *O. gloriosum*, the bold and showy *O. triumphans*, *O. citrosimum*, *O. odoratum*, *O. sceptrum*, and the elegant *O. cirrhosum*. Yellow flowers to vary the scene are supplied by grand examples of *Oncidium Marshallianum*, the rare *O. lamelligerum*, *O. concolor*, and *O. sarcodes*, *Dendrobium densiflorum* and *suavisimum*, *Anguloa Clowesi*, *Ada aurantiaca*, *Epidendrum vitellinum majus*, and *Laelia cinnabarina*. Lady's Slipper Orchids are also well represented, some of the chief forms being *C. ciliolare*, the rare and beautiful *C. tessellatum porphyreum*, which is a hybrid raised between *C. concolor* and *C. barbatum*, the flowers being suffused with a rich port-wine colour; *C. conchiferum*, which may be described as a very much improved *C. Pearcei*; *C. levigatum* (*philippinense*), *C. selligerum majus*, *C.*

granule, *C. Bogalli*, and the curious *Tropidium Lindenii*, which is a near ally of *Cypripedium caudatum*, but it does not produce a slipper-like pouch, but instead a long-tailed segment resembling the petals. *Masdevallias* also, with their brilliant flowers, contrast and blend beautifully in this arrangement, the finest of them undoubtedly being *C. Veitchi grandiflora*, rich in colour, and with blooms measuring 7 inches in diameter; various forms of *M. Harryana*, such as *rosea*, *cerulescens*, *blacina*, and *atro-sanguinea*, *M. ignea* and *M. Chimera* being most conspicuous. Moth Orchids (*Phalenopsis*) are represented by *P. Schilleriana*, *Ludlemanniana*, *rosea*, the spotted-flowered *P. Stuarti*, and the chaste rose-coloured *P. Sanderiana*. *Calanthes* contribute their quota, not only the evergreen section, such as *C. Dominii* and *C. venetifolia*, but one of the vestita section called *Sanderi*, with pink sepals and petals and rich crimson lip. This form is said to always bloom about this season, and is therefore a valuable addition to this genus. Space forbids a more lengthy detail of this fine show. Passing from the Orchids, one finds a most brilliant and varied display of *Anthuriums*, such kinds as *A. Scherzerianum*, *A. Wardianum*, and *A. Andreanum*, besides which there is a house devoted to *Azaleas* in bloom, and another to Cape and New Holland plants, in which *Heaths*, *Acacias*, *Pimeleas*, *Bononias*, *Tetrathecas*, &c., are very conspicuous.

Mr. Wm. Bull's Orchids are also magnificent. They are artistically arranged with small and elegant Palms and Ferns, which form the best of all backgrounds to flowers, and hide the pots in which the Orchids are grown. As at Mr. Williams', *Laelia purpurata*, *Odontoglossums*, *Oncidiums*, *Cypripediums*, *Cattleyas*, and *Dendrobiums*, in almost countless numbers, form the groundwork of the display, several hundred different forms and many hundreds of plants being required to fill the large house devoted to the show; whilst in the smaller houses quite an army of plants are in reserve pushing up flower-spikes to replace those which have preceded them. Besides most of the species and varieties previously noted, there are here some grand specimens and excellent varieties of *Cymbidium Lowianum* and *C. burneum*, both species preferring somewhat cool treatment; a very handsome form of *Cattleya Schlegelera* called *albescens*, numerous fine examples of *Miltonia vexillarium*, *Roezli*, and *Roezli album*; and the smaller, but not less beautiful *M. Phalaenopsis*, all these being perhaps better known as *Odontoglossums*. Amongst less known Orchids notable were *Scuticaria Dodgsoni*, a species which resembles *Steelei* in growth, but appears to bloom more freely than that species; the flowers are thick and fleshy in texture, light brown, blotched, and transversely banded with light yellow; lip white, streaked with rose. It is a plant which will not grow erect, and enjoys strong heat and an abundance of moisture. *Brassia Keiliana* is a very interesting member of a genus which appears to be regaining favour. Its flowers, which are produced on a long raceme, are yellowish brown, with a white lip, the sepals and petals being lengthened into narrow long tails. *Celogyne pandurata*, with its green and black flowers, and the Butterfly *Oncidiums*, *O. Papilio* and *O. Krameri*, are numerous. *Oncidium nigratum* is a rare and pretty species from Guiana, and produces large much-branched spikes bearing a profusion of flowers, the sepals and petals of which are pure white, barred with deep chocolate, the triangular lip being blotched in front with the same colour, with a yellow crest. This species thrives best in an intermediate house. *Oncidium macranthum* is well represented, this variety being highly coloured, and the flowers rounder and fuller than any we have previously noticed. Many forms of *Lycaste Skinneri* are also conspicuous. These have been grown and kept in a low temperature with the view of their lasting for the present purpose. The rare *L. gigantea*, although it can hardly be called a showy Orchid, is wonderfully distinct, having bronzy green sepals and petals, and a velvety maroon-fringed lip. Amongst distinctive-leaved Orchids are various forms of *Vanda tricolor* and *suavis*; the summer-flowering variety of *Angraecum sesquipedale*, *Aerides suavisimum*, *odoratum* and *crispum*; *Saccolabium guttatum*, and *Phalaenopsis grandiflora* lend their

charms. We strongly advise our readers to see these exhibitions for themselves, for no description, however lengthy, could do justice to their excellence. G.

DENDROBIUM WARDIANUM.

THIS magnificent species, originally imported from Assam, was for a time scarce, but has since been found plentifully in a new locality; consequently it can now be procured at a very reasonable rate. It is of pendulous growth, and generally grown in baskets and pans, but the longest growth I have ever had was 5 feet 3½ inches grown in a pot. The plant from which the spike figured in the annexed engraving was taken was grown in a pot along with other varieties in the Dendrobium house. The plants are potted chiefly in peat, with a little Sphagnum Moss and a good addition of charcoal, the plants well elevated above the rims of the pots and kept at all times near the glass. During

air or at the root, as it is apt to start into growth from the crown. When this takes place the lower blooming buds do not open, although the growths have been well ripened.

I do not practise the so-called pruning system, but the growths are frequently cut off to the crown when in bloom for house decoration, for which use as well as for exhibition purposes they are well adapted. This magnificent genus of Orchids (*Dendrobium*) produces in some of the species flowers which are very large and delicate in colour and delightfully fragrant, whilst many of them produce flowers in great abundance. Many of them retain their leaves all the year round, whilst others are deciduous. Some of the kinds are compact in growth, while others are straggling; again, others are most graceful when cultivated in baskets and suspended from the roof. The majority of the species are found in various parts of India and the Indian Islands, growing on the branches of



Dendrobium Wardianum. Engraved for THE GARDEN from a spike of flowers sent by Mr. A. Evans.

the growing season the syringe is used freely amongst them, as well as a plentiful supply of water at the roots, until the growths are completed. The plants are then removed to a Muscat vinery to ripen, which place suits them well. Water must be reduced gradually, but not to such an extent as to make the pseudobulbs shrivel. Young plants should at all times be grown in small baskets or pans. This variety will flower quite as freely as the old *Dendrobium nobile*, producing from twenty to thirty flowers on a growth in pairs and threes, the best variety measuring from 3 inches to 4 inches in diameter. They bloom about May, and continue a considerable time in perfection. I have had them keep fresh in the flowering compartment five weeks. Where a number of plants of this variety are grown they should be introduced into heat in batches, so that there may be a continuous supply of bloom kept up, according to the demand, from Christmas till June. One thing must be closely observed with this variety when at rest—not to keep it at all moist in the

trees such as hang over streams of water, whilst others are found in Australia. A. E.

Lytell Hill, Haslemere.

SHORT NOTES.—ORCHIDS.

Orchid sale.—Mr. G. F. Wilson, of Weybridge, writes that his hardy and half hardy plants now take up all his available time; therefore his collection of Orchids will be sold at Stevens on Thursday, June 2.

Oncidium aureum.—This very pretty species is now blooming in the collection at Kew. It produces a long branching spike bearing many flowers, which are in the sepals and petals of a dull reddish crimson, whilst the large flat lip is golden-yellow. It appears to thrive in the intermediate house. As we have not observed this species in any other collection, it is probably a rare plant.—G.

Odontoglossum Masereeli.—This form has originated from amongst an importation of plants from Ocaña, and gives one the impression of being a hybrid between *O. luteo-purpureum* and *O. pratinens*. The flowers are about the size of *O. luteo-purpureum*, the sepals and petals being large and broad, golden-yellow in colour, the latter bearing several obscure transverse bars and spots, lip white, profusely crested. The raceme of flowers was sent to Kensington. It came from M. Masereel, of Ghent. It appears to much resemble *O. Vultstekeanum* of Reichenbach.—G.

ORCHIDS AT CHELSEA.

THE display of *Laelia purpurata* and *Cattleyas* at Messrs. Veitch's nursery is just now very grand, between 500 and 600 of these beautiful flowers being all open at one time. The gorgeous beauty of the sight, however, cannot be imagined, neither can it be adequately described, as it must be seen to be appreciated. The house in which these plants are grown is about 140 feet long with a centre stage, and from end to end on both sides there is a perfect blaze of beauty, for associated with the *Laelias* are countless numbers of *Cattleya* blooms, notable amongst which are fine varieties of such kinds as *C. Mendeli*, *Warneri*, *Mossiae*, *intermedia*, *Skinneri*, *Lawrenceana*, *Laelia elegans*, &c. Rich and rare though the display is at the present time, the innumerable spikes which are just pushing out of their sheaths bid fair to maintain a succession quite equal if not to eclipse the present display a few weeks later on. The conditions under which these plants have been grown to produce this wonderful crop of flowers appear to be good exposure to sun and light, a somewhat cool atmosphere with free admission of air, with just sufficient moisture to prevent either roots or flowers suffering from aridity. In the same house are some notable examples of the Cow's-horn Orchid from Honduras (*Schomburgkia tibicinis*), and what a beautiful plant it is when seen in flower as it is here; its large and numerous blooms are more richly coloured than usual, owing no doubt to having been well exposed to the sun. This fact should be borne in mind by cultivators of this plant, as but very few are successful in its treatment.

CYPRIPEDIUMS have a house, which contains numerous magnificent specimens, devoted to themselves. They are kept somewhat warm and moist, but even here there is nothing like saturation, and air is freely admitted. The most conspicuous of the kinds in flower are the rare *C. Morganie*, one of the hybrids raised in this establishment between *C. superbiens* and *C. Stonei*; the leaves in shape resemble the latter, but they are somewhat obscurely tessellated in the way of the former; the scape is three-flowered, dorsal sepal white suffused with red, the veins being of a darker hue; petals broad and long, white tinged with pale yellow, profusely spotted and blotched with brownish purple; the lip large, yellowish white tinged with purple. *C. grande* is another of the Messrs. Veitch's hybrids raised from *C. Roezli*, crossed with *C. caudatum*. It is a much stronger grower than either of its parents; the flowers are very large, the petals much longer than those of *C. Roezli*, and the lip is much extended. *C. grande* bears as many as four flowers upon a spike, all open at the same time. *C. Druryi* has not yet been seen to great advantage, but, judging from a variety now flowering in this collection, its rich yellow flowers will render it a great favourite. *C. ciliolare* is a bold and handsome plant introduced from the Malayan Islands, and appears to combine the beauties of *C. argus* and *C. superbiens*, whilst in *C. vernixium* the Messrs. Veitch have obtained a hybrid which blends the charms of *C. argus* and *C. villosum*. Some varieties of this, however, appear to be finer than others, although all originated from the same cross. Other kinds flowering here are *C. Swainianum*, *superciliare*, *Hookeri*, *caudatum*, *Roezli*, *Lawrenceanum*, *conchiferum*, *barbatum*, *Warneri*, and various others.

In the houses devoted to those plants requiring the greatest heat are members of the showy *Dendrobium thyrsoiflorum*, with quantities of its pendent trusses of snowy white and orange-yellow flowers. *Dendrobium Jamesianum*, bearing some thirty flowers, is truly grand, its large white flowers, slightly stained in the lip with pale yellow, being very conspicuous. It appears to thrive here remarkably well treated as a basket plant, exposed to full light, and all but full sun. Other *Dendrobiums* now flowering are *D. Bensoniae*, *Parishi*, *tortile*, *albo-sanguineum*, *Dalhousianum*, *crystallinum*, and a charming form of *D. Farneri* named *album*, with large flowers, which are in the sepals and petals pure white, with orange-coloured lip. Associated with these *Dendrobies* is the spring-flowering form

of *Angraecum sesquipedale*, its large waxy white, long-spurred flowers being very conspicuous contrasted with numerous spikes of *Aerides Veitchii*, bearing much-branched racemes of delicate, soft, rosy pink, shell-like flowers, and with the dense racemes of the Fox-brush *A. Fieldingi*. *Vandas* are flowering in quantity, and their grateful aromatic fragrance pervades the whole house. In the coolest house a large and graceful display may be seen, numerous large, branching panicles of *O. cirrhosum* being associated with similar ones of *O. Edwardi*, the former with pendent twisted sepals and petals, pure white, blotched with chocolate, and the latter deep purplish violet. Intermixed with them are innumerable spikes of *O. crispum* and *Pescatorei*. These, with immense spikes of *Oncidium Marshallianum*, bearing many of its large, rich, golden yellow flowers, blotched with chestnut-brown, form the groundwork of the display, from amongst which peep out the bold flowers of *Odontoglossum luteo-purpureum*, *O. vexillarium*, *maculatum*, *gloriosum*, *triumphans*, *Cervantesi*, and its variety *decorum*, *cordatum*, *Roezli*, *citrosinum*, and the clear yellow *Oncidium concolor* and *O. macranthum*. All these plants are grown in a cool temperature, the condition of the plants and the vigour of their flower-spikes bearing ample testimony as to how well the treatment suits them.

W. H. G.

CHRYSANTHEMUMS.

E. MOLYNEUX.

THE time is now fast approaching when the plants that were struck from cuttings in December and early in January will require their final shift into the pots in which they are to flower. Provision should accordingly be made in advance for their safety when they are stood out of doors, such as protecting them from late frosts, which often come upon us unawares. Although *Chrysanthemums* are hardy plants when grown under natural conditions, they are rendered much more tender when the cuttings have been taken from plants which perhaps stood thickly together, as the young shoots under such treatment are sure to be more tender than otherwise, and these sometimes are pushed forward in a little heat and made to grow as succulent as possible, that they may assume the proportions of a walking-stick in the stems. No wonder, then, that they are unable to withstand a sharp, late spring frost with impunity. The placing, then, direct from houses or frames of the plants to an open position without any means of affording the slightest protection, is a step in the wrong direction. Plants that have been hardened in growth by the admission of a free circulation of air by day and night are in a much better condition to go directly out of doors than when otherwise treated. At this season of the year east winds, which oftentimes prevail, should be specially guarded against, as much havoc is caused by the wind bruising the tender, succulent leaves, if not breaking them off entirely. The tissues of the leaves are often so much injured as to deprive the plant of its natural support to a great extent; at the foot of a south wall the plants may be stood, if such a position is available; failing this, and the plants have of necessity to stand in the open, they may be fenced around with hurdles thatched with straw, or canvas or mats may quickly be placed over the top, which will then be a sure protection from frost at night, and the hurdles by day will shield them from cutting winds; nothing is better than a bed of coal ashes whereon to stand the plants. With hot sun and drying winds and small pots full of roots, water will be required twice, and sometimes oftener during the day. Close attention should be paid to them in this matter. At this season of the year many plants will

assume a sickly hue, notably such kinds as *M. Arlene*, *Criterion*, *Boule d'Or*, *Val d'Audorre*, *Golden Dragon*, *Album plenum*, and *Japonaise*. This is owing to a weakness in their constitution at this stage of their growth. As a rule this sickly colour in time wears off, and the plants regain their natural green shade; an excess of water at the roots or cold draughts of air in their younger stages all tend to aggravate such a complaint. Where plants are so affected it is wise in removing them out of doors to stand them by themselves in a snug corner, and by judicious attention to watering they may quickly recover as the season advances.

Chrysanthemum notes.—One result of the exhibitions of these most useful of autumn-blooming plants that are now held in almost every part of the country may be seen in a general improvement in their cultivation. In this I do not include the training of those monstrous flat specimens 6 feet or 8 feet in diameter, which are as objectionable as anything in the way of plant culture could be. But leaving these out of the question, more thought and attention are now given to secure a much higher standard of excellence than used to be aimed at, even where the plants are only required for greenhouse or conservatory decoration. The bad treatment that these and some others of the most useful things will submit to, and yet be able to live and flower in some fashion, is, no doubt, to some extent the reason of their being indifferently managed. Simple as the cultivation of *Chrysanthemums* is, if the plants are expected to produce the maximum quantity of well developed flowers, and to possess the amount of good healthy foliage at the time of blooming, that adds so much to their appearance, there must be no neglect from the time the cuttings are struck up to the time the plants come into flower. Unless the leaves from the base upwards are produced under conditions that are favourable to their attaining the requisite substance and solidity to admit of their keeping fresh and healthy to the time of blooming, they die off and leave the stems bare and unsightly, with a corresponding reduction in the strength and ability in the plants to mature their flowers. Plants that after being struck were moved into 4-inch or 5-inch pots must not be kept in these too long, as if their removal to the pots in which they are to flower is put off until they suffer for want of enough sustenance to keep them in free growth, they receive a check which no subsequent attention will make up for. Cool treatment during all the stages of growth from the striking of the cuttings onwards, plenty of light at all times, rich soil, no stint of moisture, liberal feeding with manure water when the time for giving it has arrived, and perfect freedom from insects are all requisite to grow *Chrysanthemums* well. In regard to stopping the shoots, it is necessary to be guided by the form the plants are required to be grown to; if the ordinary bush shape where each plant should consist of six or eight branches, and which for general use is best, one stopping will be enough, providing the young plants are strong, as when in this condition they will push more shoots than if weak.—T. B.

Gardeners' Orphan Fund.—The one thing that has been proposed is within the power of everyone, and yet the gardeners themselves are responding so slowly, and seem so bent on seeing what others do before they act themselves, that one would imagine they had no will of their own. If each one did what I first suggested and gave their 5s. yearly, it would enable us to start at once; but if they feel willing to give more (then give it, and not wait for others), the result would be that those who now wait would let us know what we could do, and would soon know how their money would be used and what a vast amount of help it would give. I certainly am sorry that my brethren seem so chary when the call of real charity comes in, especially as some of our best men give, and are willing to give, their time and assistance at their own expense for this good cause. I can only ask all my fraternity to canvas for the fund at once, and with a will,

and I am sure they will surprise themselves and others with the good results.—CHAS. PENNY *The Gardens, Sandringham.*

SOCIETIES AND EXHIBITIONS.

ROYAL BOTANIC SOCIETY'S EXHIBITION.

MAY 18.

THE first of the summer shows of this society was in every respect a very fine one, although, as at the last year's May exhibition, the weather was not propitious. The show was made up much in the usual manner, which must necessarily be the case, when little or no alteration is made in the schedule of classes from year to year. The only departure from the stereotyped display is brought about by the miscellaneous groups staged by the nurserymen, for which there is neither class nor prize offered, and over which there is therefore no restriction. Upon the present occasion these groups were both large and varied, staged with considerable artistic skill, and contributed in no small degree to the general effect of the exhibition.

STOVE AND GREENHOUSE PLANTS IN FLOWER. In the nurserymen's classes for twelve and six, Mr. Cypher, of Cheltenham, was first with the following plants, all of which were models of good culture and most profusely bloomed: *Erica depressa*, *Aphelaxis macrantha purpurea*, *Azalea Criterion*, *Pimelea spectabilis*, *Anthurium Scherzerianum*, *Franciscea eximia*, *Acrophyllum venosum*, *Dracophyllum gracile*, *Darwinia tulipifera*, *Erica ventricosa magnifica*, *Pimelea Hendersoni*, &c. Mr. James, of Norwood, came next with many of the same plants, and, in addition, fine examples of *Boronia pinnata*, *Darwinia Hookeri*, *Bougainvillea glabra*, &c. In the amateurs' classes Mr. W. Chapman, The Gardens, Hawkesyard Park, Rugeley, was to the fore with grand examples of *Tetradlea hirsuta*, *Statice profusa*, *Darwinia tulipifera*, *Acrophyllum venosum*, *Ixora coccinea*, various *Ericas*, *Azaleas*, &c. Other exhibitors in these classes (two and three) were Mr. Wheeler, Mr. Butler, gardener to Mr. Gibbs, St. Dunstan's, Regent's Park, and Mr. Offer, gardener to Mr. Warren, Handcross Park, Crawley; these collections contained similar, but smaller plants of the above-named species. Amongst distinct kinds staged by Mr. Offer were *Clerodendron Balfourii*, *Statice Gilberti*, *Boronia elatior*, and *Pimelea decussata*. It is much to be regretted that a greater variety of stove and greenhouse flowering plants are not brought forth. Why are the beautiful bright-flowered *Chorozemas*, the *Eriosteomons*, *Hoveas*, *Dillwynias*, and many other plants that bloom at this season not considered worthy of a place in such gatherings?

ORCHIDS had four classes provided for them, and they were well represented. In the amateurs' class for twelve, Mr. Hill, gardener to Mr. Little, The Barons, Twickenham, was placed first, with clean and healthy finely bloomed plants, well arranged; they were *Cypripedium caudatum roseum*, *Cattleya Mossiae* (twenty flowers), *Odontoglossum Pescatorei* (sixteen spikes), *Cattleya Skinneri*, *Dendrobium thyrsoiflorum*, *Oncidium Marshallianum*, *Odontoglossum Hystrix*, *Lycaste Skinneri* (twenty flowers), *Cattleya Mendeli*, two varieties, and *Dendrobium Dalhousianum*, &c. Closely following him came Mr. J. Douglas, Great Gearies, Ilford, with well-grown and flowered *Odontoglossum Roezli* and its variety *album*, *Cypripedium villosum*, with about fifty flowers, slightly past their best, *Masdevallia Lindenii*, fresh and good with nearly a hundred flowers, and a very good variety of *M. Veitchii* bearing ten blooms, a grand *Oncidium ampliatum majus*, *Cattleya Mossiae*, *Dendrobium Wardianum*, and *Cymbidium Lowianum*, which appears to make very long spikes, and bears a quantity of flowers, but it is a most wretched variety. In the class for nurserymen Mr. Cypher staged *Cattleya Mossiae* and *C. Skinneri*, *Laelia purpurata*, a magnificent specimen of *Dendrobium thyrsoiflorum*—the number of its flower-spikes it was quite impossible to count; also *D. chrysotoxum*, *Odontoglossum vexillarium* and *citrosinum*, *Calanthe veratrifolia*, *Oncidium ampliatum*, and *Vanda suavis*. Mr.

James, Castle Nursery, Norwood, followed with bright examples of *Oncidium concolor* and *Marshallianum*, *Masdevallia Harryana* and *Lindenii*, *Odontoglossum Alexandriae*, *Pescatorei*, and *vexillarium*, *Cattleya Mendeli* and *Mossiae*, the Fox-brush *Aerides*, and the fine old *Dendrobium fimbriatum oculatum*. This collection was followed by Messrs. Jackson and Sons, Kingston, with nice plants of *Cypripedium Lawrenceanum*, *barbatum*, *grandiflorum*, and *villosum*, *Aerides Piellingeri*, various *Masdevallias*, *Cattleyas*, and *Odontoglossums*. In the amateurs' class for twelve single specimen Orchids, Mr. Douglas was the only exhibitor. His best plants were *Cypripedium Dominicanum* and *Harrisianum*, *Oncidium Marshallianum*, *macranthum*, *ampliatum majus*, *Cattleya Mossiae* and *Mendeli*, and the form of *Cymbidium Lowianum* previously referred to. In the corresponding class for nurserymen, Mr. James, of Norwood, and Mr. Cypher, of Cheltenham, were awarded equal firsts. The former staged *Saccolabium retusum*, *Oncidium Marshallianum*, *Epidendrum vitellinum majus*, *Vanda suavis* and *tricolor*, *Laelia purpurata*, various *Cattleyas*, *Masdevallias*, and *Odontoglossum vexillarium*. Mr. Cypher's best plants were a very fine *Laelia purpurata*, *Odontoglossum vexillarium*, and a very highly coloured *O. citrosimum roseum*, various *Cypripediums* and *Dendrobiums*.

ROSES were both numerous and good. In the nurserymen's class for nine distinct varieties, Messrs. Jackson and Sons, Woking, wrested the place of honour from Messrs. Paul and Son. Messrs. Jackman's plants were superb, grand in foliage and flower; the best were *Victor Verdier*, *Celine Forestier*, *La France*, *Cheshunt Hybrid*, *Star of Waltham*, *Charles Lefebvre*, *Camille Bernardin*, and *Fisher Holmes*. Messrs. Paul and Sons' plants were fine, but wanted a day or two more to be at their best; the varieties were similar to Messrs. Jackman's, but *Charles Lawson*, *centifolia rosea*, *Magna Charta*, and *Juno* were very fine. Mr. Rumsey also staged nine excellent plants in this class. Class ten, six Roses in pots (amateurs), Mr. T. Lockie, gardener to G. Fitzgerald, was first with fine *La France*, *Etienne Levet*, *Mdme. Jamain*, *Mdme. Thérèse Levet*, *Marquise de Castellane*, and *Jean Liabaud*. Another pretty six were contributed by Mr. Peiry, gardener to Mr. W. G. Rawlett, The Woodlands, Cheshunt. The class for twenty Roses in 10-inch pots, not less than ten varieties, produced three competitors, viz., Messrs. Turner and Sons, Slough, Messrs. Paul and Son, Cheshunt, and Messrs. Jackman and Sons, Woking. Amongst the superb small specimens of Messrs. Turner, the following were most notable: *Edouard Morren*, *Celine Forestier*, *Charles Lawson*, *Juno*, *Sir G. Wolsey*, *Mdme. Margottin*, *Mdme. Victor Verdier*, and *Etoile de Lyon*; and amongst Messrs. Paul's best were *Alphonse Soupert*, *La France*, *Beauty of Waltham*, *Perfection de Monplaisir*, *Merveille de Lyon*, *alba rosea*, and *Charles Lawson*. These with Roses staged not for competition produced a strong feature in the show.

AZALEAS. For these plants four classes were provided, and produced numerous finely bloomed plants. Messrs. Van Houtte, of Ghent, also staged a group of finely bloomed standards not for competition, all of which were of great excellence.

HEATHS were contributed by Mr. Cypher and Mr. James. In Mr. Cypher's collection were handsome specimens of *Erica aristata major*, *depressa*, *multiflora*, *Cavendishi*, *Victoria*, *ventricosa coccinea minor* and *ventricosa alba*. Mr. James staged *E. tubiformis*, *Baudouin*, *Cavendishi*, *ventricosa magnifica*, *eximia*, *superba*, and *affinis*.

PERLARGONIUMS, for which three classes were provided, produced keen competition, those from Mr. Turner being marvels of cultivation, more especially the fancies, the finest of which were *Ellen Beck*, *Lady Carington*, *East Lynn*, *Princess Teck*, *Miss E. Little*, and *The Shah*. Fancies shown by Mr. Phillips, Langley Broom, Slough, were also remarkably fine. His best varieties were *delicatam*, *Beatrice*, *Roi des Fantaisie*, and *Vivandiere*. Amongst large-flowered and show kinds notable were *Mdme. Thibaut*, *Flirt*, *Fortitude*, *Lady Isabella*, *Digby Grand*, *Triomphe de St. Mande*, *Amethyst*, *Maid of Honour*, *Prince Leopold*, and *Kingston Beauty*.

HARDY HERBACEOUS PLANTS came from Mr. Ware, Tottenham; Messrs. Paul and Sons, Cheshunt; and from Messrs. Collins & Gabriel, Waterloo Road, London, amongst which we noted good examples of *Trillium grandiflorum*, *Trollius americanus* and *Fortunei fl.-pl.*, *Polemonium Richardsonii*, *Lilium longiflorum Harrisii*, *Saxifraga Camposi*, *Primula Sieboldii*, *Arnebia echinoides*, &c.

ALPINE PLANTS came from Messrs. Collins and Gabriel and Messrs. Paul and Sons, Messrs. Collins having splendid specimens of *Phlox amena*, *Nelsonii*, and *frondosa*, *Aubrieta Hendersonii*, *Gentiana acaulis*, and *Viola Mrs. Charles Turner*. Amongst Messrs. Paul's were *Androsace sarmentosa*, *Menziesia empetriformis*, *Hutchinsia alpina*, *Aubrieta tauricola*, *Pulmonaria dahurica*, *Houstonia cerulea alba*, *Linum campanulatum*, &c., &c. Other hardy plants, contributed by Mr. Ware, were numerous *Montan Paeonies*, the best of which will be found amongst the new plants; a beautifully diversified group of *Primula Sieboldii*. A group of alpine and herbaceous plants from Messrs. Paul contained amongst others the lovely *Gentiana bavarica*, *Myosotis rupicola*, *Papaver nudicaule*, *niviatum* and *album*, *Bellis caerulea*, *Uvularia grandiflora*, *Lithospermum prostratum*, &c.

FERNS.—This class produced three collections, none of which were of great note; in Mr. Douglas's six were *Gleichenia flabellata* and *Spelunca*, *Microlepia hirta cristata*, *Dicksonia antarctica* and *Adiantum concinnum latum*; Mr. Butler staging *Todea africana*, *Dicksonia squarrosa*, *Asplenium inaequalifolium*, *Microlepia hirta cristata*; whilst Mr. Eason, The Gardens, Hope Cottage, Highgate, contributed nice specimens of *Gleichenia dicarpa longipennata*, *Davallia Mooreana*, *Gymnogramma Lanchena*, &c.

FINE-FOLIAGE PLANTS were contributed by Messrs. Cypher, James Offer, Butler and Wheeler, all showing large specimens of *Palms*, *Cycads*, *Crotons*, *Dasyliirions*, &c., all of which were in excellent condition, but amongst which there were no novelties.

GLOXINIAS were contributed by Mr. Eason, but were not remarkable.

NEW PLANTS.—Botanical certificates were awarded to Mr. B. S. Williams, for *Chamaedorea cynicanthus*, *Odontoglossum Andersonianum splendens*, and *Laelia grandis*; to Mr. Cypher, for *Laelia purpurata Cypheri* and *L. p. Wyattiana*; to Mr. J. Hill for *Cattleya Mendeli grandis* and *Cattleya Mrs. Little*; Mr. W. May for *Odontoglossum Jacobiana*. Floricultural certificates.—To Mr. B. S. Williams for *Gloxinia Alfred Outram*; Mr. T. Ware for *Paeonia rosea odorata*, *P. Triomphe de Milan*, *P. odorata Maria*, and *Trollius Fortunei fl.-pl.*; to Mr. C. Turner for *Tea Rose Miss Edith Gifford* and *Pelargonium Magpie*; to Messrs. J. Laing and Co. for *Begonia Prince of Wales*, *B. Queen Victoria*, and *B. Princess of Wales*.

Mr. James received a large bronze medal for a collection of *Dracaenas*; Mr. Ware for group of *Tree Paeonies*. Bronze medals were awarded to Mr. James, Farnham Royal, for a group of magnificent *Calceolarias*; to Messrs. Standish, of Ascot, for a collection of *Japanese Acers*; to Messrs. Barr and Son for a collection of cut flowers; to Mr. H. B. May, Edmonton, for group of *Calceolarias*, *Mignollette*, and *Ferns*; to Mr. Ware for group of *Japanese Primulas*. Certificates were awarded to Mr. J. Walker, Thame, Oxon, for cut *Roses Maréchal Niel*, alike remarkable for size and colour, and to Messrs. Paul and Son for a collection of alpine.

Mr. B. S. Williams, Victoria and Paradise Nursery, Upper Holloway, staged a magnificent group, artistically arranged, in no way crowded, every plant displaying its character and yet all deformity in the shape of ugly pots being quite hidden. The group was composed largely of *Orchids*, interspersed with graceful *Palms*, *Dracaenas*, *Ferns*, &c. Of the *Orchids* the most notable were fine forms of *Cattleya Skinneri*, *Mendeli*, and *intermedia*, *Laelia purpurata* and *grandis*, *Cypripedium grande* and *tesselatum porphyreum*, *Odontoglossum vexillarium*, *Vanda tricolor Patersoni*, and *Dendrobium Wardianum*. Amongst ornamental-foliaged plants notable were *Aralia Kerchovana*, *Sarracenia Courti* and *Plan-*

bean, *Cocos hybrida*, *Lomaria discolor bipinnatifida*, *Lomaria gibba platypetala*, *Gleichenia rupestris* and *flabellata*. Large silver medal.

Messrs. Laing & Co., The Nurseries, Forest Hill, also staged a most effective group, composed of well-grown and well-coloured *Dracaenas*, *Caladiums*, *Palms*, *Crotons*, double and single *Tuberous Begonias*, and numerous *Orchids*. Amongst *Palms* the elegant *Geonoma gracilis* and *Cocos Weddelliana* were conspicuous. The best *Caladiums* were *Triomphe de l'Exposition*, *Mdme. Marjolin Scheffer*, *albo-luteum*, *Ferdinand de Lesseps*, and *Leopold Robert*; *Begonia Queen Victoria*, bright crimson-scarlet, very large, good shape and substance; *Princess of Wales*, rosy-carmine; *Prince Albert Victor*, vivid scarlet; *Princess of Wales*, crimson-maroon, an exquisite flower. Double *Begonias* were represented by *alba rosea*, outer petals rosy-pink, centre ones white; *Lord Randolph*, crimson; *Blanche Duval*, bright scarlet. Amongst *Orchids* the most notable were *Odontoglossum triumphans*, various forms of *Cattleya Mossiae*, *Odontoglossum vexillarium*, *Dendrobium superbum*, *D. Wardianum*, *Odontoglossum citrosimum*, &c. Large silver medal.

Messrs. Cutbush and Sons, Highgate, staged a large bank of *Palms*, *Indian* and *Japanese Azaleas*, *Ericas*, *Crotons*, &c., bordered with *Adiantums*. It would, however, have been better had the space been larger or the number of the plants less, the beautiful *Heaths* especially being far too crowded. The most notable in the group were *Erica Victoria*, *Cavendishi*, *ventricosa*, *coccinea minor*, *perspicua nana*, *McNabiana*, *Aitoniana*, *rubra* and *eximia superba*, *Leptospermum bullatum*, *Boronia elatior*, *Tetratheca verticillata* and *hirsuta*, *Hypocalymma robusta*, various *Kentias*, and *Azaleas*. Silver medal.

A fine group of *Orchids* also came from Messrs. Hugh Low and Co., Clapton, consisting of magnificent forms of *Cattleya Mendeli*, *Mossiae*, and *Reineckiana*, *Laelia purpurata*, with a remarkable lip, large and wholly deep violet-purple, *Cypripediums*, and *Odontoglossums*. Bronze medal.

A group of *Orchids* from Mr. F. C. Jacob, Amherst Park, Stamford Hill (gardener, Mr. May), contained numerous *Odontoglossums*, amongst which were handsome forms of *Alexandre*, *scepstrum*, *Wilckianum*, *Pescatorei*, fine *Masdevallias*, *Cattleyas*, and *Cypripediums*. Bronze medal.

A prize list is given in our advertising columns.

Death of Philip Frost.—We regret to announce the death on the 10th inst., at the age of 83, of Mr. Philip Frost, who has worked so long and honourably at Dropmore, and rendered the place famous for the magnificent collection of *Conifers* growing there. Sixty-five years have now elapsed since he first went to work in the gardens there. He was born at Moreton, in Devonshire, in 1804. At the age of 14 he was employed on Lord Grenville's estate at Bocomoc, in Cornwall, where his father also was. In 1822 he came to Dropmore, where he remained until 1826, when he left for Ashted Park. In the following year, however, he returned to Dropmore, but again, in 1827, he removed to Caen Wood, the seat of Lord Mansfield at Hampstead. Here he remained only a short time, as we learn that he went to the Botanic Gardens at Chelsea, then under the curatorship of Mr. Anderson. In 1832 he returned to Dropmore as head gardener, where he has remained ever since. Mr. Frost has been very successful in the cultivation of *Coniferae*, as the noble specimens, notably those of *Abies Douglasi* (measuring in 1886 124 feet high) and *Araucaria imbricata* (measuring in 1886 63 feet high), testify. In 1872, on his completing his fiftieth year of service, some 200 of his friends presented him with a handsome silver cup, on which were engraved the portraits of the Douglas Fir and *Araucaria*. Accompanying the cup was a purse containing £210, which was invested as a life annuity.

We are pleased to say that the report of the death of Mr. Ford in last issue was an error.

BOOKS RECEIVED.

"New Commercial Plants and Drugs." By T. Christy, F.L.S. Christy & Co., 25, Line Street, E.C.
"The Agricultural Pests of India." By Surgeon-General Edward Balfour. Bernard Quaritch, 15, Piccadilly.

WOODS & FORESTS.

"YORKSHIREMAN."

FORESTRY NOTES.

I HAVE been reading that book on forestry which has been described as "the best work on the subject extant," for although knowing both the book and its author well by repute, I have never seen it until now, although I have recommended it to others. No doubt in such a book there is much excellent information. It would be easy to point out the faults in some authors' teachings, but my object in the present case was not to find faults, but to see what such an authority said on some of those subjects lately discussed in *Woods and Forests*. Looking up the subject of hedgerow timber, one is much disappointed to find him decidedly on the "wrong side of the hedge," because he advocates its culture, and no doubt has helped to foster what we and all those most closely interested regard as an evil. Great excuses are to be found for foresters and their employers when we find such an authority as Brown stating that hedgerow trees "instead of being a nuisance to farmers, become of first-rate importance in all well cultivated districts; and instead of impoverishing the land they become a source of fertility to it." This is a statement which when we read it deprived the book of much of its value in our eyes as a practical guide. True, he specifies "hedgerow trees when trained up and managed upon right principles," but when we come to the training and principles, they are nothing better than an apology for the maintenance of such trees and a condemnation of their existence. Two of the main objects of raising hedgerow trees are, we are told, "the raising of useful timber in the country without occupying much breadth of land exclusively for that purpose" (the old fallacy), and "the producing a degree of shelter for stock and crops in the adjoining fields." One cannot believe that Mr. Brown had the ordinary English system of farming with its small fields and numerous hedgerows before him, but rather those big Scotch farms and fields, where the hedgerow timber, even when plentiful, is somewhat excusable, although the best farmed districts even in Scotland seem to have ignored his advocacy of hedgerow trees by sweeping all or most of them away. In that respect our author cannot be said to have had much honour in his own country. His instructions as to the training of hedgerow trees constitute his main, but unwitting objection to their existence. Their training "is a matter of the greatest importance, and should be most perseveringly attended to." This training is to begin in the nursery and be continued there till they are from 6 feet to 8 feet high, and afterwards the training is to be so unremittingly attended to that one wonders where the expense of culture is to come from when the trees are felled for timber and sold. As to the other advantage, viz., shelter for crops and stock, the trees are to have "a clean stem of from 10 feet to 15 feet high," and as the trees grow, their branches are to be shortened well in so that they may ultimately extend only "a few feet over the fence upon each side." Now, where is the shelter to come from to either crops or stocks from a straggling line of trees with bare stems 15 feet high? The very behaviour of cattle tells any rural observer that shelter is only afforded by bushy fences made thick and dense to the bottom and not by long limbed trees whose long shadows fall upon the crops soon after noon and deprive them of the sunshine when there is any. It is but right also to state that Mr. Brown's advocacy of hedgerow

trees appears to have been prompted at the time by the advocates of improved agriculture "crying out vehemently against hedgerow timber, declaring to an enlightened public that all hedgerow timber trees are injurious to the raising of plentiful and healthy crops," to quote the opening passage of his chapter on the subject.

THINNING.—Turning to this subject, we are sorry to find the same author making assertions so totally at variance with facts as greatly to surprise the reader who notes the stress Brown lays on foresters at all times making careful personal observations in everything pertaining to their duties. For instance, on the subject of thinning plantations we are told the Silver Fir and Spruce are both "extremely impatient of want of space," and that "the more the branches are encouraged by having space, the larger and better is the timber of the trees;" whereas exactly the contrary is the case, the one great fault of our home-grown Spruce being that it is too rough and full of knots, produced by giving the trees space to make too many branches. That is a fact that the foresters of Brown's school have begun to realise lately. It is very amusing, a few pages further on, to find the author of this advice in regard to Firs asserting that in a state of nature the Pine family is generally found in large masses of each species separately, and that "there" (in a state of nature) "we always find the best timber of whatever kind," a complete contradiction of the former assertion, that Firs produce the best timber that have room to produce the most branches, because in a state of nature the Firs seldom produce more than a tuft of branches at the top, as being self-sown and springing up thickly and remaining crowded, like seedlings in a hot-bed, they never can grow in any other way. The last statement was, however, made after the author had visited the natural forests of America; the first, about the Spruce, we may suppose was derived from another source previously. In another part of the book we are told that Fir and Pine trees, as a general rule, should, where grown for timber and shelter, be left "about the third of their height" asunder, that being the distance "found most favourable to the useful development of the Fir and Pine tribes as timber trees." As elsewhere the author tells us the taller Firs and Pines grow from 80 feet to considerably over 100 feet, it follows that a third of the height runs from nearly 30 feet upwards; whereas we know from common experience that half that room will produce most excellent Fir and Pine timber of generally useful size, and much more to the acre, while in a state of nature less room still suffices, we are assured by travellers. I have read and been told that Brown's "Forester" has done more to influence British, and especially Scotch, forestry than any other book, which I do not doubt, and these are some of the things I have culled from it, and I leave them to be judged in the light of recent discussion on these topics.

UNTHINNED PLANTATIONS.—Though not denying the advantages of thinning in certain cases, I am inclined to think that leaving thickly-planted young plantations altogether unthinned till they grow up to timber size is not fraught with such disastrous results as foresters generally assure us. I admit that the artificial regulation of the trees may make the evenest plantation, but I would not undertake to say that such a plantation would produce the best, heaviest, and most valuable crop of timber in the end. No British forester has yet been able to dispute that the very kinds of trees he grows at home with such care produce timber of the very best

quality in climates no better than our own, where they are left unthinned and so crowded that it becomes a struggle for existence among the individual trees, but always ending in an even, regular, and heavy crop of fine timber over vast tracts. Why should not the same thing happen here, and why thin, at all events in those cases when it only adds to the cost of culture? I looked through a plantation of Sycamores yesterday that were, I believe, sown about thirty years ago, and must say that although the plantation has never been thinned I never saw a more regular or better crop of trees, mostly now about 30 feet high or more, and big enough for bobbin-wood purposes and the like, every tree as straight literally as a ramrod, standing as they do not much more than 6 feet or 7 feet apart—that is, the large trees. They have been thicker on the ground than that originally, but a natural process of thinning has been going on, resulting in the smothering of the weakest, of which plenty are still standing, some long dead and others not far from it, but leaving the stronger trees perfectly regular and strong and much thicker on the ground than the artificial thinner would have left them, forming a uniform and dense leaf canopy overhead—making it so dark beneath that even the Grass has ceased to grow in most parts. This plantation stands on a hill-top, and when seen against the sky-line in winter, as the traveller approaches, the crowded mass of straight poles, standing like a solid battalion, has a very striking effect. This natural process will go on, and I have no doubt in the end the result will be a fine crop of Sycamore of the best quality.

MISMANAGED PLANTING.—I think if "Rusticus," in *THE GARDEN* (p. 455), is fully convinced that he has "planted ten Corsican Firs" for every one planted by "Yorkshireman," and that in most cases his ten have mostly died off, "no matter how careful the operation of planting is performed," then I submit that he has planted sadly too many in his time, and his failures must be frightful to look back upon. I did not condemn transplanting either, as "Rusticus" conveys, but only said that roots were of no value if not got up with the plant; hence our care in seeing orders executed ourselves. As to "Rusticus's" question, if I ever saw a Spruce Fir with a tap root, my reply is that I hardly ever saw a young tree without one till it had been lost by transplanting.

Wood of the Black Walnut.—The timber of this valuable North American tree is, on account of its durability and other good qualities, adapted for almost every kind of woodwork. It may be used for the largest and most costly kinds of furniture, as well as for carvings of the most elaborate kind. It is used for doors exposed to the full action of the weather; for conservatory doors, exposed to constant damp and considerable changes of temperature; for internal doors and casement windows, of rather large and costly construction, and carved, and for every kind of small cabinet work, exhibiting the highest taste and good workmanship—for all these purposes the wood answers most admirably. It appears to bear rough external wear quite as well as Oak. It does not warp or crack like Oak, and bears the greatest transition of heat and cold without any visible change. The colour of the wood, when oiled, is perfect—that natural rich brown colour which three centuries of wear will alone give to Oak. It has a close grain, without much figure; it is thoroughly well adapted for every kind of carving; and its cost now is not higher than Oak. It has every possible advantage over Oak, and in old cathedrals requiring new stall-work its rich brown colour would give it a great advantage over the pale brown-yellowish hue of new Oak, which to

most persons is most offensive. No doubt want of knowledge of its many excellent qualities has alone prevented the more general use of Black Walnut wood. Without question it would be a safe investment to plant the Black Walnut largely in this country, now that its timber has been proved to be so valuable.—Z.

THE MEXICAN DECIDUOUS CYPRESS.

(*TAXODIUM MONTEZUMÆ.*)

THIS is a pretty but little-known tree, one that is described in all plant lists and Conifer books as too tender for the climate of Britain, and one that, moreover, has stood unharmed for many years at Penrhyn, has attained a height of 40 feet, and is one of the brightest ornaments in the small patch of well-sheltered and choicely-planted ground where it grows.

I know of no other Conifer that is so delicately beautiful as the one in question, none that in autumn changes to such a lovely golden red its light, fresh, green foliage of the summer, and none that is better fitted for adorning a shady, well-chosen spot on the lawn of some maritime garden. The Penrhyn tree, the only really established plant of the Mexican Cypress that I have seen, is of pleasing outline, the spread of branches being small in proportion to the tree's height, remarkably uniform, much ramified, and nearly horizontal. It is growing in a sheltered corner with a southern aspect, and in soil composed principally of a second-rate, but dampish loam. The Pomegranate, Myrtle, Azalea, Lapageria, Chamærops, and Cunninghamia are its near neighbours, all of which stand the rigours of our Welsh winters with admirable pluck and without the shadow of harm; indeed, save the Lapageria, I have never seen either a bast mat or covering of any kind placed around them, so self-confident is our worthy gardener that they are perfectly able to take care of themselves. This is merely mentioned so as to give an idea of the genial warm corner in which the so-called tender Mexican Cypress is growing.

The stem of the tree in question is straight and well formed, 42 inches in girth, and with bark of a cinnamon-brown—not rough nor smooth, but a medium between the two. At a considerable height from the ground the trunk divides into two limbs, these growing perfectly parallel and within a few inches of each other for a number of feet, the branches spreading regularly around and covering a space of 16 feet in diameter near the ground-level. The Mexican *Taxodium* may best be described as a very refined deciduous Cypress, the foliage being finer, of a lighter green, and the whole tree more graceful in appearance; leaves arranged in two rows, long, pointed, and of pea-green colour. The wood, from the small specimen I had the chance of examining, is light, but strong, and nicely grained.

To recommend this tree for planting in any but the warmer parts of England and Ireland would perhaps be out of place, but I must say, in judging from the fine specimen here, and which has never suffered from the effects of frost, that I am quite convinced that the tree is not nearly so tender as it is described. It likes a cool, damp soil, by the water's margin, in this respect resembling its near relative, *T. distichum*.
A. D. WEBSTER.

Canadian forests.—The soil of the eastern townships is very fertile and susceptible of the highest degree of cultivation. The features of the country are rolling, having the appearance when viewed from an elevation of an upheaval of an immense wave suddenly stilled; and these slopes and valleys, before they were cleared, were covered with a luxuriant growth of those kinds of forest which in America are known as a sign of naturally drained soil and great fertility. There are many kinds of wood found in the eastern townships forests. Among these the following may be enumerated: Maple (hard and soft), Birch, Elm, Ash, Spruce, Bass-wood, Butternut, Hickory, Cedar, &c. It is also to be noticed that contiguous to these woods are numerous water powers which may be utilised in manu-

factures. The country is literally intersected with streams and rivulets, the waters of which are cold and clear and the home of the red trout. In the north-west territory of the province of Manitoba nearly the whole of the fences are composed of posts of Spruce and Poplar, the latter of which, with the bark removed, will last twenty years. Pine and Bass-wood timber are also used, the former ranging from £4 to £12 per 1000 feet. Poplar and Oak are in sufficient quantity to supply the present demand, but it is feared there is not enough to supply a very large population, in which case there might be a scarcity of hard wood, but plenty of Poplar and Tamarac, the former of which is produced very rapidly. Coal is not known to exist in the province of Manitoba, but is said to be found about thirty miles west of the boundary of the province. In the Peace River country five-sixths of the timber is Poplar. Balsam Poplar is very abundant on the islands in all the north-western rivers, often attaining a diameter of from 6 feet to 10 feet. White Spruce grows to a very large size on all the water sheds and slopes of the south bank of the Peace River, on islands in all the rivers, and very abundantly on the low lands at the west end of Lake Athabasca. It is frequently seen over 3 feet in diameter, but the usual size is from 1 foot to 2 feet. White Birch is not abundant along the Peace River, but is common on the Athabasca and Mackenzie Rivers. The Northern Indians make large quantities of syrup from its sap in spring.

PRUNING HARD-WOODED TREES.

ALTHOUGH the pruning of forest trees at one period or another becomes necessary, it is a fact that this branch of forestry is too often neglected, or but performed in an injudicious and unsatisfactory manner. This circumstance is not surprising when it is considered to whom, on many estates, the so-called management of the woods is entrusted. Even where experienced men are in charge, their operations are often hampered by inexperienced persons, or suffer from the want of means for properly carrying out the work when such becomes necessary.

There is no doubt that if hard-wood plantations are judiciously managed, the amount of pruning that becomes necessary is reduced to a minimum, but there are always subjects that require to be operated upon in the way of pruning on every estate; therefore, it is desirable that everyone who has the charge of plantations should possess the necessary knowledge of when and how to proceed when pruning is required. The object of pruning trees intended for the profitable production of timber is to regulate their growth, so that a maximum amount of sound marketable timber is produced. That, of course, will be materially assisted by judicious thinning, and the work of the pruner in this case should be directed in gradually enlarging the length of the stem by removing the lower branches and regulating the top by cutting out superfluous leaders and shortening at a horizontal twig all lateral branches that are assuming unusual vigour. Where thinning has not been carried out on a system calculated to obtain the foregoing results, hard-wood trees will have acquired greater lateral vigour, at the expense of the upward growth. If pruning has been neglected, it is desirable to proceed cautiously, and remove but a limited number of the lower branches, and shorten at a lateral twig a few others, leaving for a future pruning their complete removal. The top must also, if necessary, be operated upon by removing or shortening all contending leaders, retaining only the most central and vigorous one. All lateral branches, moreover, which have outgrown their neighbours, or are likely to cause the tree to become one-sided, should be shortened, but too much ought not to be done at one time, or the cure would be probably worse than the disease. The process should be repeated every second year, so that the object aimed at may be gradually, instead of quickly, brought about, the idea being to prune gradually instead of carrying it out all at once. Severe pruning results in the arrest of the flow of sap and the production of an undue quantity of spray

or shoots in the vicinity of the wounds, and frequently on the stem itself, so that the tree not only becomes unsightly, but the growth is checked, and often several years elapse before it recovers its original vigour.

Ornamental trees, on the other hand, do not, as a rule, require much stem-pruning, but it is essential that their tops should be attended to, so that they may be induced to develop a well-proportioned and evenly-balanced head, and be less liable to be damaged by high winds. The leaves of a tree being such important organs, it is necessary, in order to maintain a vigorous health, that trees should be well furnished with healthy foliage; consequently, in pruning the object should be to defoliate the trees as little as possible. Opinions differ as to the best season for carrying out pruning operations, but it better be done at any period than not at all.

S. A.

The Carolina Poplar.—This old acquaintance, and the best of the Poplars for use as a shade tree, or for its wood, has been generally known as the Black Italian Poplar—"black," because its foliage is of a deep rich green, and dense; and "Italian," because, having been taken to Europe at an early date, and being easily propagated, its peculiar merits for street and road planting caused its extensive use in Italy and Germany. In many places where no fences are used, and the country is nearly bare, the lines of road are rendered visible for miles by these Poplars which grow along their sides.

Preservation of wood.—A section of a piece of timber impregnated with tar shows that the conserving substance has followed the lines of the longitudinal fibres, and the microscope often reveals the complete filling of the pores, and every channel which might give entrance to deleterious agents is plugged by the tar, which, in many cases, is also found a perfect preserver of bolts, screws, and nails. It must be clear that no such results as these could be attained without a careful selection and preservation of wood in the first instance. Then it becomes a question as to what is the best preserver, regard being had to cheapness. Is it carbolic acid, or tar, or what? The answer may most materially affect the application of wood where durability is an absolute necessity to its adoption.—X.

Draining land.—There is no doubt that stagnant water in land is most injurious to vegetation, and although it may be ever so fertile, no crop of any value can be produced by it when in that condition. Its effect upon pastures is to encourage the growth of a number of semi-aquatic plants, which are devoid of any useful property, and they and the dampness combined tend in many instances to engender unhealthiness and disease in those animals which graze upon them. The surface layers of soil in a healthy state are more or less in an open and porous condition, so that air and the essence, so to speak, resulting from the decay of organic matter are freely percolated through them. It is necessary for the healthy growth of plant life that the soil should be in this state in order to prepare new supplies of fertilising matter for their absorption. Should the land, however, be in such a state that its interstices or air passages are filled continually with water, it is evident that the requisite alterations cannot take place. It is therefore necessary to resort in these cases to a system of drainage, so as to draw off all superfluous water that may be lodging in the soil, and thereby promote a means by which the water falling on the surface may pass away freely. Among other beneficial effects consequent on draining is that the sun has a more direct influence in imparting heat to the soil, thus raising its temperature, which results in vegetation being forced earlier in the season and in hastening its growth. The soil is also brought into a fit state for being benefited by the application of manures, which, if laid on those in a wet and undrained condition, would have but a slight influence upon them, and after the drainage of pastures the inferior Grasses gradually disappear, which are replaced by others of a richer and more abundant character.—A. S.

No. 810. SATURDAY, May 28, 1887. Vol. XXXI.

"This is an Art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—Shakespeare.

NOTES FROM THE ISLE OF WIGHT.

As you invite contributions, I will send you mine, promising only that if a sailor looks at his worst when he has just escaped shipwreck by the skin of his teeth, so these flowers, it should be remembered, have been buffeted about during the last week or ten days from every point of the compass, and are now the mere relics of what they would have been in any ordinary spring. Still, we can be happy to-day. There is at last a reminder of the merry month of May. It has not slipped us entirely, and everything will soon pluck up courage again. For Irises, I am more than thankful that there is a professor of them at Cambridge, and what is more to the purpose is the fact that he remembers me most kindly and liberally. If it were not for that and the raid which I made last year on the Privat Botanischer Garten at Baden-Baden, my garden would be comparatively naked and destitute. But Irises now gravitate here in very fair number, and, to my happiness, stay here. Already, not a few have had their days of glory, and their pride is over for this year. *Iris arenaria* is one of them, and I was very much pleased with it. *I. susiana* succumbed to the tempest of last week, but you can still have a bud of it, and it is sure to open in water. It is the same with *Xiphion tingitanum*, which is very handsome, and was kindly given to me by Mr. Wolley Dod. I enclose his *Bludowii*, which I never saw till just now: the black veining on a clear yellow ground gives it a very striking appearance. *I. statice*, *I. balkana*, *I. subbiflora*, *I. iberica*, *I. Tolmieana*, *I. Redoutei*, *I. cristata*, and many others are all in different stages of beauty, either promised or fading. You will hail with acclamation an old friend, *Iris pavonia*, again. It is one of the delights of the year, and I espied it just now for the first time. I am thankful to say that the late Mr. Mangles distributed his favours very equally between Guernsey and the Isle of Wight, and as with Mr. Smith so with me *Rhododendron Aucklandi* is glorious; the extreme delicacy of the blossom is wonderfully set off by the large pink-tipped buds, and, standing as it does in a bed of some of Mr. Waterer's very best hybrids, it looks like a princess amidst a galaxy of washerwomen! Mrs. Clutton and such like are nowhere by its side, and a kind old friend here with whom I have been quarrelling about flowers for twenty years is obliged to confess at last that for once he is beaten. If other *Rhododendrons* bear any comparison at all with *R. Aucklandi*, I hope in four or five years' time to have something to show here. Mr. Thiselton Dyer was so good as to let me have twenty-four young plants to experiment on rather more than a year ago, and of these I can report that twenty-three are doing well. I enclose a bit of *Oxalis enneaphylla*, which I like very much. It is a great thing for an *Oxalis* to be neat. *Eremurus robustus*, *E. Bungei*, *E. spectabilis*, and two or three others will be at their best during the week, but I cannot find it in my heart to send them to you. For some reason or other which my gardener and I cannot make out, *Camellias* in the open have done well this year, as they have never done before.

Usually some two or three have done duty for all the rest, but this spring nearly all of them have simultaneously burst out into a full chorus of praise. The note of "K." about *Tulipa Greigi* in your last impression puzzles me a good deal. My experience differs wholly from his. I failed to blossom it very often till I was told by Mr. Horner to take it out of the ground on Midsummer Day and to replant it somewhere about Lord Mayor's Day in November. I scrupulously followed his advice, and I have been recompensed for my trouble. How odd it is that experience should vary in this way, but it is not uncommon with flowers. I suppose that some one little thing disarranges all the rest, and so general rules cannot safely be laid down. Still Mr. Horner must live under very different conditions from mine, and I say Amen to all that he told me about Tulips. *Tulipa Kolpakowskyana* has been an object of great admiration, and *T. altaica* should, I think, find a place in every collection on account of its earliness. Calochorti call for no trouble here: they do well on the rockwork or in the open border without any attention whatever. I enclose two or three—*C. Mawianus*, *C. Leichtlini*, and one other. My present anxiety is about a Rose, and I shall be thankful to any of your readers who can speak from experience and say what ought to be done. I have already applied to several of the best Rose doctors, but they do not give very certain replies. The Rose I allude to is *Rosa berberifolia*, not *Rosa berberifolia* Hardi, which cheated me at first—in the culture of this there is no great difficulty—but *Rosa berberifolia*, which is not very often met with, and which seems to elude cultivation. This precious specimen was given to me on the Continent last year, and I have kept it in a pot for eight or nine months in the greenhouse, but now comes the critical juncture. My gardener thinks it is doing so well as it is I had better leave it alone, but he has never had this Rose in his hands until now, and Herr Max Leichtlin told me last year that it must have root-extension, and that without that it will die, so I am puzzled—I am afraid of putting it in the open border, and I am afraid of leaving it as it is. Mr. T. W. Girdlestone (who has won his spurs so well in the matter of Roses and who must have had his first lessons here when his father was Vicar of Ryde) suggests that it should be planted out and taken back into the greenhouse in winter. Mr. G. Paul once lost this identical Rose, and he does not, therefore, speak positively about its requirements. On the whole, I am left much in the dark about this difficult subject, and when I add that Herr Max Leichtlin cannot grow it, it may be said, perhaps, there is no cause for wonder about that. But certainly at this present moment *Rosa berberifolia* is doing well in my greenhouse. What the chances are of its being there or in my garden next year, I should not attempt to say. We are scarcely out of April yet in very many respects if the ordinary pace of the seasons be considered.

H. EWEANK.

P.S.—May 26. A beautiful flower has opened this morning—*Camassia Leichtlini*; it is of the softest primrose colour, and too much cannot be said in its praise.

Primula japonica.—This, as we saw it the other day in what is known as the wild garden at Kew, is certainly a noble plant, and seems to be perfectly at home here among the tall Grass and old flowering stems of the Imperial *Fritillaria*, with a background of the giant *Polygonum sachalinense*. The bed, if it can be called such, contains some forty or fifty plants. It is perfectly hardy,

having withstood the last severe winter, and we could see the ground covered with myriads of seedlings, which tell a tale of their own about the suitability of this plant for purposes of naturalising. The colour, too, of the flowers when grown out of doors is much more vivid and striking than when seen under glass. Near by, the *Gumera scabra* is doing its best to cover all the available space, and behind is a large colony of the Poet's *Narcissi* just opening and promising a fine display a week or so hence. They are planted in the Grass, and the fresh green groundwork sets off the glaucous leaves and handsome flowers to the best advantage.—K.

FLOWERS IN THE HOUSE AND EDITOR'S TABLE.

Under this head we propose, during the present season of flowers, to notice things, from whatever it partment, that are pretty and useful for the house. Any reader who will help us by sending fitting things, or a word about them, will oblige. The simplest things from the smallest garden, and even from the woods and fields, need not be excluded.

LILACS FROM TROYES.—Again some beautiful Lilacs from Troyes, carrying to London their delicate odour. One called Lucy Ballet is peach colour. When nurserymen name things after their children or their wives, the plants are, we notice, more than usually interesting! Messrs. Ballet also send *Ville de Troyes*, of a purplish hue. Naturally these things are seen far from their best.

*

MITRE-WORT (*Tiarella spicata*).—How beautiful the white spikes of flower rising from a ground-work of satiny deep green leaves veined and washed with reddish brown! The above will be found very useful when used as a carpet under bolder and larger flowers, or for filling up blank spaces between shrubs.

*

RICHARDSON'S JACOB'S LADDER (*Polemonium Richardsoni*).—This useful, though common, border plant is now in flower in many places. It is to hand from Mr. T. B. Field.

*

FAIR MAIDS OF FRANCE (*Ranunculus acontifolius*) is a beautiful plant of about 18 inches high, forming dense masses which are quite covered with little rosette-like blooms of pure white. It will be found invaluable in arrangements of cut flowers. From T. B. Field.

*

WHITE TUFTED PANSIES.—I sit at my window and look out upon a variety of garden plants very striking, amongst which just now is a number of large broad plants of white *Violas*, seedlings of last spring, from Mrs. Gray, and now perfect bunches of pure white flowers. These are really tufted Pansies, clusters some 15 inches over, and like lumps of snow lying on the neutral tinted soil. Some are even better than is the parent; some are inferior, but all are lovely. I have propagated cuttings from a few of the purest and best.—A.

*

ANEMONE CORONARIA.—A big bed of these blooming freely; the blooms, not so large as in previous years, give welcome and effective colour. The plants stood the winter well until March, when the last visitation of snow with horrid London fogs cleared off all the foliage, and effectually checked growth for several weeks. Thus my *Anemones*, usually so early, are fully a month later in blooming this season, but are very beautiful all the same. Seed for a new batch has already been sown, and is now fast coming up.—D.

*

HONESTY.—In one place a big patch of the white, and in another the rich deep purple

Honesty commands attention. The purple is rather the dwarfier of the two, and is much more so than is the old pale purple kind, but which the deeper-hued one has displaced. Sometimes I find flowers to come flaked with white, evidently the product of intercrossing, and then invariably the plants are rather dwarfier than are either of the parents.—A.

*

GIANT POPPY.—How fine and effective is the tall and handsomely cut foliage of *Papaver orientale* as seen in a big clump of a couple of dozens of strong plants. Did not this grand perennial produce such glorious flowers, it would be worth a place in gardens for its fine leafage. The earlier buds are just about to open on some plants; others show no evidence of bloom yet, so that the flowering period is lengthened.—D.

*

WHITE OLEANDER.—The enclosed white Oleander, although not new, I think is very beautiful and worthy of being noted. The plant requires a good supply of water in the season of growth, a soil composed of loam, light manure, and sand, and plenty of light. It flowers freely, and the flowers last fresh five or six weeks.—W. W., *Crews Hall*.

** A very fine spike. We think that these plants ought to be more grown than they are. As small specimens they will be found most useful when in flower, there being such a variety of colours both of the single and double forms.—ED.

*

WOODRUFF.—One of the prettiest little flowers in bloom at the present time is the common white Woodruff, which is now a complete sheet of delicate white blossoms. It grows freely among stones, and does well elevated on banks or around tree stems and shrubs. Once planted, it is no more trouble, as it springs up ever year more beautiful than before. Anyone searching for a good carpeting plant for turning unsightly places into really beautiful spots should make a note of this pretty native plant.—J. G. H.

*

MIXED LILAC BUSHES.—The common Lilac is now loaded with bloom, and I find the beauty of both the common and white kinds is much enhanced when they are planted so that the branches mingle together, and look like one bush. The white kind runs up and flowers best on the topmost growth, being of a more erect character than the purple kinds, and if planted so that the white towers a little above the others, they look really beautiful. The dwarf-growing Persian and Siberian kinds that flower so freely in a small state make capital outer edgings to large groups of strong-growing kinds. A large clump or group on a lawn is one of the prettiest things in the way of flowering shrubs that one can add to the garden.—J. G. H.

*

DOUBLE BORDER NARCISS.—Those who have to provide a supply of cut flowers and depend a good deal upon what may be had in the open air should grow the following three forms of double Narciss, viz., *incomparabilis plenus*, and what are known in the Dutch lists as Orange Phoenix and Sulphur Phoenix. They are cheap, late-flowering, very free and showy, and do well in the open border. Add to these poetic ornaments and the double white, and a most useful group is provided.—R. D.

Patches on Grass land.—I have 4 acres of park land behind my house planted with large trees. The Grass has got into patches of rank and good Grass, showing a very uneven and ugly surface. Neither cattle nor sheep will eat down the patches of tall rank Grass. How am I to deal with this Grass and get the meadow smooth and park-like?

To cut out all the rank Grass would be a very serious undertaking. (I have mown the Grass well during the last two years.—F. MANSON.)

PROPAGATING.

HYDRANGEAS.—These flowering shrubs strike readily enough at any time during the growing season, and where the beautiful and now popular *H. paniculata grandiflora* has been grown in pots and forced into bloom, the shoots of the current season's growth will be now in a suitable condition for cuttings. If they are cut into lengths of from 4 inches to 6 inches, and inserted in pots of sandy soil, they will strike root in about a month if kept close and shaded. They strike better without any artificial heat, or, at all events, with but a very slight amount, as they are, when soft and delicate, liable to the attacks of red spider and mildew, either of which greatly disfigures the foliage. The plants of the common *Hydrangea* that flower in a dwarf state and carry but one head of bloom are struck later in the season, and are formed of the ends of the shoots taken from plants that have been grown under conditions favourable for flowering.

CLEMATIS INDIVISA will be now in active growth, and the young shoots will strike root without difficulty, provided the weaker short-jointed ones are chosen. They must be kept close in a gentle heat till they root, and under the same conditions the beautiful garden varieties of Clematis will also strike. Besides this, all of them—*C. indivisa* included—can be grafted on to pieces of the roots of the Traveller's Joy (*Clematis Vitalba*) in the manner detailed earlier in the season. Of the hardy kinds, the warmer and more sheltered a position the shoots are grown in, the better they will strike.

ACCUBAS.—The berries of these shrubs will now commence to get discoloured, and some will likely drop. When this happens, the berries may be gathered for sowing, provided young plants are required. Should there be but a few berries, they can readily be cleaned from the pulpy matter by hand and sown in a pot or pan, but where there is a large quantity they may be placed in a heap with some sand for a time before sowing. When the seed is sown in the open ground, a spot not too much exposed to the sun should be chosen, as the young plants (like specimens of a mature age) make more rapid progress when somewhat shaded. By far the better way, however, is to sow the seed in a frame, as a more regular state of moisture can be maintained, and germination is much assisted thereby. When in the open ground a few Spruce branches or something in that way should be laid over the bed to protect it from wind and sun.

BERTOLONIAS AND SONERILAS are well-known stove plants with beautifully marked foliage, and some of them require a considerable amount of care, not only in their propagation, but also in their culture. *B. superbissima* and *Van Houttei* are about the most particular in their requirements, but they can be propagated (though not without great care) by cuttings of the shoots or by single eyes. The present is a good time for the operation, as they are now in full growth, and are not long in forming roots. Where there are plants set aside for propagating from, the top of each will furnish a good cutting, and the remainder of the stem can be cut up into single eyes. The soil best suited for the propagation of these things is peat, loam, silver sand, and pounded charcoal, the whole sifted through a sieve with a quarter of an inch mesh. The cuttings should be put singly into small pots, which must be thoroughly drained, and then fill the pot with the before-mentioned soil. When the hole is made for the reception of the cutting a little dry silver sand can be placed therein, and when the cutting is put in position a little more may be sprinkled in the opening before the soil is pressed firmly around the cutting. The remainder of the stem is cut up into single eyes by dividing it immediately above each joint, and then splitting the stem down the middle, thus leaving an eye and a leaf to each. These single eyes are then put in the same way as recommended for cuttings, and inserted to such a depth that the bottom of the bud is on a level with the surface of the soil. Each

leaf should then be secured to a stick, otherwise, owing to the slight hold of the soil, the cutting is very likely to fall out. After this a thorough watering through a very fine rosed water-pot must be given, and the cuttings allowed to drain a few minutes before placing them in a close case. The case chosen for their reception should have a gentle bottom heat, and be quite free from drip. The great thing to guard against is damp, and to prevent it as far as possible great care must be taken in watering, shading, and occasionally in giving a little air for an hour or so. The best time for this is the first thing in the morning. Seeds of some kinds are often obtained, and to succeed with them they must be sown in well-drained pots or pans, using for the purpose much the same kind of soil as recommended for cuttings. The pots must be filled nearly to the rim with soil, and being pressed down smoothly a thorough watering should be given. While the surface is still wet the seed may be sown thinly thereon, and just slightly sprinkled over with silver sand. The pots must then be placed in a case as for cuttings, and if plunged in a gentle bottom heat so much the better. When the seeds germinate a little air must be given, and the young plants pricked off when large enough to handle.

PERNETTYAS.—Where these ornamental-berried shrubs have been in fruit throughout the winter, many of the berries will have lost their freshness and may now if need be gathered and sown. The berries may be rubbed up with a little dry sand and sown at once, either in pans of sandy peat, or where there is a considerable quantity a frame may be set apart for them, and 5 inches or 6 inches of soil being placed therein, the seeds may then be sown. Whichever plan is adopted, the shelter of a frame must be accorded them, and it is better if kept close and shaded from sunshine till the young plants make their appearance. When large enough they may be pricked off, and will make more rapid progress if still sheltered by a frame during their earlier stages. Of course, plants raised in this way cannot be depended upon to perpetuate any particular variety. When it is necessary to propagate any of the named varieties, other means of increase, viz., by cuttings, layers, and division, must be employed. Cuttings may be formed in early summer of the current season's shoots, when they commence to acquire a woody texture. They must be cut off at a joint, and a few of the bottom leaves having been removed, they should be then dibbled into pots of sandy peat. It is necessary to drain the pots thoroughly for the reception of the cuttings, and to press down the soil very firmly. When the cuttings are put in securely and a thorough watering given to settle the soil, the pots should be stood in a close frame, and kept shaded from the sun till they root. They strike quicker and in a more satisfactory manner if covered with a bell-glass, for the double protection of a frame and bell-glass as well tends to maintain the soil and cuttings in a more even state of moisture. They will take a couple of months or more to strike, and the better way is to leave them undisturbed in the cutting pots till spring, when they can either be planted out in a prepared bed, or potted off and when established planted out. This last is, generally speaking, the better plan, as the hair-like roots are so delicate that when transferred from the cutting pots to the open ground, some of the more tender are very likely to succumb. Layering may be carried out at any season, and may be frequently done without detracting from the appearance of the plant in any way, as the low growth of these *Pernettyas* renders them easily brought in contact with the earth. They may be layered in the ordinary manner, that is by just cutting a tongue on the lower side of the branch in the part that will be covered with soil, and pegging the branch securely in position. Division is but a modification of this last, as plants that have been buried rather deeply in the soil will in many cases have produced roots from the underground portion of the branches, and the plant can sometimes be split up into several pieces, or single branches be detached with sufficient roots to support them. The better way is to plant them at first in a sheltered position, and when they become established they can be removed to wherever required. T.

FLOWER GARDEN.

NARCISSUS CYCLAMINEUS.

This curious and rather pretty form of *Narcissus* may be called a re-introduction, and has been several times brought before the *Narcissus* Committee of the Royal Horticultural Society during the present season, and much difference of opinion as to its parentage has been expressed, though there seems to be no doubt that *N. triandrus* blood is in it. Perhaps when it has been under cultivation a little longer the doubt may be cleared up. It is an elegant and curious little plant for a pot, and its cultivation under protection is perhaps the best for this and for all the section, which require more sun than is usually their lot in England.

Mr. Tait, of Oporto, distributed bulbs of *N.*



Narcissus cyclamineus. Engraved for THE GARDEN from a coloured drawing sent by Rev. A. Rawson.

cyclamineus to several persons in this country during the last autumn, and it is to him that I am indebted for those which produced the blooms represented here, as well as for some other curious forms of *Narcissus* collected in Portugal. A. RAWSON.

Tree Pæonies.—Though the cutting winds and late spring frosts often work such havoc among the Tree Pæonies when planted in the open ground, yet a slight protection will successfully bring them through their most critical stage. A great point in their favour is that they readily lend themselves to pot culture, and on that account may be employed for the embellishment of the greenhouse at this season, and will make a goodly show therein. The Tree Pæony will not succeed with hard forcing, but with no more protection than a cold frame, is now in flower; and some plants that were taken into a

gentle heat about the middle of March were in bloom more than a month ago. A good and, at the same time, holding soil is necessary for these Pæonies, a very suitable compost being good fibrous loam with an admixture of well-decayed manure. —T.

PLANTING DAHLIAS.

MAY is the month for planting out Dahlias, but of late years it has hardly been safe to do so until the first week in June, and so it has been found much better to grow on in pots any choice varieties, so as to get them as strong as possible before planting them out. There are great advantages in doing this, especially, as sometimes happens, when at some flower shows Dahlia blooms are invited as early as the first week in August.

It was an old custom on the part of those nurserymen who grew Dahlias largely for sale purposes not to send out any plants until the 1st of May, and

when the days have lengthened and the weather is warmer, they will make roots in about three weeks, and so the work is greatly hastened. By and by, when the cuttings have rooted, they are potted singly into 2-inch pots, placed in a frame heated with manure, and when established gradually hardened off and then placed in cold frames ready for sale. Thousands of plants of Dahlias in these tiny pots are annually sent out to all parts of the country, carefully laid down on their sides and packed with soft Moss in square or oblong Willow-made hampers. It is surprising how well they travel and what very little harm falls to them on the way to their destination.

Those who grow Dahlias for exhibition purposes generally trench their ground in autumn and throw it up in ridges for the winter; it is then levelled in March or April and well dug over previous to planting. When planting time comes, the ground is marked out, and the usual practice is to plant 6 feet from row to row, and the plants nearly the same distance apart in the rows. This gives ample space for development, and room is afforded for the grower to get round his plants at the blooming season. The plants should always be far enough apart to prevent the branches from being drawn.

Unless the ground was well manured in the autumn and it is poor, some manure should be put in the soil at the time of planting. Let a hole be dug, two or three spadefuls of well-decomposed manure thrown in and well mixed with the soil, and then planting can be done—turning the plants out of the pot, carefully loosening the fibres, and, in the act of planting, placing about the roots some fine waste soil from a potting bench, in order to give the Dahlias a good start. As a hint to planters, it may be stated that the best plants are those that are short, stout, and fast swelling in the main stem. Those that have been too long in the pots take on a stunted appearance, the main stem becomes hard, and they do not make a generous growth; hence we see the advantage of potting on Dahlias when they come from the nursery in 2-inch pots, as it helps a free development and stunting is avoided.

When planted, secure each plant to a stout stake, allowing ample space for the stem to swell. Those who grow for exhibition add two small stakes at right angles, to which the plant is also secured, and by these means it is kept in a firm position during rough weather. Large stakes are added as the plants advance in size, and the side branches are firmly secured. High and sweeping winds do great damage among Dahlias, and if not secured as just recommended, a plant may become stripped of half its branches.

There are some Dahlias that are apt to produce green, hard centres, which defect is a practical disqualification for exhibition purposes, while it detracts from the decorative beauty of the flowers. Such varieties do best in soil that is both light and moist; and where it is convenient to give them water, as, if they are to produce blooms with perfect centres, they should be encouraged to make a rapid succulent growth. There are some sorts of Dahlias that will throw good blossoms at first, and the succeeding ones come thin; such as these should have an open situation and a heavy soil, in order to produce a slow growth and more perfect blossoms.

It is a great mistake to plant single Dahlias that are only required for cutting purposes in soil as rich as that intended for show varieties. There is a tendency in most single Dahlias to grow rapidly, and heavily manured ground only adds to their vigour. I saw last season some single Dahlias in rich ground, that, though planted 6 feet apart, had grown so close together and so tall, that they had to be tied back with cords, so as to allow anyone to get among them to cut the blooms. Here, then, is one disadvantage from planting single Dahlias in heavily manured ground; another is, that the flowers are large and coarse, instead of medium-sized and refined. R. D.

Leucojum trichophyllum.—In THE GARDEN of May 14 (p. 434) I observe that Mr. Archer-Hind and Mr. Wolley Dod have flowered specimens of *Leucojum trichophyllum*, but some doubt seems to

exist as regards the localities where this plant is found. I obtained it last year near the sea coast of Portugal, from Figueira to the Lake of Obidos; it is also found near Lisbon, as correctly stated in the *Botanical Register*, vol. vii. (pl. 511). It grows in a soil composed of fine sea-sand, mixed with a little fibrous peat. Two varieties have been mentioned by Peninsular botanists—the larger one being known as *grandiflorum*, but, as I find them growing together, I think they are only accidental varieties. Wilkomm gives a very good figure of the *L. trichophyllum* var. *grandiflorum* in a late number of his "Illustrationes Florae Hispanicae." I have endeavoured to introduce this plant into English gardens, as it should flower well in the soil mentioned above and grown in a cool frame in pots. *L. autumnale* (*Acis autumnalis*) grows close to *L. trichophyllum*, and flowers from October till February and even in May.—ALFRED W. TAIT, *Oporto*.

A NEW SNOWDROP.

I BEG to be allowed to protest most strongly against Mr. Wilks' name of *Galanthus globosus* as applied to the large-flowered form of Elwes' Snowdrop. In the first place, the same variety has been illustrated and described in THE GARDEN as long ago as 1881 (Vol. XXV., p. 371) under the name of *G. Elwesi* major, and is not nearly so uncommon in cultivation as Mr. Wilks (p. 115) would lead us to believe. Every cultivator who has dealt in imported roots of *G. Elwesi* must have observed this variety among them. Mr. Smith, of Newry, sent it to me in 1883, and it turned up again in a lot of imported roots from Messrs. Watkins and Simpson, as also in a batch received direct from Smyrna in 1884. As to its twin-flowered habit, all Snowdrops now and then produce two-flowered scapes in an accidental way; but in no single species or variety is this habit a constant one. Seeing that this identical variety is well known in many gardens, and as it has already been illustrated and described in THE GARDEN as *Galanthus Elwesi* major, I venture to suggest that the name *G. globosus* be withdrawn, or at any rate, if retained, that it be used in the third or varietal position, viz., as *G. Elwesi globosus*.—E. W. BURBIDGE.

— I have only two remarks to make on above: 1. My Snowdrop is new. I obtained it as a single bulb in 1880 or 1881 from Smyrna. It is as different from Elwesi or so-called Elwesi major as a long-rooted Radish is from a Turnip-rooted. I have Elwesi major, and I know perfectly well that many modifications of Elwesi appear—so much so that I have ceased to believe in Elwesi major, as I have forms of it intermediate to all stages, and the "major"-ity is often no more than strength of bulb or extra cultivation. 2. Of course, I admit that I may be mistaken, but I submit that so also may be Mr. Elwes and Mr. Burbidge. It is just within the bounds of possibility. And in this instance, notwithstanding the eminence of their names, I slightly incline to believe that they, who have not seen the plant, are more likely to be mistaken than my humble self, who has possessed it for six or seven years and studied its habit and form side by side with almost all the varieties of *Galanthus* known to us gardeners. 3. If whenever anyone, thinking he has something good, or rare, or new, sends you a note of it, and is met by such letters as Mr. Elwes' and Mr. Burbidge's, which, without any question, are not superabounding in courtesy or overflowing with gentleness, the only effect will be that we shall never send you word or note of any kind; and, for my own part, all interest in THE GARDEN would be gone. By all means discuss matters; display the "cons" as clearly as the "pros," but let us neither ridicule the mistakes of a beginner nor abuse the errors of the more experienced, considering that we ourselves were once beginners, and may even yet sometimes be in error.—W. WILKS.

Mortar rubbish for Violets. A friend who grows Violets very well tells me that he finds an application of mortar rubbish to the soil very beneficial. This is put on at planting time and well worked into the top spit, and wherever it is applied

the growth of the plants is much more vigorous. In the case of tenacious soils, I could understand that the mortar rubbish would improve them by rendering them more friable, but my friend's garden, being a light loam, points to the fact that lime is necessary to the welfare of Violets, and it may be that a deficiency of this is the main or only cause why Violets, in some places, are so difficult to grow. Last year I had occasion to remark how well Violets thrive that come from self-sown seeds. This year plants that came up and were allowed to remain undisturbed flowered well. We do not look for effectiveness from the Violet, unless, perhaps, in a cut state; but these plants were so covered with bloom that a bed of them on the grass would have been very attractive. What was remarkable about them was the dwarfness of the foliage which enabled the flowers to display themselves so well. There was an entire absence of that leafiness that distinguishes the growth of Violets in many places. This peculiarity I attribute to no manure having been employed, and to the position being an open one. I feel sure that in time the growing of Violets from seeds will become general. It is so easy to get up a stock in this way, and the thrifty nature of a seedling enables it to live where plants propagated in the usual manner fail.—J. C. B.

THE ORIGIN OF THE EDGED AURICULA.*

IN my paper on the history of the flower at the Primula Conference, 1886, I have presented a series of evidences tending to the conclusion that the florist's Auricula is of pure descent from the wild Auricula of the Alps, the *Primula Auricula* of the botanists. By the same method I have assigned the origin of the alpine Auricula to the supposed hybrid *Primula pubescens*, and this, taken at the valuation of Professor Kerner, carries us back to *P. Auricula* and *P. hirsuta*, its reputed parents. Seeing that we cannot prove every proposition, and must allow opinions to have weight, I feel bound to say that, although my proposals were warmly debated, they were not less warmly accepted by not a few, even of those who in the first instance disputed them. Not to make a catalogue of names, it shall suffice now to say that Sir Joseph Hooker, Mr. J. G. Baker, and the Rev. P. D. Horner concur in my view of the parentage of our two great sections of garden Auriculas. It is no part of my plan on this occasion to enter further into that matter.

I have carried back the history of the edged Auricula to the year 1734, and at that point the edge appears historically to melt into a series of stripes, for anterior to this date stripes were in favour and edges were unheard of. The first edged flower we read of was called "Honour and Glory," as though Fate had emerged from the abstract to the actual in order to have a hand in providing a name for the first representative of a new and glorious race of floral beauties. It is a matter of the highest importance in this connection that while we have in the old books figures of Auriculas, there is no suggestion either in figures or words of an edged Auricula until, in the *Flower Garden Displayed*, by Sir Thomas Moore, we have the characters of Honour and Glory plainly set before us, fixing the date of its origin as certainly not later than 1734. In Parkinson's *Paradise*, p. 237, are figures of Auriculas in which stripes are suggested; but the draughtsmanship is of so rough an order that it would be unsafe to found a critical opinion on any of them. While, however, we may lament that the literary florists of the olden time were not careful of our interests in their floral portraiture, we are not without the aid of the facile pencil in respect of evidence of the kind of flower that gave birth to the edged Auricula. There were men who understood flowers in days when edged Auriculas were unknown, and when possibly the striped Auriculas had not long been invented. It is generally understood that for the Auriculas of the garden we are indebted to the Dutch florists, who made the first beginning in the domestication of the savage of the Alps. And our debt to the Dutch

painters is not less great for representations of the flowers as the Dutch had improved them, and these representations testify to the pure love of Nature by which the Dutchmen of old time were animated both in their horticultural and pictorial arts. The artists of the real Dutch school have never been equalled at any time before or since in the directness of their interpretation of Nature, and the reason of their pre-eminence is seen when we compare contemporary works of other nations, say of the French for example, for the French did follow, as they thought, the wonderful contribution of the Netherlands to the joy of the world. The fact is the Dutch painters of the golden time loved Nature, and lived as near to her as circumstances would allow, but their French disciples, in common with disciples of other nations, loved themselves and lived from Nature, and so failed of true interpretation. The one painted the thing as it was; the other as, in his vain fancy, it ought to be. First in the throng of the Dutchmen who have left on record the characters of the flowers of 200 years since, I will name David de Heem, Abraham Mignon, and Jan Van Huysum. These, in their splendid groups of flowers, show us the Auriculas of the days of Gerard and Parkinson, and there was a golden opportunity for London florists in the last exhibition of Old Masters at the Royal Academy for observing in a picture, by Van Huysum, the characters of the florist's Auricula of his day. I have placed before you a rough sketch of a bunch of flowers as they appear in the centre of that picture. The selfsame flowers, or say flowers of the same type, occur commonly in the groups of Jan Van Huysum; they are usually in trusses of ten or twelve; the pips are of the size and form of show Auriculas of the present day, with bold yellow eyes, a clear paste, and a bold, broad margin marked with stripes of colour radiating from the centre. You will observe in the diagram that Van Huysum's Auriculas had distinct geometrical properties; the edge is wanting, and the body colour is broken into rays, but the proportions are precisely such as modern canons would require were such striped flowers now in demand.

It will be observed, then, as the result of a comparison, that in the progress of time the rays have become consolidated into a belt by the withdrawal of the colour inwards, thus leaving a margin of the green colour, which, as we have agreed in supposing, was the sole colour of the Auricula in the first instance before it became a yellow flower on the Alps. I do not insist on this view, for I am content to deal with facts, and the facts appear to demonstrate that the formation of the edge is a late process, and the facts do emphatically suggest that the edge is formed in accordance with a large plan of Nature much more than by any fancy or fable of man. To put the case another way, I would say that the edged Auricula adds a chapter to the history of evolution much more directly than to the history of fashion in floriculture. We have apparently four colours in a show Auricula; but the paste is but an extension and intensification of the meal, and white and grey edges are of the self-same constitution. The ground colour of the paste is yellow, and the ground colour of the edge is green, and the body colour may be likened to the dark zone on the leaf of a zonal Pelargonium. Van Huysum's flowers show an extension of the yellow to the margin with heavy rays of red overlaid; there is no green traceable; that in the Auricula is a late development, and it has a meaning of some sort apart altogether from our taste and aspirations as florists.

For a moment let me direct your attention to a few collateral facts. In the old books there are no figures or descriptions of edged Carnations. Those of the times of Van Huysum and Gerard were flaked and spotted, and the spotted flowers were called Picotees. The origin of the term has been much debated, but the end of the story is that it came from France, and was applied to a flower distinguished by spots and blotches. The edged Picotee is a late growth, and offers an analogy to the Auricula. The colour has undergone a process of concentration and of segregation, taking an isolated

* Paper read by Mr. Shirley Hibberd at the Horticultural Club on May 10.

position on the very edge of the petals, but always showing a tendency to run inward as a kind of reversion to its original state. The lateness of the origin of the florist Picotee is a matter, as it appears to me, of peculiar biological interest. Again, we have edged and tipped Dahlias, of later origin than edged Carnations, and, like them, fitful in behaviour, the edge tending ever to thrust its colour downward on the face of the florets, and so spoil the flower for the florist's purpose. The lateness of the edged Dahlias accounts for their scarcity and inconstancy; for in truth the Picotee edge is in process of formation, for in these matters Nature does not hurry herself; if man is impatient, she is not, having more time at command than her biped moth that flutters in the flame of its small passions for an hour, and then is seen no more.

It appears that flowers do not begin business with edges, but we cannot say they end with them, because we know not what the end may be. It is of great insignificance that the edge of the Auricula is green; it would perhaps comfort us were it yellow, for then we might consider the colour as an extension from the centre, but the green suggests that the flower is about to change into a leaf, and pass away. We see incipient edges in Pelargoniums, Azaleas, Amaryllis, and other flowers, suggesting that definite edges will be formed in time, but our best examples of flowers that have made up their minds on the matter are the Auriculas, Picotees, Dahlias. These are late developments, and they suggest that the formation of the edge is the result of cultivation, and a proper end to aim at in the selection of seedlings and the framing of exhibition schedules. From *Gardeners' Chronicle*.

Primroses.—"R. G." should obtain seeds of Primroses and sow at once under glass, and thinly in shallow pans. In such case he should have fairly strong plants to dibble out under a north wall by the end of July, and such seedlings would give him fairly large heads of bloom the following spring. Lacking own-saved seed—which is best sown as soon as ripe, because germination is then not only better, but the plants are enabled to grow much stronger for the second spring—it is wisest to sow seed in March under glass, as the seedlings may then be ready to dibble out of doors by the end of May, or even earlier, and thus get them established before the summer drought comes. As to difference in the Welsh and Devon climates, one would think a resident could best give the reason why; but perhaps that of the former is drier, hence the reason why Primroses do not thrive so well there as in Devon. Naturally, a climate which kills double Daisies wholesale could hardly be a very acceptable one, even for hardy Primroses. A. D.

Single white Violets. Permit me to thank the Rev. A. Rawson, Fullbarrow, for his courtesy in forwarding a nice bunch of long-stalked single white Violets. If it proves as free-blooming as the best double white, Comte de Brazza, it will indeed prove a valuable acquisition. The chief faults of our single white Violets heretofore have been their short stems and shy blooming. Most of the older single whites are so short that it is almost impossible to bunch them, and such varieties as the single Czar bloom but sparsely. The Comte de Brazza lost most of its leaves this winter in the open, but this did not greatly lower the quality nor lessen the number of its exquisitely perfect and fragrant blossoms. Neither did the foliage suffer so much as that of Marie Louise. This was so closely cropped as to cut off with it most of the more forward blooms. I have also to thank Mr. Rawson for an admirable bouquet of vari-coloured Primroses, which he grows to admirable perfection in the cool, dripping climate of the Lake district.—D. T. F.

Laced Auriculas.—If "A. D." refers to THE GARDEN (p. 416) he will find that I did not say he introduced them. I was not even aware that they were introduced by Mr. Dean, and therefore could not say so. I understood that they were sent to Chiswick by M. Vilmorin, of Paris; at least, I obtained plants from Chiswick very many years ago, about the time that Mr. Dean exhibited them. If my surmise is not correct, perhaps Mr. Dean can

set the matter right. I would like to allude to another remark by "A. D." He says: "If the Auricula Society continues to exist, I trust it will be able soon to establish a class for half-a-dozen laced alpinines." In answer to this, I may say that they are recognised as alpinines, and may be exhibited in competition in classes K, L, M, N, and O; and, in order to give them a still wider field, there is a special note to the effect that they may also be exhibited in the class for fancies. They have been exhibited in most of the above classes, but they are not refined enough as yet to obtain the higher prizes. "A. D." also complains that I am not correct in designating self-coloured alpinines as self-edged. I believe that I am quite correct in so doing. There is, first, the yellow or cream-coloured centre, and the shaded edge or the self-edge, both of them the margin or edge. J. DOUGLAS.

THE CULTURE OF SWEET VIOLETS.

AS Violets from November to May, or even a month earlier or later, are now expected as a matter of course in many gardens, their careful culture has assumed an importance never dreamt of in those olden times when the traditional Violet border under the shady wall sufficed for generations to supply the wants of good country families. During all the early years of my business I never so much as saw or heard of Violets being propagated, divided, or shifted on to new beds or borders. Old huge-headed Violets made a brave greenery and a cool home for slugs and snails throughout the summer, and mostly threw up a few weakly blooms throughout the spring. But as to bunching Violets in quantity for bouquets, table-decoration, or sale, it was alike impossible and unheard of. A very few tiny bunches to fill the Violet glasses once or twice in the season were all that were expected. As to autumn or early winter Violets, they were wholly unknown. When the so-called tree Violet (the double Russian) was introduced as a pot plant, it was seldom or never forced. Its great merit was to be trained up to a single stem, a tree from 6 inches to a foot or 15 inches high, and then bloomed in the greenhouse or window garden a few weeks earlier than it would have done—did, in fact—in the open air. In passing one lingers a moment to pay a compliment to this. In the depth and fulness of its deep blue colour, and the profusion and fragrance of its blossoms, it is still unrivalled. But the flower-stems were so short as to render its artistic use most tedious and difficult. Anyone would yet confer a favour on Violet cultivators who should mount the old double Russian on to the stout, long flower-stalk of The Czar, Victoria Regina, or odoratissima. By the way, are not these two first descended from the last?

Considerable skill, labour, and space are needed to cultivate Violets in the most successful manner. As to the first, the very keynote of success rests on an annual-renewal of the plants. The temptation is great at times to leave a portion of the stock undisturbed. But it does not answer. Two-year-old plants are less floriferous as well as less hardy than one-year-old, or less. Some may question the first half of this sentence; hardly anyone will demur to the second. The smaller and more compact the plants of Violets the hardier they are. This has been abundantly proved this winter, which has also proved a striking correlation between youthfulness and hardiness; and as to floriferousness, reckoning actual Violets gathered rather than mere shows, the younger ones have the advantage by a long way. A very fine border of two-year-old Marie Louise was left this winter. Through the late autumn and beginning of the winter the ground was covered thickly as a mat with flowers and foliage. The first heavy frost checked the development of the blooms, and the succeeding ones cut leaves and flowers off as if they had been scalded with boiling water. All this while, borders of annual plants close by were but little injured.

The same lesson has been repeated with more or less emphasis many times, so much so, that it may be laid down as an axiom that annual propagation and a new start with single crowns is the true secret of success in the cultivation of sweet Violets. Next in importance to this is the proper time to propagate or

divide Violets. In general terms, so soon as practicable after the plants are out of bloom is the most favourable condition. But as the wholesale propagation of sweet Violets can only be carried on in the open air in most gardens, the matter is somewhat complicated by the state of the weather. To divide Violet plants more or less forced and carefully protected in pits or frames, and plant them out in the teeth of the east wind in April or early in May, is hardly the likeliest course to grow them into model patches of embryo blooms and leaves next October.

It is better to wait than to check the plants at starting. While waiting, those who have the means may divide their Violets and root and start them under glass, transferring them to the open about the beginning or middle of May according to the state of the weather. Plants thus prepared will seldom look behind them if carefully transferred to their growing quarters, and many of them will be in full bloom in September. But the first fortnight in May is a good average time for the propagation of Violets. By this season the best open-border Violets will be sufficiently advanced for division. Frame Violets may be used provided the lights or frames were lifted off as soon as they ceased blooming, and the plants kept clean and healthy by liberal waterings. Skill and labour are also needed in the division and planting of the young Violets. Each good growing centre should be so separated from the mass as to have growing roots attached; the nearer the latter are to the base of the shootlets the better. The plants should also be planted firmly up to the base of the offset. The next considerations affect space or area devoted to the Violets, and this includes site, soil, distance apart, &c. As to site, all have been recommended from direct south to due north, and it must be admitted that success has been achieved on all aspects. Nor is this surprising, considering our infinite variety of seasons and soils. In dry seasons probably the finest Violets might be grown on a north border; in wet ones on a south; and the same might be affirmed of light and heavy soils respectively. But, on the whole, the finest Violets are grown in the open ground without help or hindrance from artificial sites or shelters.

Neither is the Violet very particular about soils, provided they are not too light nor too rich. On the first they are apt to succumb to thrips and spider, or to be destroyed by drought; on the latter they run to an excess of leafage. Common kitchen garden soil should have no manure added for a crop of Violet plants. As to distance apart, that may vary considerably according to the nature of the soil, variety grown, and amount of space at command. To make the most and best of Violets on a limited area, they may be planted quincunx fashion a foot apart; where ground is more plentiful and the soil is richer, in rows 18 inches or 2 feet asunder and a foot or 15 inches from plant to plant in the row. They are mostly grown too close together. By allowing greater space the plants ripen earlier and more thoroughly; every interstice of clear soil becomes in fact a warming-pan, and thus the temperature of the Violet plot is higher where the plants are thin than where they are thick. These clear spaces also favour the other important processes of culture, such as the persistent picking off of the runners and the frequent scarifying of the surface. With a loose surface and a fair depth of garden soil or sound loam Violet plants will seldom need watering. Should, however, long periods of drought set in, the Violets must not be allowed to flag or become flaccid, for the double reason that they have no time to lose, and also inasmuch as severe flagging is almost invariably succeeded by red spider or thrips, and either of these is fatal to perfect Violet culture.

Finally, change the Violet ground every year, for though Violets are not so prone to earth-sickness as Roses and some other flowers, yet they do suffer from it, and hence the importance of giving them fresh growing quarters annually. There is little to add concerning varieties. Odoratissima, Victoria Regina, and The Czar are still the finest singles, and Comte de Brazza (white), Marie Louise, and Neapolitan the finest doubles for general purposes,

There are a good many other names, but I would respectfully invite cultivators to better if they can these six sterling varieties. D. T. F.

The Prophet Flower (*Arnebia echioides*).—Why is this called the Prophet Flower? At the recent exhibition of the Royal Botanic Society a fine pan of this, laden with yellow flowers with black spots, was shown, and it was very effective. It was curious to note that the black spots, which are quite distinct in the young flowers, almost disappear in a few days, leaving only faint marks behind. In this respect it might appropriately be termed the vanishing flower. Mr. W. E. Gumbleton stated that to grow it successfully it should be planted on a dry spot.—R. D.

Single white Auriculas.—I am told this is somewhat plentiful in Scotland. Can any reader of THE GARDEN tell me if it is so? I do not mean the pretty little snow-white *Primula nivea*, which is sometimes termed a white Auricula, and offered as such. I have one that I got from Belgium a few years ago as a double variety, but the flowers are only partly double, scarcely semi-double, and many of them quite single, white, but yet not so white as those of *P. nivea*. Is the Scotch white Auricula similar to this? I have raised a few seedlings from it, but as yet failed to get anything of a similar character. It is a good grower and, on the whole, free of bloom. I name my best double Auriculas, and I call this Bridesmaid.—R. D.

Varieties of Primula Sieboldi.—A goodly number of these were brought forward at the Regent's Park exhibition, and opportunity was afforded for instituting comparisons. One thing is quite certain; we have too many of the character of *P. Sieboldi laciniata*, still one of the best and most distinct. Mrs. Geggie is in much the same way, but paler in colour, and it is slightly lacinated on the edges. Magenta Queen is also very similar. Vivid is smaller and brighter, still of the same character, and also lacinated. Thus we get four that largely resemble each other. A fine and distinct variety is to be found in Brilliant, bright magenta in colour, with stout, flat, circular flowers. Pearl is a good white, stout, and well formed, with the slightest tint of lilac on the reverse of the segments. Lilacina marginata, the bright lilac flowers being margined with a pale colour, is very pretty and distinct; and Charmer, pale rosy lilac, is very good also. Add to these four, laciniata and purpurea, a fine stout, well-formed pale purple variety, and an excellent half-dozen is thereby furnished. They are a sadly neglected, but yet a beautiful and satisfying class of hardy Primulas.—R. D.

SHORT NOTES.—FLOWER.

Prostrate Phloxes.—Some of these were seen to the best advantage at the Regent's Park Exhibition in the form of bold masses in pans. They demonstrated how admirably they are adapted for the summits of rockwork, and indeed in any position suitable for them. The three shown on this occasion were amena, pale rosy pink; Nelsoni, white; and frondosa, pale pink; all very free indeed.—R. D.

Allium Hermetti grandiflorum.—I received last autumn from Messrs. Ant. Roozen & Sons, of Haarlem, some bulbs of this fine variety, which I think is destined to supplant *A. neapolitanum* as a winter-flowering plant. It is more robust and more floriferous; the umbels are, I think, larger and the individual flowers finer; it comes in quite as early if not earlier, and is altogether a very desirable plant.—DELTA.

Allium grandiflorum.—This also I received at the same time. It has large handsome foliage; the flower-stem has already gone up 3 feet and more, but the flowers have not yet opened. If it corresponds to leaves and stem it ought to be something good, but most of the Alliums are disappointing.—DELTA.

Stoncrop in baskets.—This makes a capital carpet plant for hanging baskets of hardy plants. We use the small-leaved *Baunymus*, *Vincas*, or *Periwinkles*, and many other plants for filling baskets, and there is not a more useful plant for surfacing them than the hardy Stoncrops, or Sedums. If put in at the base bottom upwards, it does away with any need for Moss, and soon spreads into a living covering of verdant green, covered in early summer with innumerable heads of yellow flowers.—J. G. H.

Primroses and snarrows.—It is very odd that with swarms of sparrows about this place yet I have been troubled with their attacks on Primroses only once. I have thought the action is not due to want-mess, because that would be crediting the birds with special intelligence and a knowledge

of how to annoy man. I prefer to believe that the act is rather due to a search for moisture when the weather is dry. With thousands of plants blooming profusely almost close to the trees which the birds frequent, still not a bloom has been touched this year. A ditch with plenty of water in it is close by.—A. D.

STOVE AND GREENHOUSE.

T. BAINES.

HERBACEOUS CALCEOLARIAS.

A BATCH of these plants in full flower at the present time is very useful for conservatory decoration, succeeding the Cinerarias, and coming in just before the bulk of the Pelargoniums. We do not see these Calceolarias generally grown well in private places, as oftentimes they have to share positions in houses with other subjects quite unsuited to them. Treated in this way they generally fall a prey to greenfly, which is their greatest enemy. To have them in bloom by the first of the month the sowing of the seed is generally deferred too long; thus sufficient time for the plants to grow to a good size before they are required is not allowed. The flowers in a cut state do not last a long time, but the plants when used for the decoration of the dwelling-house and placed so that they receive a fair amount of light are very showy and most interesting, as the colours vary much when seed is procured from a good strain. The habit of growth, compared to what it was a few years ago, is also so much improved by careful selection, as to render this plant much more desirable in every way. To have the plants in full flower by the end of April or early in May, the seed should be sown thinly in large pans about the first week in June, using a compost of half peat and leaf mould, adding to this a plentiful supply of silver sand, the whole passed through a fine sieve. By sowing the seed thinly the seedlings do not grow up weakly, a circumstance to be avoided, as a sturdy growth at the start makes all the difference between success and failure in the future. Many causes of failure in obtaining a sufficient number of plants might be traced to allowing the soil to become dry during the germination of the seed. If the soil is moist no water will be required for a time, but when water is required it should be allowed to soak through the bottom of the pan until the whole mass is thoroughly moist, care being taken not to wash the seed off the surface. Thoroughly drain the pan by filling it three parts full of crocks, and over these place a layer of rough leaves, pressing the soil firmly in the pan and maintaining an even surface to within half an inch of the rim. Upon this surface sow the seed thinly, gently pressing it down, and covering the whole with white sand, which favours the quick germination of the seed and induces a quick rooting of the plants. Over the surface of the pan place a square of glass, covering the same with Moss, which assists in retaining the moisture in the pan, or a piece of slate, which preserves the moisture better than glass, may be placed over the top of the pan. Place the pan in a cold frame behind a north wall. The seed will quickly germinate, and as soon as the seedlings appear above the soil admit air by slightly tilting the glass on one side and removing the shading, and if slates have been used, substitute glass. As growth progresses remove the glass entirely, and give a little air to the frame. When the seedlings are large enough to handle, transplant them carefully into other pans about 1 inch apart, using the same kind of soil with the addition of some loam, sifting all fine as before. Return them to the frame, and keep close for a few days until the roots have taken to the new soil. Gently dew the plants overhead with tepid water, and admit air gradually as growth proceeds.

When the leaves touch each other the plants will be ready for their first shift into pots $2\frac{1}{2}$ inches in diameter, using rather more loam and not sifting the soil so fine; return the plants when potted to the frame. By keeping the frame under a north wall during the summer months shading is dispensed with—an important item in the culture of these plants, as it often

happens that when the frame is placed in a sunny position sufficient moisture is not maintained about the plants, and they fall a prey to green fly, which, if not quickly eradicated, soon cripples the plants to such an extent that they hardly ever retain that vigour which is essential to success. During the summer months a damp atmosphere within the frame must be preserved, the plants standing upon a thick bed of coal ashes. As soon as the roots reach the sides of the pots, and before they are in the least pot-bound, shift them to a larger size, according to the size of the plants, until they are in their flowering pots. Some of these may be 10 inches across if large specimens are required, while they will so vary in size that some will remain in 6-inch pots, in which they are very useful for decoration in various ways. After the first shift the soil may have more turfy loam and a small quantity of horse manure partly decomposed added to the previous mixture, and leaving out some of the peat. For the final potting, which usually takes place in January when the plants are in their winter quarters, the compost should be as follows: One part good fibrous loam of a light character, one part leaf-mould and partly decomposed horse manure, half a part of peat, some finely ground bones, some charcoal and sand, using all in a rough state, and potting lightly. Do not place the plants deeper in the pots than previously, as sometimes, owing to an excess of moisture, they damp off at the collars.

About the middle of September, or sooner should the weather be cold and dull, the plants will be benefited by a change of quarters, viz., by placing them where they will obtain more light and a little sun. Still resort to shading them if the sun be very strong, and admit air freely to the plants by tilting the lights, gently syringing them overhead every evening. Retain them in this position as far into the month of October as is safe, covering the frames each night in case of an early frost injuring them. When the plants are not considered safe in the frame, or at all liable to lose their foliage by damp, remove them to a cool house where the temperature is kept so that frost does no harm. Beyond this no fire-heat will be required, beyond an occasional warming of the pipes, to dispel damp during foggy or damp weather. Great care should be exercised in watering them. Never water unless it is required, and, if possible, always use soft or rain water in a tepid state. When the plants are thoroughly established in their flowering pots, some stimulant will be an advantage. Nothing is better than occasional doses—say, every second time water is required—of weak liquid manure, that from sheep or cow manure being the best. Early in March the flower-stems will begin to throw up above the foliage; these will require some support, which is best done by placing to each a small stake. By training the flower-stems in an outward direction, those growing from the middle of the plant will have room to develop thoroughly, and thus prolong the display and preserve the colours in their proper character. A light shading should be placed over the glass, as the richer colours quickly lose their brilliancy under a hot sun during the months of April and May.

If the plants are allowed to become pot-bound or dry at the roots, they seldom regain their natural vigour. When there are any signs of greenfly on the leaves, smoke the plants with Tobacco in the evening, and again in the morning, as the second application will effectually destroy any that may be left alive from the first dose. After this, give the plants a good washing with the syringe, which will leave all sweet and clean. E. M.

Agathæa cælestis (Blue Daisy).—Now that Daisy-like flowers are so popular, this plant is far more extensively grown than was the case some years ago. It is a most accommodating subject, and may be had in bloom throughout the year with but the simplest treatment. The pretty pale blue star-like flowers are borne in great profusion on long wiry stalks, so that when cut they may be employed in many arrangements. Not only is it useful for cutting from, but it may be grown into neat

little bushes, and is then valuable for greenhouse decoration. To succeed with this *Agathaea* and thus obtain a supply of bloom throughout the winter, cuttings must be struck in the spring or early summer, and, after the first shift, plunged outdoors. They must be pinched back frequently, and, as the pots get full of roots, shifted into larger ones, so that by the end of the summer, if they have been carefully attended to, the plants of this *Agathaea* will be in the shape of neat little bushes full of flower-buds. In the warm end of a greenhouse, or in a structure kept at an intermediate temperature, they will flower throughout the winter, and some of our plants that had been flowering till the end of March were slightly shortened back and given a good dressing with Clay's Fertiliser, the consequence being that they broke strongly into growth, and are again thickly studded with bloom.—H. P.

RESTING EUCHARIS AMAZONICA.

I do not in the least question the accuracy of the description of the fine pots of *Eucharis* at Gunnersbury Park, but unless "R. D." (p. 410) has either been wrongly informed or has blundered sadly, Mr. Roberts will not long be able to point to such a valuable stock of this popular flower. This is "R. D.'s" extraordinary version of the Gunnersbury treatment:—

Mr. Roberts states that the secret of growing *Eucharis* is that when a young leaf comes up, a flower-stem will be sure to follow, and as soon as the young leaves appear the plants should be dried off and the flower-stem comes up.

This may be correct enough as far as the leaf forming prior to the flower-stem appearing, and in the case of well-grown bulbs as many as three or more flower-stems may be obtained in one year. By all means grow them in a high temperature, with plenty of room and shade, and if not often potted they must also have abundance of water and frequent supplies of soot water or other liquid manure. To dry them off, however, "as soon as the young leaves appear," is simply suicidal. It ought to have occurred to him that the leaves must largely contribute to the strengthening of the bulbs as well as the formation of the flower-stems, and instead, therefore, of crippling these, every attempt should be made to properly develop them.

The withholding water from well-established plants for a short time, or say giving only sufficient for about three weeks or a month, to prevent flagging, may safely be practised by experienced cultivators, flower-stems showing in abundance directly after they are started again. A slightly reduced temperature for about the same time, accompanied with rather less water at the roots, followed by re-introduction to strong heat, will excite the plants into flowering equally as well. In either case this rest ought not to be enforced before the last batch of leaves is fully matured, or anything but satisfactory results would be the consequence. In the majority of gardens in this country the *Eucharis* are not strongly established in their pots, and I hold that unless they are root-bound, or at any rate approaching that state, nothing in the shape of drying off ought to be attempted, and that all advice to the contrary given by inexperienced persons is calculated to do much harm. All the time there is fresh soil for the roots to occupy they are active, and they ought to be encouraged to remain so. Dry them off and there is the almost certainty of the bulk of them perishing, and the mite or other insects gaining the ascendancy. Subjecting weakly plants to a temperature ranging from 60° to 50° is also an unwise proceeding, as this also seriously checks root action. After all I am not convinced that it is even advisable to dry off a lot of strong plants unless a large quantity of bloom is required at a given time. We have a small house devoted principally to *Eucharis*, and are very rarely without a few flowers, while at intervals a fairly large quantity is open at one time, yet there is no drying off. The very variability of a climate seems capable of affording all the excitement needed to induce them to flower any time during the spring, summer, and autumn months. A spell of dull cold weather followed by the opposite will frequently cause all to flower that are in a fit state to do so. The flower-stems of various bul-

bous-rooted plants are frequently formed in an embryo state many weeks before they show themselves, and a little excitement is all that is needed to bring them forward. This I have repeatedly discovered, and the drying off such plants as *Eucharises*, *Crinums*, *Vallotas*, and *Amaryllis* is therefore an uncalled-for proceeding, and is more often than not responsible for what is attributed to the attack of mites and other insects. I repeat other insects, for mites are not the only tiny insects to be found in unhealthy *Eucharis* and *Vallota* bulbs.

W. I.

LARGE-LEAVED PANICUM.

(PANICUM Plicatum.)

In this genus are numerous large, and in some cases gigantic Grasses. They are widely distributed throughout the tropical and sub-tropical portions of the globe, but many are robust enough to stand our climate during the summer. The variety, *P. plicatum*, of which the annexed woodcut gives a good idea, is, like many others in the genus, very useful for mixing among flowering plants in the conservatory or for cutting from; although it may be planted out during the summer months, it will be found to do best under cultivation in pots. To succeed



The large-leaved Panicum (*Panicum plicatum*).

with it, it must be grown in heat, more especially during the winter months. As it is of a free rooting character it requires to be grown in good sandy loam to allow of the water, with which it must be liberally supplied, to pass away freely. There is a variety with variegated foliage called *niveo-vittatum*. Both may be increased by seed and division of the roots. The plants, however, raised from seed are the best.

Mitraria coccinea.—Among greenhouse shrubs remarkable for the beauty of their blossoms and at the same time but rarely met with in gardens, mention may be made of this South American plant, which is now in full bloom. It is a native of Chili, and, consequently, is nearly hardy, but to be seen at its best, must be treated as a greenhouse plant. It forms a much-branched bush, in general characters not unlike a slender-habited *Fuchsia*; while the bright red urn-shaped blossoms are borne in great profusion. It succeeds best where shaded from the full rays of the sun, and when grown in an open compost consisting of fibrous loam, peat, and sand. As the roots are by no means vigorous, thorough drainage must be ensured, especially if it be planted out, for this *Mitraria* is a good pillar

plant where subjects not more than 6 feet high are required. It may also be grown as a pot specimen and turned outside during the summer, but for that a shady place should be chosen as the foliage is apt to become yellow if exposed. Cuttings of it strike root readily enough during the growing season if the young shoots are taken and treated as *Fuchsias* and similar subjects. They will take longer than a *Fuchsia* to strike, but, provided good cuttings are obtained, success will in most cases follow.—H. P.

A PROFITABLE HOUSE.

OCCASIONALLY we meet individuals who maintain that it is almost impossible to grow fruit and flowers well together, and now and then we read as much in the gardening periodicals. I, too, much prefer to have houses as far as possible devoted to one or two subjects, but having in bygone times been obliged to adopt more makeshift practices, am well aware how profitably a small forcing house can be utilised on the mixed system. In quite a small span-roofed house I have grown good and continuous crops of Tomatoes, Cucumbers, and Melons, with a few Ferns and fine-foliated plants underneath, while the next compartment was shared by Grapes, Tomatoes, and Stephanotis. The Cucumbers were planted in a central pit, the Melons were disposed along the south front of the house, being grown in large pots plunged in a hotbed of leaves, while the Tomatoes were planted in boxes and occupied the ends of the house. The Vines were planted in a front pit, and being well attended to at the roots soon took possession of the soil and perfected heavy crops of comparatively large bunches. The white varieties coloured well, but the black sorts, including Hamburgs and Alicantes, were more remarkable for their flavour than for finish. They were only fruited once, then thrown away, and their places at once occupied with late Tomatoes; these in their turn having to make way for more Vines grown in pots in another house. The Stephanotis was grown in a tub and completely covered the north side of the house, the Vines being given the southern half of the roof. Tomatoes occupied one end, as in the other compartment. There was no staging under the Stephanotis, but on the concrete floor were grown Ferns, Pandanus, Crotons, Dracenas, and other plants. Everything succeeded surprisingly well, but all needed and received close attention, each being kept in its place and as clean as possible. I never had a better supply of Stephanotis flowers, nor did the little front air given by night and plenty of top air by day when the Grapes were colouring seriously check its growth. Some of the Tomatoes were exhibited successfully at the London show, and I have never been able to surpass them since. Smooth, round sorts being principally grown, these are invariably more liable to crack before they are ripe, but by cutting directly they commence to colour, cracking is anticipated and the fruit will ripen quite as well on a warm shelf, the precaution being taken to shade them from bright sunshine. The temperature of a Cucumber house, and the moist atmosphere also maintained, suit Melons equally as well as Cucumbers, and should the former crack when ripening they may be cut and ripened off the plant.

In this neighbourhood a gentleman who takes a very active interest in his garden grows a greater variety of plants in one house than I have ever attempted, and his success is noteworthy and ought to encourage others similarly situated to persevere in the direction I shall endeavour to plainly point out. The house under notice is span-roofed, and about 16 feet wide. It runs from north to south, and adjoins a greenhouse. Every ray of sunshine appears to reach it, and in addition it is well heated. There is a central brick pit and side stages. The end of the house is entirely covered with a plant of *Stephanotis floribunda*, the roots being confined to a good sized pot. In one corner stands a strong pot plant of *Bougainvillea glabra*, and this, only very lightly trained, flowers abundantly for several months. In the opposite corner a pot plant of *Allamanda Hendersoni* is grown, and this also flowers early and late. A *Dipladenia amabilis* occupies the corner next the greenhouse, but its treat-

ment not being quite so well understood, it almost failed. On the staging along the west side of the house were grown a number of Tomatoes in pots, these being trained up the roof a length of about 3 feet. The true Dwarf Orangefield is the variety preferred, and rightly so, it being of really dwarf habit, is very prolific, no difficulty being experienced in setting a heavy crop; the fruit ripen quickly and are of good flavour. It is neither a large nor showy variety, but connoisseurs consider it superior to all in point of quality. On the opposite, or east side, early Cucumbers are grown, these also being in pots and not trained more than 5 feet up the roof. Telegraph is the sort grown, the fruit being available in March, and up to the time when they are plentiful in frames, when they are cleared out and their places occupied by late Melons. For the latter the staging is removed, and small pits are formed over the pipes with loose bricks. Planted early in June, in good loamy soil, these Melons grow rapidly, and yield many good fruit early in August or during September. The varieties preferred for this position are Hero of Lockinge and Blenheim Orange; but for the central pit, which is planted with Melons early in April, such sorts as Longleaf Perfection and Easton Castle are preferred. Four plants are put out in nothing but rich loam, this being warmed by bottom-heat pipes. All side shoots are rubbed off till the roof trellis is reached, when they are allowed to spread at will, fruit being set as soon as possible, and at intervals, so as to secure a good succession. They receive plenty of water at the roots and occasional light surfacings of manure. I have seen several very fine Melons cut from this house; they are frequently too large, in fact, but the quality is always good.

When Cucumbers, Tomatoes, Allamandas, and Bougainvilleas are grown in pots, they require to be closely looked after, a few hours' neglect almost ruining them. There ought always to be a tank of water in the house, and this convenient supply largely contributes to the success of the undertaking. The Cucumbers should be lightly cropped and top-dressed with turfy loam occasionally, and then, if otherwise well attended to, overhead syringings and slight shading included, they will remain in a healthy bearing state for many weeks. Tomatoes in pots, which are also much benefited by top-dressings, require plenty of water and liquid manure, and will not be injured in any way by overhead syringings. Whatever number of main stems are laid in, all should have the side shoots kept closely rubbed out, the foliage being quite sufficient to swell the stems and the fruit. Moreover, they require plenty of light, and if all the side shoots are allowed to grow, these would soon smother each other as well as the clusters of flowers. What stopping or thinning out is necessary in the case of Melons should be done early, as if the superfluous growths are allowed to remain, so as to necessitate the use of a knife, the wounds may not heal readily. A little powdered quicklime or Portland cement will dry a wound or any canker in the stem, and thereby save the life of a plant. Stephanotis, with their roots confined in a pot, require plenty of water and weak liquid manure, especially when growing and flowering freely, and these, if well attended to, will yield surprising quantities of fine trusses. Allamandas must be thinly trained, and as at each flowering point they form two or three side shoots, these should be reduced to one or two at the most, and these being laid in will duly form other flower-spikes. On no account should these spikes be cut, as they continue to lengthen and flower all through the season. The plants require abundance of water and liquid manure, and without it they soon become unsightly and useless. Bougainvilleas and Allamandas soon take possession of a top-dressing of turfy loam and old cow manure, and the former also must have plenty of water and liquid manure, as well as frequent overhead syringings—red spider if allowed to gain a foothold soon spoiling the foliage. Dryness at the roots will also cause them to shed nearly all their leaves. Dipladenias should have very different treatment. They require a rough peaty compost—no loam being used—plenty of drainage, and com-

paratively small pots. Water must be given very cautiously, an overdose quickly spoiling the plants. Such varieties as Brearleyana, amabilis, and Williamsi are most beautiful, but the more easily grown boliviensis is also very pretty, and can be had in bloom nearly all the year round. The latter roots more freely, and therefore requires more water, and when the pots are well filled with roots a top-dressing of fibrous peat and a little loam and old cow manure will materially assist them.

During the winter the house just alluded to is filled with Begonia semperflorans, Knowsleyana, Ingrami, and erecta multiflora, semi-double zonal Pelargoniums, a few Tea Roses, and a variety of Ferns and fine-foliaged plants. Altogether it is most probable no plant or fruit house in the country gives much better returns for the outlay, and it is a source of never-ending pleasure to the proprietor.

W. I. M.

Helleborus viridis as a market plant.—

This is one of the least showy of the Lenten Roses, but it has so much beauty of form, that it would be worth a place in gardens even if it gave no flowers at all. The deep green shining elegantly divided foliage, so hardy that such winters as the past one make but a feeble impression on it, render it no mean ornament to the outdoor garden during the winter months. As regards general appearance, it quite equals many tender fine-foliaged plants grown for decoration, and I have often wondered that it should never have been taken in hand by market growers and florists. I was looking the other day at some two-year-old plants, compact specimens about a foot high with thick spreading crowns of foliage, and I thought how attractive they would look in 6-inch pots, and how likely such healthy little specimens would be to find favour in Covent Garden. This Helleborus may be grown as a market plant, but I have never seen it employed in that way. Were I growing fine-leaved plants for decoration I should certainly give Helleborus viridis a trial.—J. C. B.

Acradenia.—A genus containing a solitary species, belonging to the Order Rutaceae, the chief distinguishing characters of which are calyx and corolla in fives; stamens free, not joined together, and quite smooth; the anthers also smooth and destitute of any appendage; the ovaries close together and enveloped in a dense woolly covering, and bearing on each summit a small gland which gives rise to its name. It is a robust-growing plant, producing an abundance of white flowers arranged in terminal, many-flowered corymbs. The soil best adapted for this plant is a mixture of peat, loam, and sand in the proportion of one of the latter to two parts each of the former. A. Franklinie, the plant in question, is named after the late Lady Franklin, and, apart from the interest which its name inspires, is a valuable addition to the greenhouse. Stems and branches terete and rough; leaves opposite, trifoliate; leaflets lanceolate, somewhat coarsely toothed on the edges, glandular and deep green on the upper side, paler below, the whole plant diffusing an aromatic perfume when rubbed; peduncles terminal, forming many-flowered heads of snow white blooms, which are produced during the early spring months. A large plant of it may now be seen in bloom planted out in the temperate house at Kew. Native of the district around Macquarie Harbour, Tasmania.—G.

SHORT NOTES.—STOVE AND GREENHOUSE.

Azalea Miss Jarrett.—This was shown by Mr. H. James, of Lower Norwood, at the recent exhibition of the Royal Botanic Society as a new variety. The flowers are of large size, stout, and fringed on the edges, with slight markings of lively green on the inner segments. It is a very free and fine variety, but whether an English seedling or a Continental introduction was not stated.—R. D.

Azalea mollis in the open.—In some parts of Wales these are just now in great beauty in the open air. They are charming flowers, and are a grand addition to Whitsunide blossoms. The plants are in no way shy in growth; they are bushy and compact in habit, and the profusion of their orange, straw, salmon, rose, and other coloured blossoms attract the attention and command the admiration of all who see them. They merit far more attention in the open than they have yet received.—CAMBRIAN.

Asparagus plumosus nanus.—The Maiden-hair Fern which for so many years has held the foremost rank in supplying foliage for bouquets and other forms of floral decoration appears at length to have met with a formidable rival. The Asparagus plumosus will undoubtedly supplant it as soon as a sufficient quantity of it is forthcoming. At present the demand is in excess of the supply in Covent Garden, and doubtless will be so for some time to come. There is no doubt here an opportunity for anyone with sufficient capital to purchase largely, holding and propagating their stock for a year or two to make a good hit. The sudden brisk demand for this plant will, of course, send up the price, so that the buying of any quantity will necessitate considerable outlay. The speculation would, however, be sure to be a paying one. I am informed that nearly all of this Asparagus that is brought into Covent Garden is bespoken. Those market growers who cultivate the Maiden-hair Fern largely will be wise if they gradually substitute the Asparagus for it.—J. C. B.

SEASONABLE WORK IN PLANT HOUSES.

SINGLE PRIMULAS.—Plants that have been raised from seed sown some time since will now be large enough for pricking off. To grow Primulas well they must be kept moving freely from the time the seed vegetates until they come into flower, as if the plants, especially during the early stages of growth, get into a stagnant condition they will not afterwards make up the lost ground. One of the most frequent causes through which these plants suffer is by being allowed to remain too long in the seed pan, where their roots get so matted and entangled that they cannot be separated without breakage, and their leaves become drawn through want of room. The usual way of proceeding is to move the little plants singly into small pots, in which they remain until large enough for transferring to those in which they are intended to flower; but a better method is to prick them off in shallow boxes, allowing enough room for them to remain in these without the leaves overlapping each other until the plants are large enough to be transferred to the pots in which they are to flower. Treated in this manner, much of the attention in watering which such things when in little pots require is saved, and they will gain much more size and strength in a given time than when confined to pots, whilst the facilities which the boxes give in keeping the plants raised up to the glass are much in their favour. See that the soil is sufficiently light and open in texture to admit of the plants being taken up without breakage of the roots when the time comes for finally potting off. Leaf-mould, rotten manure, and fresh loam passed through a fine sieve, with a little sand added, are the right materials with which to fill the boxes. Abundance of light, free admission of air, with a thin shade when the sun is bright, are the necessary conditions for securing the stout, stocky growth so essential in a well-grown Primula. A little more seed may now be sown, the plants from which will come in useful for flowering after the earliest set is over.

SEMI-DOUBLE PRIMULAS.—The semi-double-flowered varieties of Primula are deserving of general cultivation. Seed of these may now be obtained in the various different shades and colours that in recent times have appeared. These half double kinds come sufficiently true to their respective colours to be relied on. The points in their favour are that they are better growers than the double sorts, whilst their flowers are much more enduring, especially in a cut state, than the single varieties. Their cultivation is the same in every respect as that of the single kinds.

DOUBLE PRIMULAS.—These may be propagated at any time during the spring and summer when side shoots in right condition are to be had. If there is any deficiency of stock, more should be put in now. There is less danger of the cuttings suffering through damping at this season than earlier on. A little warmth with shade and a moderately confined, but not too close, atmosphere are necessary to get them to root. Some of the later forms that

have appeared have larger flowers than the older kinds, but for general usefulness when well managed it is a question whether the old double white and its slightly different newer variety are yet beaten. The size the plants attain under good treatment and the profusion of flowers they produce are unequalled. Where white flowers are much in demand for bouquets, they supply material during the early months of the year when there are not many things to choose from. Where large specimens are required strong established plants should be moved into bigger pots, being careful afterwards to keep them where they will have plenty of light, as when the plants get large, unless the growth is made under conditions that will ensure its being strong and robust, the stems are more liable to suffer from damp in autumn and winter than smaller examples are.

LILIES.—Old bulbs of *L. auratum* that have got well established and have bloomed several seasons are much more to be depended on than such as are newly imported, or that have been grown for a single season, as it not unusually happens that they grow and flower the first summer and then die; whereas, with fair treatment, when once the bulbs have got over the severe ordeal inseparable from their long voyage and the long time during which they are out of the soil, they go on thriving and increasing in numbers. This species of Lily submits fairly well to forcing, but though this is sometimes done, I look on it as a mistake. During the latter part of spring the number of plants that flower naturally is such that there is no necessity for hurrying on the Lily in question, and when a healthy, thriving stock of it is obtained, it is better policy to treat it in a way that will keep the plants strong and vigorous, rather than flower them out of season. As has before been pointed out when speaking of *L. auratum*, there is much difference in the time that the bulbs flower. This peculiarity should be noted, and the roots treated accordingly, having the earliest to come in first, with later ones to follow. The continued healthy condition of this and other Lilies, when subject to pot culture, is much dependent on the way they are treated during the time they are making growth; they are naturally light-loving plants that do not like being located where their stems and leaves become drawn and weak. From this time, when the danger from spring frost is past, they are best out in the open air with the pots plunged in coal ashes, and their stems safely secured from rough winds, and for this reason a fairly sheltered position should be chosen for them. For late summer and autumn flowering there are no Lilies equal to the different varieties of *L. speciosum*. These should be treated in the same way as *L. auratum* through the summer. Amongst the host of Lilies now in cultivation many thrive best and are only fit for growing in the open ground, whilst some, like *L. auratum*, *L. longiflorum*, and *L. speciosum*, succeed better in pots. By selecting a few of those that are most distinct in the character of their flowers a succession may be had in bloom from the first months of the year up to autumn, beginning with the earliest and best forcer, *L. Harrisii*, to be followed by its near ally, *L. eximium*, which is the best of the older forms of *L. longiflorum*, as it produces double the number of flowers. By forcing a portion of the stock of this sort, and having others to come on in cool quarters, with the common old *L. candidum*, also grown cool, an almost unbroken succession may be had until the first of the auratum flower. Neither should the stately *L. giganteum* be omitted, for though, in common with many other Lilies, it will succeed in the open ground in some localities, and under some conditions of soil, &c., it is still a grand object in a pot. So grown I have seen it far better in every way than I have ever met with it out of doors. As pot plants for conservatory decoration these Lilies can scarcely be over-rated, whilst the flowers of the smaller-flowered sorts are very useful in cut-flower arrangements. Plants of the earlier-flowering kinds, or such as have been brought on slowly to succeed them, must be well cared for, giving them plenty of light and attending to their wants in the matter of water, as unless strict atten-

tion is given to these points until the leaves and stems die down, it is useless to expect their continuing in a healthy, vigorous state.

BRUGMANSIAS.—For covering the back wall of a large cool conservatory, or, still better, trained against the glass at one end of a house of this character, *Brugmansias* are amongst the most effective of all plants. To do justice to them, if on a back wall, the structure must not be a dark one, for if deficient in light, only the tops of the plants will flower freely. Vigorous-habited plants, as the larger growing kinds naturally are, require more root room than things that attain less size, though much may be done to keep up the requisite strength by renewing the surface soil of the border annually. When grown against the glazed end of a roomy house the plants are seen to most advantage, as the light they get in such a position causes them to flower more freely. Grown in this way, or as more usually seen in the form of bushy headed standards or pyramids, they will now be in active growth, and should be regularly supplied with manure water, particularly in the case of old specimens that have their roots confined in pots or tubs. By having a few extra plants a succession of flowers may be obtained, as if a portion is now turned outdoors in a sheltered place they will bloom after those that are kept under glass are over. In all cases keep the syringe going freely to preserve the foliage from insects. I have found none to equal *B. Knightii* and *B. suaveolens*.

STOVE. PANCERATIUMS. Of the various species of *Paneratium* in cultivation, *P. fragrans* may be set down as the most generally useful. Where fragrant flowers are required for bouquets it is not easily equalled, or for arranging in large vases where the spikes are used entire they are equally effective. The time of blooming varies considerably with the amount of heat the plants are subjected to, but in most cases they will now be in full growth. They are light-loving plants, and, provided means are taken to keep the leaves from getting injured by the sun's direct rays acting on them, the plants increase the fastest and bloom the most freely when kept in a light position. Where at all underpotted, manure water should be given once every ten days or a fortnight, being careful not to apply it too strong. *Paneratium* and all the kinds of their near allies, the *Hymenocallis*, that I have tried will, if the spikes are cut before the flowers expand, open freely in water, attaining a size only a little inferior to that which they reach when left on the plant. When the flowers have to be sent any distance it is much better to thus cut them before they open, as then they are not disfigured by the pollen getting scattered on them. T. B.

KITCHEN GARDEN.

W. WILDSMITH.

THE RUBBISH HEAP.

THE above words have not a very refined sound, but to a gardener they are full of meaning, as designating a place of the utmost importance in assisting him to keep the entire garden trim and neat. Of course, much that is wheeled from the garden has sooner or later to be wheeled back, yet this apparent double labour is in every sense of the word most profitable, as in the first place it ensures neatness, for every scrap of dead and decaying matter is, or should be, regularly taken away; and, secondly, that same material is again returned with interest to the ground in the form of manure of the highest value. Our manufacture of it—manure—is continuously going on, and the ingredients are as varied as they are numerous. There is grit, the sweepings of walks; there is vegetable matter, the old stumps and leaves from Cabbage and Broccoli; also Potato haulm, weeds, and green vegetables not required for use; then there are soil and opening material, in the form of refuse from the potting sheds; and, lastly, there are all the scraps from the

prunings of fruit trees, the trimmings of Ivy and hedges—these last we burn, and after reserving the best of the ashes for use separately, the remainder is thrown together with the other ingredients, and twice during the winter the entire mass is turned over, and a little salt, soot, and freshly slaked lime are added as the work goes on. These have a destructive effect on insect life, and the heating settles any seeds of weeds there may be. After this second turning the heap is allowed to stand for another month or six weeks, when it is ready for application to any description of vegetable crop. Peas, Celery, and Globe Artichokes seem to revel in it, and on our sandy soil it is most excellent for Potatoes. The refuse of our garden is thus returned to the soil, and our rubbish heap again cleared for another year's campaign. I wish that the refuse of the furnaces was as easily got rid of, for this grows in spite of our new walk and road-making, the foundations of which we always form with clinkers and ashes for the double reason of reducing the heap and preventing the growth of weeds and formation of Moss that invariably happen when walks are made entirely of gravel.

VEGETABLE GROWING.

WHAT with the extension of houses in gardens and the cutting up of work into sections, such as Orchid, plant, fruit, and decorative departments, there seems to be no great anxiety on the part of young men to acquire a good knowledge of hardy plants, or of vegetable culture. The ordinary opinion seems to be that anyone can grow vegetables, but I think there are few head gardeners who do not find one of their most valuable garden allies in a reliable and practical kitchen garden foreman. Generally, too, the kitchen garden work, because it is rough and laborious, falls to the lot of the ordinary garden labourer, and if observant and intelligent he can as a rule far more easily obtain a situation at an increase of wages than can young men whose time is almost entirely spent in the houses. Whilst there are vast numbers of gardens in which vegetables are principally grown, those in which houses predominate are limited in number, and good single-handed gardeners may often find better wages and more places to select from than house-trained young men can whose aspirations are higher. There is some reason for belief that we are approaching a time when high-class vegetable culture will be made one of the most important of garden elements. Hitherto plants and fruits have enjoyed the chief attention of the gardener under glass. Dwarf Beans in houses and frames and early Potatoes in frames are the principal, but still not remarkable exceptions. What is needed is such a knowledge of vegetable culture, both in houses and frames, that an ample supply of the best description shall be produced literally all the year round, but, of course, chiefly during the winter and spring months when vegetables are scarce and far from being tender out of doors. If it be pleaded that warmer climates give us all we need during our blank seasons for the mere trouble of purchasing it, there is great force in the observation that no imported vegetables can ever give us that freshness and flavour which go to make good home-grown products. The vast sums of money spent by those having a love for Orchids would serve to supply a table with vegetables which at present may be regarded almost as luxuries. Cheap glass houses and frames with moderate heating power would produce wonders in the way of choice vegetables, and, being fresh and sweet, would also be more valued than the best which Covent Garden could furnish. Where gardening is a pounds, shillings, and pence question, it may be asserted that vegetable culture under glass would not pay; but some things cannot well be appraised at a money value, amongst which is the pleasure experienced in partaking and enjoying the produce of one's own garden. The tendency of the age in most things is of a utilitarian cha-

racter, and in gardening that tendency is asserting itself. We have but to note the prominence given of late years to Tomato culture under glass to realise how popular such products may be made. What is done so largely for Tomatoes may presently be done for some other things now grown as best they can be out in the open, and therefore it behoves young gardeners to give close attention to vegetable culture in all its varied forms and aspects.

A. D.

KITCHEN GARDEN NOTES.

THINNING OUT.—Favoured by a copious rainfall, we have been able to thin out all crops that were ready for that operation; Parsnips are thinned out to from 10 inches to 12 inches apart. The second sowing of Turnips has also had the same attention; distance apart about 6 inches. Summer Spinach was mainly thinned as required for use; now that the crop is finally thinned, the plants are from 6 inches to 9 inches apart. This crop quickly runs to seed, and on that account many do not thin out the seedlings at all; this was once our plan, but finding that increased space considerably lengthened its season of perfection, we now always thin it out the same as we do winter Spinach. Early Horn and Early Nantes Carrots that were sown on a warm sheltered border early in February are nearly ready for use; they were sown thinly to obviate the necessity of thinning out the seedlings, but those who have not exercised this precaution would do well to thin out to about 3 inches apart. Owing to pressure of work, we have occasionally omitted to prick out (prior to final planting) Cauliflowers, early Broccoli, and Coleworts, but in lieu of this have drawn out the smallest to give the remainder more room, and the plan has answered very well, and once again it has been done to each of the above. At the same time there is no doubt but that the best way is to prick out the plants, and if time and labour can be spared it should be done.

ASPARAGUS.—At last daily supplies are possible. As a rule we discontinue cutting as soon as Peas are ready, but if this be done this year we shall have had an open-air Asparagus season of about a month's duration. Of course, the rule will this season be disregarded, and in prospect thereof, we have given the plot a dressing of guano, and the recent heavy rain will at once make it of service to the present season's supply. Salt and soot have been scattered over a newly planted plot. We use the two together, and both are excellent manures for the crop, as the salt keeps weeds in check, and by mixing soot with it there is no need to use it in such quantity as will make the surface soil adhesive or pasty, and therefore liable to get hard on the surface in dry weather. Hoing will, of course, remedy this, but it is just as well to prevent that operation being so frequently necessary by being more moderate in the use of salt.

VEGETABLE MARROWS.—The demand made on us for this vegetable is very limited—indeed, is almost nil so long as Peas are to be had in quantity; hence our aim is quantity at the end of summer rather than early supplies. We have now put out the plants on open parts of our soil-yard, the ridges or beds being composed of scrapings from roads, edgings of walks, and the siftings of soil from the potting-shed. Bottom-heat is out of the question, and, in fact, in this part of the country (Hants) unnecessary. The plants are strong, were in 5-inch pots, and have been well hardened; still, it was deemed necessary to afford shelter to the plants by affixing round them Yew branches, and as matters turned out it was well this was done, for the morning following the eve of planting the thermometer fell to 29°, or 3° of frost, and they were not injured.

POTATOES.—As all but our latest crops are up, it has lately been an anxious time with us in regard to their protection from frost. They have been kept earthed up, and as yet no injury has befallen them. Were it not as a protector from frost, earthing up on our light soil would be entirely discontinued, solely for the reason that the Potato might get immediate, and therefore the fullest amount of benefit from the rainfall, which for our light soil is seldom

too copious—indeed, I may say never, except when the murrain prevails; then, of course, we would prefer that the crop had none at all. Such an arrangement is, however, beyond our power, and the next best plan is (provided the tubers are anything like nearing maturity) to lift and store them at once. We are now digging fairly good tubers from frames, or rather that were in frames, but these structures being wanted for other purposes, a skeleton framework made with stout rods was fixed round the beds, and on these, when needed, was placed coverings of canvas, mats, or felting. The first supply we grew in pots, shifting them from one house to another as exigencies of space and the necessary temperature to keep them growing demanded. The beds from which we are now having supplies will presently be utilised for the growing of Capsicums, Solanum capsicastrum, Bouvardias, rooting the runners of Violets preparatory to planting them in frames at the end of summer, and for raising from seeds many varieties of herbaceous flowering plants.

CAULIFLOWERS.—Broccoli seem likely to hold out longer than usual, and present prospects are favourable to a continuous supply till early, frame-wintered Cauliflowers are ready, of which some few already show signs of hearting; and to such we have given a good soaking of clear manure water. Another small planting has been made of Early Dwarf Erfart and a first batch of Autumn Giant; other small plantings of the latter variety will be made once a fortnight up to the end of July. After rain, whilst the ground was wet, the drills in which all that have been planted this spring were filled in to the ordinary ground level, and no further earthing up will be necessary, nor artificial watering either, provided mulching is done before the ground gets dry.

GENERAL WORK.—To look over Asparagus daily, cutting such heads as are ready, and tie up tight to keep the heads straight. If stood in an upright form in shallow pans of water and in a cool place—light or dark—it will keep in perfect condition for quite a week. Sow Radishes fortnightly, Mustard and Cress about every ten days. Cut back seeding herbs, plant out any that have been raised from seed. Thin out Salsify, Scorzonera, and Dandelion to from 6 inches to 9 inches apart. Also thin out Lettuces, stake seeding Onions, keep seed stems off Rhubarb, Seakale, and Horseradish; stake Peas and Runner Beans.

W. W.

Hardy Broccoli.—I do not credit the statement that Mr. Gilbert can find "any number of cottagers" who can grow Broccoli or anything else better than "half the gardeners in the country," no more than I believe that his Cabbage Broccoli is a Broccoli. It has no more Broccoli about it than any other Cabbage has when bursting with its seed-stalk. If I am wrong, I ask him to produce one sample in proof of it from the Land's End to John-o-Groat's. I have never seen the Broccoli in Chou de Bughley, nor met anyone who did; but I do know of some who have bought seed of it in the expectation that it was what it is described by Mr. Gilbert, and been ruefully disappointed. Produce me one head in any way differing from any other good Cabbage at the same stage, and I will acknowledge my error. I do not care one straw for the independent testimony Mr. Gilbert speaks of. Show me the Broccoli. It has been too long belauded in THE GARDEN on that head, and it is time someone asked for some sort of proof. I would suggest Mr. Gilbert exhibits both at some show. The fact of the matter is, a Cabbage cannot produce a Broccoli head; it is impossible. Broccoli and Cabbage flowers are the same; but the Broccoli or Cauliflower "head" is only produced in some members of the Brassica tribe that never close up in Cabbage form, and under no other circumstances.

—J. S. W.

SHORT NOTES.—KITCHEN.

Rhubarb Ruby.—Forced Rhubarb, or when grown in a cellar in the dark, comes to table when cooked of a nice red or pink colour, and is far more enticing to the appetite than when it is green in colour, as it generally is when used

from the open ground. There is a sort called Ruby, which when cooked is of a beautiful ruby colour, and has also a much better flavour than the sorts usually grown. It does not grow so strong as Victoria or Linnaeus, and requires good ground to grow it well. I think if Ruby was better known it would be grown very extensively for its nice colour when cooked, and I would advise those who have not grown it to get it. I feel sure that they will be pleased with it when it comes to table.—R. LLOYD, Brookwood.

Failure of early Potatoes.—Some early Potatoes which were planted in my garden in the second week of March are not yet above ground. The sets were home-grown, from some plants of Veitch's Ashleaf, purchased in 1886. A deep fall of snow followed by severe frost came on just after the planting; that weather, however, did not last a fortnight. We have, as everybody knows, a great rainfall here in Lochaber, but spring is our driest season; these Potatoes have had but very little rain. The ground was newly trenched and left rough. The Potatoes were planted on the system universal here, namely, raw manure is laid in the bottom of the drills, and the sets placed upon it and then covered up. The drills in this instance were about 6 inches deep. If any of your correspondents can point out any fault in the system pursued that would prevent the plants from growing properly, I should feel grateful. I should mention that when examined last week the tubers when taken up were not killed.—E. C. M. Fort William.

GARDEN FLORA.

PLATE 598.

NEW HYBRID MONTBRETLE.*

THE three beautiful hybrids most accurately portrayed on the accompanying plate were raised by the well-known French nurseryman, Victor Lemoine, of Nancy, and distributed by him in the spring of 1886. They bloomed abundantly in my garden during the summer and autumn of that year, and though they suffered a good deal during the long winter both from damp and frost, they are now shooting up strongly, and



Montbretia crocosmiiflora, showing habit of plant.

will, I hope, bloom again this summer. M. Lemoine is this year sending out, besides a fine form of one of the parents of these hybrids under the name of M. Pottsi grandiflora, two more new hybrids named Le Phare and Solfatare, of which I hope to be able to give a description in THE GARDEN in the autumn when they bloom with me. They both seem to be of quite as free-growing a nature as their brethren here figured, and will, it may be hoped, present some pleasing varieties of shade and colour. These plants were much admired by all who saw them in my

* Drawn by Miss Travers in Mr. Gumbleton's garden, at Belgrove, Queenstown, Ireland, August, 1886, and printed by G. Severyns.



NEW HYBRID FORMS OF MONTBRETIA CROCOSMÆFLORA
1 BOUQUET PARFAIT 2 GERBE D'OR 3 ÉTOILE DE FEU

garden last autumn, and were a most marked improvement, both in size of bloom and brilliancy of colouring, on any of the hybrid forms that had preceded them. W. E. GUMBLETON.

FRUIT GARDEN.

W. COLEMAN.

PACKING GRAPES.

Good Grapes, like other choice fruits, are often injured by indifferent packing for long journeys, the injury, if not to the berries, certainly to the bloom, in nine cases out of ten, being the outcome of temerity. Because Grapes, once valuable, are, or should be, beautifully coated with a delicate bloom, many people are almost afraid of touching them, and yet a moment's reflection should tell them that friction in transit is the main cause of all the mischief. Although for many years hundreds, if not thousands, of tons have been sent to all parts of the kingdom and the Continent, the methods of packing still are legion. When I was a youth, Henderson, the veteran, packing for transit by coach and rail, placed about 20 lb. in a square box, as tightly as one bunch would rest against another; then prior to putting on the lid he drew strings across to keep the shoulders up. Noted Scotch growers, packing for very long journeys, I am informed, fold each bunch tightly in a sheet of soft paper; place these packages, like pounds of Tea, in flat boxes, and wedge up with paper shavings. Growers about London, who never lose sight of their Grapes from the time they are cut until they are delivered by hand or spring vans, have a decided advantage over long-distance men, especially when the latter have to prepare for transfer from one railway company to another. The first use baskets of various shapes and sizes, but generally round, for the reception of the bunches; shoulders upwards and outwards, points in the centre. These bunches pass direct from the hand to the basket, when a tie to each stalk keeps them in place, whilst the tendency to wedge downwards prevents friction. A thin covering of paper to keep out dust finishes the operation, and the Grapes arrive without spot or blemish. The latter, myself included, adopt the plan followed by the veteran, and approved of by the leading Covent Garden fruiterers—less the troublesome process of stringing up the shoulders. The boxes I use for Hamburgs are 24 in. long, 14 in. wide, and 7 in., sometimes 8 in. deep, the depth being regulated by the size of the bunches. Fresh, sweet Moss, prepared as for Peaches, is used for padding the bottom, then two or three thicknesses of soft paper complete the preparation. Moss being used for tightening the Grapes after they are put into the box, it is necessary to allow at least one half of each sheet of paper to hang over the outside and ends of the box to prevent it from working in amongst the berries during the process. The box is then weighed, taken to the vinery, and tilted on its end at an angle of 45°. Cutting is then commenced, the first bunch being laid or rather set, shoulders well up in the extreme left hand corner; another goes into the opposite corner, and the third in the centre of the end forms the wedge. Tightness to prevent friction being the main object, bunches large or small are selected, and in this way the packing, row after row, goes on until the box is nearly full; it is then raised to a much sharper angle and allowed to descend with a sharp shock upon the table to carry the bunches and berries still closer together. More bunches then are introduced until a piece the size of a shoulder cannot be got in and the box is ready for weigh-

ing. The weight taken, the half sheets of paper are turned up, and being three-ply thick they will stand a little drawing inwards with the left hand to form a cavity for the introduction of Moss between the side of the box and the paper with the right. In this way Moss is firmly, but gently pressed in until all the berries brought suddenly together without friction are as tight as paving stones. When no more Moss can be introduced, these half sheets of paper are turned back to keep it down and form the commencement as it were of an arch, which prevents the shoulders from touching the lid, although the box in transit may be turned upside down. A sheet of tissue paper is then strained over the top; the lid, in one piece, is put on, lightly nailed and stoutly corded. Good Grapes should never be entrusted to delivery companies, neither need they be addressed "Till called for" or to be met, and the consignee is advised beforehand.

ORNAMENTAL FRUIT TREES.

I NEVER recollect a more beautiful show of fruit blossom of all kinds, for though unusually late, owing to the protracted winter and severe frosts in spring, yet the bloom does not appear to have suffered in the least, and we may reasonably hope for a good and fruitful season. The question of employing useful fruit-bearing trees in the pleasure grounds as ornamental subjects crops up from time to time, but the examples one meets with of trees actually growing and doing good service in the double capacity of useful and ornamental trees have hitherto been more the results of accident than design. From the great changes that have occurred in gardening matters during the last twenty years we may at least hope that the usefulness of any given tree will be no bar in future to its being honoured with the best place that can be given it in the ornamental grounds. Old customs and prejudices are rapidly giving place to new ideas. Trees that are not either useful or ornamental will be rooted up. It would be difficult to say which fruit tree is the most beautiful; all have their admirers. I have long since decided that the Apple bloom is the prettiest. Although this is not the time for planting Apple trees, let us note which is the most beautiful when in bloom, and again at the gathering in of the fruit we may note which makes the most striking effect on the tree. I think that trees that grow entirely unpruned are the most showy when in bloom, for although I have some bushes, pyramids, and espaliers lovely masses of bloom, they cannot equal the long, pendulous branches of the naturally grown standards. Lord Sutfield and all the Codlin type are very beautiful, and the Scarlet Goff is brilliant in spring and autumn, a good cooking Apple, but hard and sour as a Crab. For a fine tree, Elenheim Orange is difficult to beat, and a good Apple for all purposes. Deux Ans is one of the great orchard favourites in Hampshire, and makes noble trees; while for keeping up a succession of late bloom, Court Penda Plat is the latest, and certainly one of the best of Apples. It will be June before it is in bloom.

Gosport.

J. GROOM.

Late-keeping Apples.—"A. D." says (p. 438, May 14) that the problem of keeping Apples through a long winter is solved. He does not appear to have tasted the Apples—the one thing most needful. Such Apples may be kept and *seem* to be good when they have wholly lost their brisk, pleasant flavour and their wholesome and refreshing qualities! Our Apple-growing needs healthy change, but this way of showing autumn and early winter Apples with nothing but the good coloured skin to recommend them is only throwing dust in our eyes.—R.

Tomatoes.—The only way to gauge the success of any method of culture is to measure it. If Mr. Gilbert claims his restrictive method of growing Tomatoes as the best, let him test in that way and publish the results. If his method is the best, I will adopt it the day after I am made sure of it. Up to now (May 20) I have gathered fully 40 lbs. of

the common red Tomato, most of which has fetched 2s. and 1s. 6d. per pound to the trade, while foreign ones were selling retail at 1s. and 1s. 6d. per pound, and at the present date I have hanging about fully swelled, coloured or colouring, at least 200 lbs. more on sixty-one plants struck last October, and anyone can see them and judge who likes. That is nearly 1 lbs. of fruit to the plant, and it takes no account of quantities of small fruit newly set or just swelling. What are Mr. Gilbert's weights and number of plants, and how far on are his January-sown plants? Mine are all entering into full bearing, and some ripe fruits have been gathered. I would have gathered much more, but lately the fruit has ripened slowly owing to the dull weather, and we do not use much fire-heat.—J. S. W.

THE BEST TIME TO PLANT STRAWBERRIES.

SOME useful remarks on this subject recently appeared in THE GARDEN (p. 399). They were in favour of spring rather than autumnal planting, and, as is natural, they made the worst of the latter and the best of the former. No harm was done, for no doubt spring planting has its advantages, and it is equally certain that capital Strawberries are grown by both methods. My object now, however, is to point out a system of summer planting which is practised by Mr. Allan, of Gunton, and others most successfully, and to which, so far as I am aware, no objection can be urged. Its basis consists in growing the main crop of Onions a little more than double the usual width and intercropping the Onions with Strawberries so soon as rooted runners can be obtained either from forced plants or not.

None of the usual objections urged against autumnal planting can be urged against this, for, in the first place, it is really summer rather than autumn planting, if a sharp outlook is kept for the earliest runners. The soil of the Onion quarter is also proverbial for its hardness and solidity. This favours the rapid rooting and vigorous growth of the Strawberry plants.

As the latter grow into size the Onions ripen and are harvested, leaving the Strawberries in full possession, which furnishes them with abundance of space. The removal of the Onions and the scarification of the ground where they grow gives a useful fillip to the Strawberries. Should ground be scarce, as it mostly is in these hard times, a row of Lettuce or Endive may be run along on the late site of the Onions, and will yield nice cuttings of useful greens in the autumn or winter. Thus the same ground will have produced three good crops within the year, and the cultivator may almost be said to have got his Onions for nothing, so far as the ground is concerned. Though he does not grow so many Onions as by the usual and more close-cropping system in general use, yet the Onions are finer, so that there is less loss of gross weight than might be supposed, while the larger Onions, if sold, command higher prices in the market. As to the Strawberry plants, they almost equal, occasionally excel before the end of the season, those runners planted in the spring in the usual way. The Lettuces or Endive are another clear gain.

In cases where there may be any difficulty in obtaining the current year's runners sufficiently early, last year's runners pricked out into nursery beds may be drawn upon in the usual way. These, however, should not be planted till June, lest they should outgrow the Onions and lower the quality or lessen the bulk of this chief main crop. Strawberries grown thus yield enormous crops of first-rate fruit the following season, and may either be dug in after their first crop or allowed to yield a second, as considered most profitable. Beyond the first year there is nothing special in the culture or cropping. Some have thought that the residue of the Onion crop might affect the flavour of the Strawberries, but it does not, even when the above system is so modified as to grow fruiting runners abreast with the Onion crop. This may readily be done by planting the interstices with Strawberry runners from the nursery beds soon after the Onions are fairly up. Nice pickings of fine fruit of excellent flavour may be obtained thus the first season

without any sensible diminution of the main crop of Strawberries the succeeding season.

HORTUS.

STORE ROOMS FOR APPLES.

IN reply to "A. D." in THE GARDEN, May 11 (p. 437), respecting the mode of keeping the Apples recently exhibited by us, we have pleasure in giving the following description of our store. The room is built on the ground level, the outer walls of 9-inch brickwork. Inside this, wooden quartering is placed and lined with match boarding, facing the inside, and allowing a circulation of air between the woodwork and the walls. A light set of rafters is then placed overhead, lined underneath or inside with match-boarding. On this is laid about a foot thickness of straw thatching, and over this another set of rafters covered with tiles. A window is placed at one end with a double set of casements, one for the outer and one for the inner walls, a small ventilator being placed above it with movable shutters, a shutter also being hung over the window inside to exclude the light. It also has two doors, one inside the other. Internally it is fitted up with shelves 2 feet wide of thin close boards, which are placed 1 foot apart from the floor to the roof, the floor being paved and covered with cement. Previous to storing the fruit the shelves are covered with a thin layer of clean wheat straw. The fruit is then placed on the shelves, one, two, or three layers thick, a thin piece of board placed between each variety, and a label with the name in front. We do not cover the fruit with straw, and the less they are disturbed after this the better. Of course, they require looking over from time to time to remove any defective fruits.

As to temperature, on several occasions during the past winter it fell as low as 2° or 3° below freezing. But this with a low outside temperature does not damage the fruit in the least, provided that the room is kept close and the inside temperature is allowed to rise gradually with that of the outside. There is not the least difficulty in providing good sound Apples through the spring if the following essential points are attended to: first, to select the right varieties; secondly, to see that the fruit is thoroughly matured before gathering; and thirdly, to provide a suitable store in which to keep it.

To store Apples in bulk for marketing purposes, of course a much simpler structure than the one described above would answer all practical purposes, and those who have Apples of suitable varieties for keeping would find that a little outlay in this direction would pay them well. Our English growers are gradually learning the lesson, long ago learnt by our American cousins, as to the great importance of selecting the right varieties to fulfil certain definite purposes, and planting these and these only. With a little care in these respects our English growers would leave no room for Americans to supply our markets.

J. CHEAL AND SONS.

Crawley.

Preparing Strawberries for forcing.—I think I shall be in touch with most gardeners when I say my favourite plants for forcing have one crown only, well developed, and plump. Numbers of our forcing Strawberries are potted too early. Here I wish to describe the varieties which cannot be potted too early, and also the varieties which may. For our first earlies we grow La Grosse Sucrée, which has no inclination to split its crown. Our second batch is Sir Charles Napier, which, potted at the same time as La Grosse Sucrée, will grow into half-a-dozen crowns, which I think a bad omen. British Queen is also one which requires early potting; by this, I mean from the 20th of July to the 1st of August, and what I look upon as late potting is from the 15th to the 25th of August. A great favourite variety with me (to ripen in February) is Laxton's King of the Earlies. Potted late in 4½-inch pots, they bear quite charming little fruit, and the flavour is excellent. For the latest of all Strawberries I look upon Oxonian as best, either for forcing, or for growing out of doors. It is large

in size and magnificent in colour; in fact, a model of what a Strawberry should be, but it is not a quick grower. My plants of this variety for pot work next year are late runners, now potted and under glass in 3-inch pots; when they get well established we pot them in their fruiting pots, and use 8-inch pots. They make splendid specimens, keep their crowns entire, and so are in the best condition for forcing purposes.—R. GILBERT.

RED SPIDER.

ON one point only should I decline to agree with Mr. Coleman, when writing on the above subject in THE GARDEN, May 14 (p. 436), and that is in the use of sulphur to eradicate red spider. I have a firm conviction that the remedy in this case is even worse than the disease, and that the sulphur fumes are even more injurious to plant than to insect life. As in the case of many forms of aphides, red spider has its favourite haunting grounds. One may hardly find a trace of it out of doors in some places, whilst in others, during a very hot dry summer the hedgerows will be nearly skeletonised by the pest; and under these circumstances the gardener must be very diligent to keep out and indoor fruits free from its ravages. "How do you manage to keep your Peaches so free from spider?" I asked once in a garden that I was looking over, and the reply was, "an occasional slight syringing is quite enough to keep them clean." I should like to say the same; it is not, however, slight syringings, but very careful winter cleaning, repeated scalding of pits in the case of the renewal of Melons, Cucumbers, Beans, &c., and heavy and persistent drenchings of foliage in the case of in and outdoor Peaches that are required in our case to keep the pest in check. With abundance of spider on outdoor hardy vegetation (apart from all garden considerations) through the summer, old walls that bear the impressions of nearly 200 years' mauling, and three-fourths of the houses blue-heated, I may claim to have a tough battle to fight with spider, and may also claim to have invariably kept the upper hand of it. In the case of pits used for growing Melons, Cucumbers, and French Beans, a thorough scalding is given before starting, every nook and crevice being well saturated with boiling water. I never find the insect troublesome in the pit devoted to Cucumbers all through the growing season, the state of humidity essential to the well-being of these not being relished by the spider; but as soon as Melons and Beans are kept a little on the dry side it makes its appearance, and the only remedy is to push fruits and vegetables rapidly along and clear them out as soon as possible and again have recourse to unlimited supplies of boiling water before renewal. In the case of Peaches and Nectarines both in and outdoors, as soon as the first signs of spider are seen, the trees get a drenching with the mixture already referred to in THE GARDEN (November 27, 1886, page 195), taking care to attack on all sides, that every particle of foliage may get a thorough wetting. Outdoor Peaches had their first dose early in April, for on looking over the trees before putting on the netting I found the spider on the move, and consequently took prompt measures to check its increase. Strawberries (which we have to grow in vineries) get a good dipping before they are taken inside, and if spider show itself on them before the fruit is over, they are removed to some cold frames or pits. In the case of Vines, we act almost entirely on the principle that prevention is better than cure; all woodwork and glass being thoroughly washed, and walls, floors, &c., scalded before the Vines are started, and the temperature during the spring months is kept rather on the low side, it being far better in the case of blue-heated structures to be content with a decline of 5° on very cold nights than to maintain the usual figures with a dry scorching heat. Such are the remedial measures and precautions adopted in our case to keep spider in check, and it will be seen that sulphur is not included in the list. If anyone can conclusively prove to me that foliage that has been badly attacked with spider shall, after the application of the sulphur to the pipes, be quite free from the pest, and itself quite uninjured by the

sulphur fumes, I will be a convert to this particular remedy, but not until then. E. BURRELL.

SUPERIOR HARDINESS OF YOUNG STRAWBERRY PLANTS.

THIS has been strikingly illustrated in an accidental manner during the long and trying winter hardly yet ended. While I write a collection of about a dozen sorts of Strawberries, planted out on a piece of ground for trial, is before me. After testing and proving them a press of other work prevented the runners being trimmed off in the usual manner; hence they have passed through the winter with runners and old plants intact. On looking at them recently the runners were so fresh and strong, and the old plants amongst them so much crippled, as well as those in the general quarters, that it was determined to leave the runners intact, and now this mixture of old and young plants promises to be the most fruitful piece of Strawberries in the garden. "Slovenly culture!" some of your most fastidious critics will cry. Just so; but this is not the point; neither does the hopeless jumble of sorts matter much in this case, as the sorts are kept true in another place. But the fact of those young plants passing through the winter without the loss of a leaf, while all the older ones were defoliated, is most suggestive.

Neither does this one sure and certain proof of the superior hardiness of young Strawberry plants stand alone, for it so happened last autumn that certain changes in the movements of the family led to several hundreds of young plants prepared in pots for forcing to being planted out in the open ground. These, like the runners in the collection, have also escaped with their leaves intact, and promise to be the second best crop to the runners. Can it be that the superior hardiness of runners over old plants was known to our fathers, and was one of the causes of their at one time growing Strawberries almost wholly in beds, especially in the north of England and Scotland? One thing is certain, that in many of the most fruitful examples of the bed system of Strawberry-growing the runners largely supplemented the produce of the older plants. The plants in the crowded beds also tended to keep each other warm. And as to produce from a given area, I have never yet seen my first experience exceeded in weight from beds of the Grove End Scarlet, Caroline, and Keen's Seedling. HORTUS.

Grubs on Raspberries.—The largest grower of Raspberries about here has all his canes infested with a small insect, which you will find snugly deposited inside the stem of young bud sent herewith. I would be glad to hear what it is, also any remedy for its destruction.—ANON, *Hirksworth*.

* * * The Raspberry shoots you sent are infested with the caterpillars of a small moth (the Raspberry shoot borer, *Lampronia rubicella*), which belongs to that destructive family, the Tineide. The caterpillars will soon be turning into chrysalides, from which the moths will emerge in the course of next month. From the eggs which they will lay another generation of caterpillars will be hatched. To prevent this cut off all the affected shoots at once and burn them. When pruning the canes cut them well back and remove any rubbish round them, particularly dead leaves, stumps of canes, &c., for the caterpillars are supposed to pass the winter in such places. G. S. S.

SHORT NOTES.—FRUIT.

Monstera deliciosa.—We have received from Mr. Fish a fruit of *Monstera deliciosa*. It was perfectly ripe and of good flavour.

Tomatoes.—Would some of your readers kindly state what may be considered the average weight of crop per plant from the large red Tomato? The plants have now three sets of bloom, and are in perfect health, and trained on the single stem system.—G. A. S.

Pears in May.—So few of the late Pears are worth cultivation, that to find a really good, juicy, well flavoured, and eatable Pear fit for the table in the middle of May is worth recording. Such is Belle des Abès, a Pear of the first quality, and averaging about three to the pound. I obtained my trees from the nurseries of F. Jamin, Bourg-la-Reine, near Paris. The fruit are excellent, from espalier

trees, and this variety should be more extensively cultivated. —W. NEW FOS, *Hills, N. Corkon-Croat.*

Apple Norfolk Beaufin.—Mr. Crook, The Gardens, Farnborough Grange, sends us some very beautiful samples of this fine late-keeping Apple. It is generally of a dull bronzy hue, but the samples sent were of a beautiful bright red colour. He also sent Sturmer Pippin and Alfriston in good condition.

SEASONABLE WORK AMONG FRUITS.

FIGS.

A CHANGE to milder, if not brighter weather will now favour the admission of more air by day, and a liberal chink on the pieces of the ventilators through the night. Fire-heat to a certain extent will still be necessary, as colour and flavour until we have much warmer nights cannot be secured without it, neither can the second crop of fruit, now a good size, be prevented from dropping under sudden fluctuations. If the latter had set thickly they should be well thinned before the trees feel the strain of the crop; and the better to increase their size, good warm diluted liquid may be supplied to the roots at every watering. Top-dressing too, especially to trees in pots and contracted borders, will also be found a great help, as not only will it prevent the surface roots from drying out, but, being well charged with ammonia, it will produce conditions favourable to the progress of the second and the finishing of the remainder of the first. The most difficult operation just now is syringing, for much as the swelling fruit and foliage enjoy copious drenchings, the ripening fruit colours and attains its best flavour; and, moreover, keeps and travels best when direct syringing is discontinued. The trees, however, being subject to spider, all stems and available parts of the foliage must be freely syringed at least once a day, and a general bath may always be given after picking in a little closer than usual. Upon this give-and-take principle, the two crops may be managed, and spider, although the season has been harsh and bad, may be prevented from spreading. Next, as to stopping, thinning of the shoots and training, the mode of procedure will depend greatly upon the size of the trees and the space at command. Pot trees, be they pyramids or bushes, must be more or less pinched or stopped to keep them within bounds, but, with the exception of an extra cross-shoot, growths of ordinary strength should not be pinched more than twice, and may not require it more than once, as every growth so checked must make another, and that must have time to ripen, otherwise it will be of little use for next year's forcing. When trees are trained on trellises and all shoots that have reached the extremities are well thinned out at the winter pruning, the extension system of laying in suits them best, as they keep showing so long as they are growing, and although the late shows are ribbed off before they are larger than nuts, their period of ripening can be prolonged or reduced at pleasure. In all cases side growths and weak spray should be removed, as good Figs cannot be expected where sun and air are excluded.

Succession houses.—The trees in these will take any reasonable amount of good food both in the way of mulching and stimulating liquid, and the syringe may be regularly plied twice a day. If not already thinned, such kinds as the fruitful Brown Turkey should be taken in hand at once, and freely divested of superfluous and imperfect fruits. When thinning all other fruits we usually, I may say always, take away the smallest and leave the largest, but in this, as in some other respects, the Fig requires distinct treatment, for if we leave all of one uniform size we have a glut and a gap; therefore, so long as they are perfect in form and well placed, some large and some small ones should be left on every shoot. Here, again, pinching should not be indulged in to any great extent, as it is much the best to secure one full crop and a trellis full of ripe points and trust to cases or walls for the autumn supply. In times past many people were too fond of pinching, especially in late houses; now they secure better crops and keep the trees in better order by pruning back every alternate shoot to a dormant bud and laying in young growths for succession.

Young stock.—Spring-struck cuttings must be pinched as soon as they have made 9 inches to 12 inches of growth, more or less to suit the mode of training. This first pinching will induce side breaks, and when they get into free growth a moderate shift may be given to the plants. It is possible to grow a cutting into a fruiting tree in one year, but unless urgently wanted a little more time is an advantage, as firm, short-jointed, well-ripened plants, established in 6-inch or 7-inch pots and with three or four breaks, make the best foundations. These, if shaken out in March, re-potted and placed in bottom heat, will now be fit for the final shift into their fruiting pots, which should not be large, as ripe wood and roots are of more importance than size, especially when young bushes are wanted for early forcing.

STRAWBERRIES.

If not already done, this troublesome family should now be ejected from Peach houses and vineries, and placed in snug pits or frames to finish out the season. This clearance made, a thorough cleansing of all the shelves with strong soap and water must follow, and a wash of quicklime and sulphur will make the walls sweet and clean for the season. In many places the late vinery in which the leafage is late is used for May Strawberries, and dearly they are paid for, as many houses of Lady Downe's suffer through spider attacking the leaders and working gradually, I may say rapidly, downwards at a time when the syringe cannot be laid on freely. Strawberries, of course, must be grown, but light pits are the most suitable places for them. If these were built upon the span with shelves facing north and south the fruit might not only be grown, but retarded for a considerable time, and the flavour would be greatly improved.

Late hatches in various stages from flowering to swelling will now take an abundance of water, and, where the fruit is set, liberal syringing. The fruit upon these should be well thinned and tied to, or supported by small sticks to keep it well up to the sun and air; otherwise, although well coloured, it will be found acid, as fire-heat, we hope, may now be dispensed with. If the plants are plunged in large masses they must have plenty of room for the full development of their foliage; but instead of moving, and so disturbing the roots of all, their wants may be met by taking out and replugging every alternate row. Should mildew put in an appearance, the plants may be well syringed on mild evenings with clear sulphur water, which must always be used in a clarified state. Some varieties are very subject to mildew, and I have heard people say they have given up growing this or the other, apparently overlooking the fact that nine out of ten cases of mildew amongst pot plants originate in the water-stinted open quarters. When mildew gets into a garden, a fresh start on deeply trenched, heavily manured ground with young runners from a distance should always be made, but on no account should runners from mildewed beds be pegged down for forcing.

Future work.—If any of the forced plants are intended for planting out, they should be in the ground this month. A good preparation is more than half the battle. The balls should be thoroughly moist, divested of all corks, and slightly reduced, to set the coiled roots at liberty. Firm planting, heavy mulching, and copious watering will complete the operation. Last year's runners put out in August for propagating from should be divested of all their flowers and well watered to encourage vigorous stock. It is yet early to commence preparations, but time flies; therefore advantage should be taken of wet days and other favourable opportunities for getting a supply of clean pots and corks ready for use. The compost, too, may be prepared and thrown up in a heap in the open air, where a good covering of fresh stable litter will improve and ripen it, especially if bone-dust or other slow fertilisers are introduced.

CHERRIES.

Houses in which Cherries are ripe may now be kept cool and airy, moderately moist, and certainly safe from birds. I have found cast-off pilchard

nets the cheapest and best material for this purpose, as they keep out small as well as large birds, and whilst admitting light and air they form an excellent shade when cast over the roof. Cherries will keep for a long time in a dry, cool house, always provided the roots are moist and well mulched, but their season can be considerably prolonged by light shading that will break the rays of the sun without excluding the air.

Later sorts, including the best Bigarreans, may still be syringed and liberally supplied with water. They must not, however, be exposed to checks, especially at the roots, as giving and withholding water is one of the most common causes of cracking. A light, not over-rich mulch will keep the roots properly moist against a daily increasing summer temperature and plenty of air will prevent moisture from hanging about the fruit. To colour Bigarreans and other large-leaved sorts properly, they must have plenty of light as well as air; therefore, the better to secure this important point, thin winter training should be insisted upon, and all useless summer spray must be kept thoroughly under hand. Insects should be completely destroyed before the Cherries approach the ripening stage; the most troublesome are black and green-fly, which cannot well be killed without the aid of Tobacco or a decoction of Quassia, and as either of these is liable to give the fruit an unpleasant flavour it is unnecessary to say this work must not be left until the eleventh hour.

PLUMS.

These and Cherries so far have succeeded very well together, but the ripening of the earliest of the latter renders it necessary to separate the two or moderate their treatment. Isolation, however, is better than moderation, as Plums may be freely syringed for some time to come, and it is a difficult matter to syringe one part of a house without charging the whole of the atmosphere with moisture, which, as all Cherry forcers know, sometimes works serious mischief in a few hours. The treatment of early forced Plums in no way differs from that of other orchard house trees. Cribbed and confined to pots, they are entirely dependent upon the hand of man for their daily wants; therefore, being free livers they must have the run of good top-dressing, fresh and often, and liquid at every watering. The syringe, too, may be freely applied; indeed a thorough flooding of the fruit will do less harm than a flush of spray, but the water must be soft or free from lime. Forced Plums will stand a strong heat after they are stoned, but they do not respond; therefore to have them ripe early they must be started early, with an abundance of air throughout their season of growth.

Late houses containing Golden Drop, Jefferson's, Gages, and others have had an excellent time for the setting of the fruit. As some of these, especially the first, set in immense clusters, they should be freely thinned with a pair of Grape scissors, a few as a matter of course being left to compensate for dropping. If the trees are planted out and trained upon trellises, the spray must be constantly pinched to prevent waste, and at the same time to let in light and air, all leaders and necessary shoots being regularly tied in the same as Peaches. Mulching of some kind will be necessary, but its quality must be regulated by the age of the trees and the crops they are carrying. Old trees will stand a very liberal dressing of good rotten manure, not once, but two or three times in the course of the growing season. Young ones, on the other hand, although bearing equally good crops, might push a growth which would barely ripen. To these it is just possible the best of all non-conducting coverings will be found in stable litter or a portion of an exhausted Mushroom bed, anything in fact that will absorb and give off moisture without producing a gross habit of growth.

PEARS.

Although the cultivation of Pears under glass dates back to the erection of the earliest orchard houses, it is to be regretted that this mode of growing the very choice varieties has not made more progress. Worked on the Quince stock, they are

worth growing if only for their bloom; but when it is borne in mind that these snowy pyramids in due course produce fruit of the largest size and of the finest quality, surely all dwellers in cold, bleak districts might find a set of trees not only enjoyable, but profitable. It is now too late to pot trees; not so to obtain them already established from the trade, and having a full summer before us they might be shifted into larger pots, and, under cold house treatment, grown into marvels of fertility by the autumn. Another, and perhaps a less troublesome, plan would be to visit a good fruit-tree nursery, and mark a set of trees root-pruned last autumn for lifting and potting in October. Although the past winter and spring have been unusually severe, bush Peaches in a glass shed have set well with me, and where these succeed one is safely within bounds in saying Pears will do also. We at one time thought they were quite as impatient of fire-heat as Plums and Cherries; but this is hardly the case, as northern growers give them a climate equal to that of the south of France, always with plenty of air, and the size and quality of their fruit are all that the most fastidious can desire.

Pears in pots or planted out under a glass roof—which should be movable, as the latter cannot be turned out in winter—require nearly the same treatment as Plums; that is to say, they should be regularly pinched to induce the formation of fruit-buds; but the first pinching should be delayed until the growths are pretty well set, otherwise they will produce spray without end instead of flower-buds. The Quince stock enjoys rich living, solid and liquid, and produces hard gritty fruit where these things are withheld from it; it also does best and lasts longest when the union is close to the roots and buried beneath the soil or mulching. The selection of varieties is entirely a matter of taste, which can best be settled by the grower. Autumn and early winter sorts in districts where Pears can be grown at all should be sparingly represented, and late ones duplicated. New late Pears now are numerous, and many, no doubt, very good; but I should not object to a large houseful of Josephine de Malines, Winter Nelis, Thomson's, Knight's Monarch, and Easter Beurré. They are old, but they will take a lot of beating. W. C.

May weather.—Never was the following on the merry month of May more provokingly appropriate than on the 20th of this May:—

The skies are dull, the winds are chill,
No flowers are to be seen,
With branches bare, reluctant still
To wear their robes of green.

Alas! indeed, we only took the coverings off our fruit trees on the 19th. The wind veered further west and was a little softer, and so off the protection came, exposing to the blast a fine crop of Peaches, Nectarines, and Apricots. I am almost afraid to look at them to-day, after seeing and reading about the wreck, ruin, and litter made by the storm. More like November than May, is a very mild way of describing the storm of yesterday. The havoc made on land and water, in field and garden, in town and country, is something dismal. Ships wrecked, boats swamped, houses, buildings, and tents blown down or torn to rags; fruit and other trees stripped bare of blossoms or torn up by the roots; flowers beaten down level with the ground with icy cold floods of rain, cut into fragments with hail or covered over with snow. Such are some of the cultivator's experiences this 20th day of May. Unless winter ends soon it really seems as if it would run on until midsummer, and that we shall have to catch our crops as best we can in the month or so when the sun must needs melt the ice and drive away the hail and the snow.—D. T. F.

P.S.—My daughter writes from Fontainebleau, France, 7 a.m. Friday morning: "Torrents of rain, high wind and bitterly cold. It is just like winter and we all shiver. Weather still horrid, and the spring is with much difficulty slowly crowning the forest with verdure and fragrance." So that we are experiencing a very wide wave of cold.

FERNS.

W. H. GOWER.

LOXOMA CUNNINGHAMI.

THIS is a handsome, distinct, and at the same time a very remarkable Fern, and is the only member of the genus hitherto discovered. It is a native of New Zealand, where it may sometimes be found in moist woods. According to Sir Joseph Hooker, it is found in the Northern Island only, near the falls of the Keri-Keri River, at Coromandel, at Waitemata, and on the river Wangarei. Although there is but one recognised species, it is remarkable that specimens we have received from one district are invariably glaucous beneath, whilst the form we originally received is quite plain. If this character remains constant under cultivation, it surely will be sufficient to establish a varietal name for garden purposes. The fronds rise from a creeping rhizome, which is clothed with reddish brown hairs; they are triangular in outline, three or more times divided, from 1 foot to 2 feet high, coriaceous in texture, bright green on the upper side, slightly paler below in some plants; in others the whole under-side is of a milky hue; the involucre are situated in the notches of the pinnae and are reflexed. The plant should be fastened upon a block of sandstone, and its rhizomes surrounded with (not buried in) rough fibrous peat. It requires an abundant supply of water, and we have found the only position in which it thrives is in a close case with Filmy Ferns, although, from the consistency of the fronds, one would imagine it capable of withstanding a dry atmosphere. The plant has never been sent home in any quantity, so that it unfortunately is little known even in the best collections of Ferns. We have never been successful in raising this plant from spores; and should much like to hear if seedlings have been obtained in this country.

OUR NATIVE FERNS.

THE MOST DISTINCT VARIETIES OF THE MALE AND BUCKLER FERNS.—The variability of most of our native Ferns is characteristic, and affects some kinds to a much greater degree than it does others which are comparatively, or sometimes even totally,



The Broad Buckler Fern (*Lastrea spinulosa*).

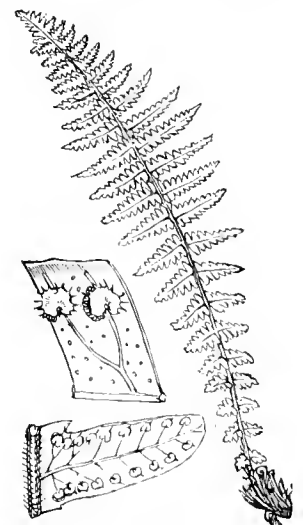
free from variations. Although such species as *Lastrea spinulosa*, *cristata*, *annula*, *rigida*, *remota*, and *palustris* may be said to have entirely retained their original form, from which no deviation worthy of special attention has been noticed, the Mountain Buckler Fern (*Lastrea montana*) has shown a certain tendency to sport, and has produced a few varieties, some of which have been considered of

sufficient importance to occupy a permanent place in collections, and to deserve the careful attention of the late Mr. Thomas Moore, who named and described most of them. Among those we must first note its crested form (*Lastrea montana cristata*), whose fronds, as large as those of the species, have their apex beautifully tasselled or crested; the same character is also apparent at the points of all



The Rigid Buckler Fern (*Lastrea rigida*).

the pinnae, which are equally crested, but of course to a less degree, though sufficiently so to render the plant very attractive. Then there are the crisped and truncate forms, the first of which, *L. montana crispa*, has its pinnules or secondary divisions slightly pinched or puckered inwards, giving the whole frond a rather wavy or crisped appearance; whereas in the second, *L. montana truncata*, the fronds, of the same length and breadth as those of the species proper, have their points, and also the points of each primary division or pinnae, abruptly ended, as though bitten off, and the point of the mid-rib of each projecting awl-like beyond the foliated part of the frond. But the form of the Mountain Buckler Fern by far the most distinct, and also the most interesting, is that known under the name of *L. montana Nowelliana*. This thoroughly permanent variety, originally found in North Wales, is of so extraordinary a character, that anyone only moderately acquainted with the species

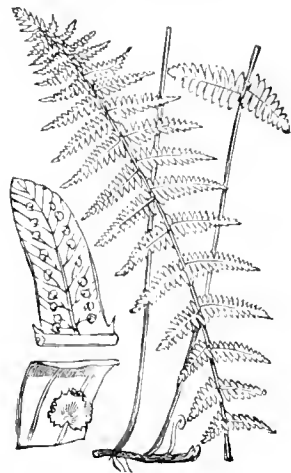


The Mountain Buckler Fern (*Lastrea montana*).

would be puzzled to say to which type it is related, as so very little possessing the characters belonging to the species is left. Its fronds, which vary from 18 inches to 24 inches long and from 4 inches to 6 inches in breadth, are furnished with very narrow pinnae and pinnules, extremely abbreviated, variously eroded and crenulated, often curiously hooked and horned. This permanent departure

from the type is all the more remarkable that *Lastrea montana* is generally accepted as one of the species of Buckler Ferns very little given to variation.

THE BROAD PRICKLY-TOOTHED BUCKLER FERN (*Lastrea dilatata*) has only produced a few varieties deserving of special notice, but some of these are truly remarkable; such, for instance, as its crested and crisped forms, the former (*L. dilatata cristata*) differing from the species solely by its broad, oval fronds, very spreading, having at their point and also at the points of many of their primary divisions once or twice-divided short, broad, flattish crests. The variety *polydactyla* is still an improvement on this curious form, showing a much greater development of the crests, which are disposed with constant regularity on each side of the frond. The crisped form, *L. dilatata dumetorum*, is a small-growing, very pretty variety, whose fronds, seldom exceeding 10 inches to 12 inches long, have a particularly pleasing, crisp appearance, owing to the upper surface of their secondary divisions being of a pinched and puckered nature, quite distinct from all other known varieties. Among the several diminutive forms of dwarf habit deviating from the original *Lastrea dilatata*, one of the most interesting, on account of its neat, tufted habit and of the peculiarity of its growth, is the branching form *L. dilatata ramosa*, which usually produces fronds either branching-stalked and then twin-fronded, or branching half way up or near the point



The Marsh Buckler Fern (*Lastrea palustris*).

with secondary divisions crispy, closely set, overlapping, and spiny-toothed. We have in *L. dilatata lepidota* a Scotch variety of great decorative value, and which appears to have entirely lost the characters belonging to the species from which it is issued, as it is of a dwarf habit, and its lovely fronds, which seldom attain more than 10 inches in length, are very spreading and almost triangular in shape and quadripartite, or four times divided, near the base; the whole fronds being thus finely incised through the ultimate or last divisional parts being very small, the plant possesses a very elegant appearance, totally different from that assumed by any other form of *Lastrea dilatata*.

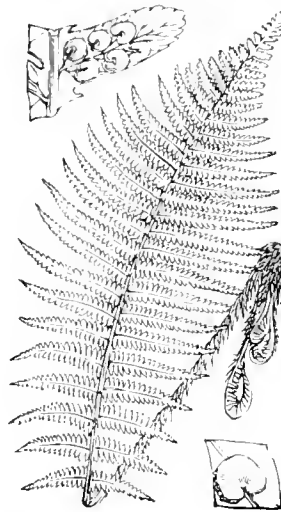
The common Male Fern, however, is of all the species of *Lastreas* that which is credited with the greatest number of abnormal forms of all sorts, some of which are extremely beautiful. That species has under cultivation shown a greater tendency than any of the others to produce crested forms which are very constant, and though very numerous are also exceedingly ornamental. The *Lastrea Filix-mas cristata*, certainly one of the most distinct and deservedly very popular forms, was first found in a wild state in the west of England, and although one of the oldest varieties known, it is also justly acknowledged as one of the most decorative, and one whose good standing qualities annually increase in value, especially where the plant is subjected to pot culture. This variety attains a size about equal to that of the common

species, but it is of a much more graceful habit, as each spreading frond, 8 inches to 9 inches wide, is arching, from the apparent weight of its often very large and many times short-branched terminal crests. Each of the primary divisions end in a



The Crested Buckler Fern (*Lastrea cristata*).

similar, though smaller branched crest, thus forming on the outline of the frond a border of pretty crispy miniature crests. *Lastrea Filix-mas cristata angustata* is a very elegant form of the variety just described, but with fronds very narrow and the pinnae so reduced as to form two almost parallel rows of compact tassels, diminishing in size as the frond tapers to a terminal crest. Among the other numerous crested forms of the Male Fern, one specially notes *Lastrea Filix-mas Jervesi*, *furcans*, *Iveryana*, *Mapplebecki*, and *caudata cristata*; but the most striking variety is undoubtedly that called *grandiceps*, which is the most gigantic of the whole section of crested kinds. It grows to a size quite equal to that of the species, its fronds often measuring 24 inches high by 5 inches or 6 inches in width, but their apex is densely ramose and crested in a different way to those above described, and, indeed, in a completely distinct manner from any other known variety, inasmuch as the cresting process begins from a few inches from the top of the frond, where the midrib branches three or four times, each of the ramifications being furnished with pinnae closely set and crested like those of the lower part of the frond, the top of which is gracefully pendulous. Of the equally numerous non-crested forms of this Fern, one of the most distinct is *Lastrea*



The Male Buckler Fern (*Lastrea Filix-mas*)

Filix-mas Bollandiae, a variety with somewhat wavy fronds, whose primary divisions are deeply cut into secondary ones, which are deeply toothed and connected by a leafy wing to the midrib. *Lastrea Filix-mas foliosa* is another exceedingly distinct

variety with short pale green fronds borne on naturally short stalks. It possesses a densely leafy appearance produced by the overlapping nature of the primary divisions, as well as by the slightly twisted character of the pinnales, which in some cases entirely conceal the midrib. In the variety *Pinderi* we have a nearly erect form whose fronds possess a peculiarly narrow outline on account of their being short-stalked, about 4 inches wide in the middle, and tapering above and below. The small or dwarf-growing forms of the Male Fern are best represented by the varieties *pumila* and *Schofieldi*, neither of which seldom exceeds 4 inches in height. They have short-stalked, nearly erect, lance-shaped fronds of a dark green colour, with their points usually once or twice forked.

S. G.

ORCHIDS.

W. H. GOWER.

RESTREPIAS.

THIS is a small-growing genus nearly allied to *Pleurothallis*. It contains numerous species, all of which are dwarf in habit, and although they cannot be classed with showy Orchids, they are, nevertheless, exceedingly curious and interesting. *Restrepias* are all natives of Tropical America, and are found growing at considerable elevations. Under cultivation they thrive under the same cool treatment as *Masdevallias*, and for this reason, as well as the fact of their being dwarf in growth, they will be found fit subjects for Wardian case culture. These plants should be fixed upon a small block of wood with a little *Sphagnum Moss*, or placed in a very small basket and suspended. The half of a Cocoa-nut shell forms a capital receptacle for them, and, indeed, many other small-growing Orchids that, like the *Restrepias*, do not take kindly to pot culture may with advantage be grown in these. A moderate supply of moisture is requisite during the whole season, as they are continually growing more or less. The following species deserve more extended cultivation than they have hitherto received:—

R. ANTENNIFERA.—The best form of this plant produces large and handsome flowers. The species was originally discovered by Humboldt in New Grenada, where it grows upon the trunks of trees, at an elevation of from 6000 feet to 8000 feet. It has stem-like pseudo-bulbs, which support a single ovate-oblong, leathery, dark green leaf, the whole plant seldom exceeding 8 inches or 9 inches in height. The flowers are produced in great abundance, upon long foot-stalks which issue from a rough scaly spathe at the base of the leaf; these are exceedingly curious and very persistent. The dorsal sepal is lengthened into an erect tail-like appendage, yellowish-white streaked with purple; the lateral ones being broad and long, connate for the greater portion of their length, but bilobed at the tip, having the appearance of a large lip; reddish crimson in colour, profusely dotted with purplish lake. Petals small and narrow, and, like the dorsal sepal, clubbed at the apex; lip small, same colour as the lower sepals. It is almost a perpetual bloomer.

R. ELEGANS, as its name implies, is a beautiful form, similar in habit and appearance to *antennifera*, although the flowers are scarcely so large. They are borne erect upon long foot-stalks; dorsal sepal tapering into a clubbed tip; lower sepals joined to nearly the apex, yellow within, tinged with purple on the outside, streaked with lines of close-set, large reddish purple spots; petals filiform, and slightly clubbed at the tip. It grows at some 6000 feet elevation in Caraccas.

R. VITTATA is a smaller growing plant than the preceding, which it otherwise much resembles, and under which name it is frequently to be found in collections; the large connate sepals are yellow, ornamented with lines of purple spots. Colombia.

R. LANSBERGII. This is a still smaller plant, but so exceedingly beautiful that it well deserves the

attention of the amateur for culture in the house. It flowered with us for the first time in England about the year 1851, and it has remained a favourite ever since, notwithstanding the numbers of large showy flowered Orchids that have since been imported; the flowers are produced at the back of the leaf, dorsal sepal and petal clubbed, the latter pendent, and, like the lateral sepals, bright shining yellow, dotted with purple. It comes from Guatemala.

CATTLEYAS AND ODONTOGLOSSUMS AT THE WOODLANDS, STREATHAM.

THE Cattleya house in Mr. Measures's garden just now presents a perfect galaxy of beauty. Imagine a display of upwards of 1500 expanded blooms of *Odontoglossum* (*Miltonia*) *veillardii*, and about an equal number of buds just opening, some of these being very fine varieties both as regards colour and size. On some of the plants are highly coloured flowers, measuring over 1½ inches across, whilst their vigour is well exemplified by one plant with but a single growth, which is bearing twenty-seven enormous flowers. Amongst them is a distinct form which leads one to hope that we have not yet seen the last of the variations of this species. Although we have in *O. v. Measuresianum* a pure white flower, and in *O. v. superbum* a flower of intense colour, the variety now flowering at The Woodlands, and which has not yet been distinguished with a varietal name, has the lip dotted all over with deep purple spots. These plants are grown all the year round with the *Cattleyas* and *Lælias* in a house kept at an intermediate temperature between the East India house and the houses devoted to the *Odontoglossums*, *Masdevallias*, and other high mountain Orchids. These *Odontoglossums* are exposed to strong light, but are never sprinkled overhead, the necessary moisture being supplied by pouring water upon the stages and damping the sides of the pots. The *Cattleyas* and *Lælias* with which the *Odontoglossums* are associated are treated exactly in the same manner, the robust growth and the abundance of flowers affording ample proof that their surroundings are congenial. Of these there are nearly 400 blooms open, the kinds being chiefly *C. Mossie* in great variety, *Lælias purpurata* and *elegans*, *Cattleya Skinneri* and its lovely pure white form (*alba*), *C. Aclandii* and *intermedia*, and *C. Mendeli*, amongst which are some remarkable forms, including the grand variety known as *C. Mendeli Duke of Marlborough*, with flowers upwards of 7 inches across, the sepals and petals, which are delicate lilac, whilst the large-frilled lip measures more than 4 inches over, and is wholly rich crimson-purple, this colour extending far back into the throat, where it is flushed and streaked with orange. *Odontoglossum citrosum* still continues to constitute a remarkable feature in this garden in a small, very light house, in which there is no centre stage. These plants, on which there are about a hundred long spikes of bloom, are suspended from the roof, forming a charming grove of beauty; the colour varies in different plants, from one with pure white flowers to one with rosy sepals and petals, with a large, almost crimson lip. This is the second batch of these plants which has flowered this season with Mr. Measures, the succession being obtained by keeping a portion of the stock cool and very dry. Another rare and remarkable plant blooming here is *Cypripedium Wallisi*, which is a near ally of *C. caudatum*, the sepals being pale yellow, lip almost white, and the long, tail-like petals are 18 inches in length and are still growing. The brilliant flowers of various *Masdevallias* are specially attractive, but one form of *M. Veitchii* is remarkable, and perhaps unique; the flower is large, the ground colour being yellow (of as bright a shade as the blooms of *M. Davisii*), the dorsal segment being flushed with purple, the same colour extending in a single line down the lower segments.

G.

Odontoglossum Harryanum.—This is a rare and extremely handsome species, and quite a departure from the ordinary type of the genus. It flowered last autumn for the first time in England with Messrs. Veitch, of Chelsea. The spike is very

stout, bearing twelve to fourteen large flowers, which measure some 4 inches across; sepals and petals chestnut-brown, streaked and transversely barred with rich yellow; lip oblong, three-lobed, white heavily streaked with bluish purple, pure white in front; crest much fringed, bright yellow. This plant appears to be a vigorous grower, in habit much resembling *O. Halli*. A quantity of this species recently imported was sold by Messrs. Protheroe and Morris, the prices ruling high. Its native country is at present known but to very few.—G.

ROSE GARDEN.

T. W. GIRDLESTONE.

NEW ROSES FROM IRELAND.

A HANDSOME coloured plate, in which their new Hybrid Perpetual Rose, Earl of Dufferin, is represented as a very finely-formed, dark shaded crimson flower, has been issued by Messrs. Alex. Dickson and Sons, of Newtownards, Ireland.

Of all flowers probably none is so difficult to represent exactly as a modern Rose, and in despair of ever making an artistic presentment in colour, those who prepare figures for reproduction in the form of coloured plates are sometimes liable to paint what they think the florists would like to see rather than that which actually exists. In the present instance, however, no exaggeration need be feared, as, considering the number of first-class certificates (not less than six) that have been awarded to Earl of Dufferin, and its unprecedented record of winning the premier prize as the best bloom in the show on two occasions actually before it had been distributed, this variety must be very good, and the portrait is additionally likely to be a characteristic presentment, having been drawn from flowers from cut-back and not maiden plants.

In an interesting letter on the subject of seedling Roses, Messrs. Dickson mention that Earl of Dufferin was raised in 1882 from seed produced by a cross between Horace Vernet and Charles Lefebvre—parents which, at any rate, should ensure flowers of fine quality and colour in their progeny; and, like all Roses of dark (or, for that matter, any other) colour, this variety is said to produce the handsomest blooms when grown on Brier stocks.

Another Hybrid Perpetual, Lady Helen Stewart (named by the Marchioness of Londonderry after her little daughter), was raised from seed which resulted from a cross between General Jacqueminot and A. K. Williams, and is described as a very vigorous and erect plant, producing flowers of a brilliant crimson colour with a very stout, smooth petal.

Judging from flowers of Miss Ethel Brownlow received on May 10, having been cut from plants grafted only the last week in February, this Tea-scented variety, which completes Messrs. Alexander Dickson's present trio of novelties, in addition to being extraordinarily free-blooming, has very full and well-formed flowers, which recall Catherine Mermet both in outline and colour to some extent. The rose colour, however, appears fuller than in Catherine Mermet, and the new variety is said to be far more free-flowering. It was the outcome, in 1881, of a cross between Madame Lambard and President, and it carries its flowers erect, like the former, on a stout stem, wherein it has an undoubted advantage over Catherine Mermet, whose pendulous habit is often the cause of the disfigurement of many a fine bloom.

Two very noticeable points in Messrs. Dickson's interesting communication on Rose raising

are the importance attached to the necessity of the Rose seed being thoroughly ripe, and the desirability of saving seed from flowers that have been artificially fertilised. That all seed should be well ripened goes, of course, without saying; but Messrs. Dickson's experience leads them to believe that thorough ripeness of the seed sown is the most important factor in obtaining Roses of good constitution, and they express the opinion that if this (thorough ripeness) is secured, "even weak growers will give strong growers as progeny." In regard to the second point, it has been the experience of most raisers of Roses that nearly all the seedlings produce only single or semi-double flowers; but then the immense majority of seedlings raised have been from chance heps gathered at random. Messrs. Dickson have found, by practising artificial fertilisation for a series of years, that the tendency among plants raised from seed so produced is rather in the opposite direction, and that many seedlings have flowers so full that they cannot properly expand.

It appears that the record is preserved of all the seedlings raised at Newtownards, whether good or bad, and the accumulation of evidence thus obtained must ultimately prove a most valuable addition to our singularly meagre stock of reliable information on the subject of Rose raising and cross-fertilisation; while it is obvious that seedlings emanating from an establishment where the raising of new Roses is a matter of such elaborate care will be awaited with keen interest by all Rose growers.

FORTUNE'S YELLOW ROSE.

IN the bud state for button-hole purposes I find this Rose is more useful than many other sorts, and equal in favour with Maréchal Niel and realises quite as much in the market, for which purpose I am astonished that it is not more grown. I find that with every order for Roses comes the following request: "Send me more of that peculiar coloured Rose," and we do not want better evidence of its popularity than the market demands afford. It is not, however, a reliable Rose to plant in the open, as it is too tender; even on walls with a south aspect it cannot be depended upon to stand through the winter. This is to be regretted, as, like many other sorts, the colour of the flowers is much deeper in the open air than under glass. When grown under glass it is a strong growing Rose, suitable either for training on wires or on pillars. We have it this season trained up a pillar 10 feet high in a large house with the top branches allowed to grow at will all last summer. Grown in this way it forms a very pleasing feature, and the number of flowers it has produced has been surprising. The half open bud is charming, and only single blooms are produced on each shoot; but supposing a plant makes shoots 6 feet long this summer and they are not pruned, nearly every bud along the whole length of that shoot will produce a single flower next year. The system of pruning that must be adopted to induce it to flower satisfactorily is therefore to prune as soon as it goes out of flower, and not to use the knife again until next year, unless it be in the case of stilly trained plants which have made vigorous growth. I have sometimes found it necessary to thin out the weakest shoots in the autumn, leaving the strongest the whole of their length; by letting in more light and air the wood which is left gets better ripened and in consequence it produces a greater number of flowers. I find that it is better to grow it on pillars. This Rose is increased from cuttings as readily as *Pelargonium*. If the shoots which have flowered are made into cuttings at once, and the cutting pots placed in bottom heat on a Cucumber or Melon bed, they will be sufficiently rooted in three weeks to be potted off. I cannot say that it is as suitable for growing in pots as when planted out, but as compared to other Roses it flowers quite as freely, only it requires more root room. Given a fairly large pot, the growth

made under glass in a light, airy house, and the long shoots allowed to grow pretty much their own way, plants in 12-inch or 14-inch pots will produce a quantity of flowers; there is, of course, an advantage in having a few large specimens in pots, as the season can be prolonged. It does not submit kindly to hard forcing, as when forced early the buds, which are never large, are too small, and they are also deficient in colour. There is still time to plant this Rose and secure a pretty good growth this season, but they require to be at least three years old to make effective objects. J. C. C.

MARÉCHAL NIEL ROSE FAILING.

THE only difficulty in dealing with the case given by Marshall Bros. (p. 414) arises from the unequal behaviour of different plants in the same house under the same treatment, and the difficulty of knowing exactly what is meant by the shoots cankering after making growths of 5 feet or 6 feet. As, however, it is stated that the shoots first turn yellow and then gradually die away, the disease can hardly be canker or warts, as generally understood. Accepting the definition of the disease given by your correspondents, it may be produced or aggravated by one or all of four causes that are more or less obvious on the surface of this case as stated (p. 414)—deficiency of light, want of air, lack of drainage, and excessive strength of manure water. As to the first, as the Roses are trained on wires running round the sides of the path, and nothing is said of the height of the house, nor of the side walls, which are opaque, it may well be that the growing shoots droop, turn yellow, and die back for lack of light. Everyone familiar with the character and idiosyncrasies of this fine Rose knows how essential brilliant light is to the strength and maturity of its fast-growing branches. It can hardly be trained too closely to the roof if a maximum of strength, beauty, and stability is to be achieved. The shoots seldom look yellow or die back as if affected by a sort of gangrene if they are run up close to the roof; the light strengthens the shoots and gives them stability as well as verdure. Want of air may be another cause of the malady. Nothing is said of roof ventilation, but we are told that there are no side lights, only ventilators which have recently been nailed up. Under such conditions in a stagnant atmosphere far from the light, it is not surprising that succulent growing shoots of the Maréchal Niel or any other free-growing Rose become sickly, yellow, and gradually die away.

Insufficient drainage would intensify the ill-effects of lack of light and want of air. We are told that the Roses are planted in good loam, and this may be good or bad for them, as it rests on a porous or impervious bottom. Good loam may quickly be converted into something akin to mud if it rests on stagnant water or mud. The roots penetrating a wet border or bottom would speedily react on the tops with such disastrous symptoms and results as your correspondents describe. Finally, the manure water may be over-strong. Few things vary more widely in quality than farmyard manure water. It may be weak almost as coloured rain water, or dangerously potent as water of horses outside the stable door. The latter is totally unfit for the roots of even the most gross-feeding Maréchal Niel Roses, unless diluted before use with at least ten to one of rain or other clean water. There is no form of manure water that needs more judgment or care in its application than farmyard liquid, and unless employed with extreme caution it had better not be used for flowers at all. Assuming that the three other influences might be working together to promote disease in these Roses, over-strong manure water would add to and aggravate their force, and introduce another and a greater danger than either.

To all this it may be urged that the Rose plants or branches, for it is not clear which, are not all alike affected, as some are growing and flowering splendidly. This only may prove that there are generally such exceptions to be met with, and that these by no means disprove the foregoing estimate of the probable causes of the disease. Plants occasionally diverge from their natural type, but these exceptions only confirm the rule that their nature is to reproduce their like; so certain conditions

produce certain results, though some plants, or parts of plants, may be able to resist or overcome the legitimate effects of such conditions.

Having answered, to the best of my ability, the question of what is likely to produce canker under such circumstances, I would give a decided negative to the second question, "whether to go on growing this Rose in such a frame under such conditions as those stated," and would advise that those conditions be altered at once, in so far as the giving of more air, and placing the shoots closer to the glass are concerned. The drainage must also be improved if needful, and more care exercised in relation to the application of manure. Weak and often is the only safe rule for this, even in regard to such gross growing and rooting plants as the Maréchal Niel Rose.

One more point deserves notice. The house is said to be large and cool. Does the latter phrase mean that it is wholly unheated? If so, the disease may be produced, or greatly aggravated by sudden depressions of temperature below the freezing point after the young shoots are in full and vigorous growth. The Maréchal Niel is so readily excited under glass, especially in houses with little or no ventilation, that early growth, succeeded by frequent chills and consequent checks, may very probably result in gangrene and dying back, as your correspondents describe. This Rose is so popular and so valuable, and also subject to so many and various accidents, that the case deserves the fullest possible consideration, and hence the semi-exhaustive manner in which I have treated it. D. T. F.

Maréchal Niel on south-east aspect. Our Maréchal, planted upon a south-east wall, has stood the winter uninjured, and is showing plenty of flower. Another one, planted upon a south border, has also stood the winter unprotected, and is also showing flower, though no earlier than the other. Tea Roses on the wall of an east terrace have stood well, and are now making some strong growth and look the picture of health. These have been protected with Yew and Box branches, with a mulching over the roots. Standard Hybrid Perpetuals have given most anxiety. They have stood rather badly; we have had to replace a good many, but they are doing very well now, and fine weather without the piercing east winds will soon give us plenty of flowers. W. A. COOK, *Holme Wood, Peterborough.*

Hardiness of Tea Roses.—"D. T. F." can hardly have read the article on page 433 very carefully, or he would not have been under any misapprehension as to the temperature there given, for the difference between that temperature of 70° Fahr. and the 25° Fahr. assumed by "D. T. F." is sufficiently noticeable. The objection to the suggested use of Cocoa fibre as a winter protection for Tea Roses is that on heavy land it keeps the soil too damp and close, but on light land it is good where the plants cannot be earthed up. As a summer mulch it is excellent on light land, either to retain moisture, or where Tea Roses are mulched with cow manure to make the beds sightly and pleasant to walk upon; but in the last case it cannot be utilised after it has been round the plants all winter without being removed and replaced—a process by which its employment would involve very considerable labour. A better plan is, where the earthing up is thought to leave the roots too thinly covered, to lay a thick mulch of long manure in the furrows or intervening spaces between the plants, so that the roots may be kept warm, and at the same time when the ground is levelled down in spring the manure disappears from view. Spruce boughs are undeniably good protection, but when they are employed it must be borne in mind that they require a great deal more fixing than Bracken to secure them from the action of wind, and even when cut with stems long enough to be thrust firmly into the soil they are liable in a gale to be blown round into positions in which they are useless to the plants they are meant to protect, unless very securely fastened.—T. W. G.

Locality of Rosa macrantha in the open.—"W. T. W. G." kindly give some indication of the whereabouts of his bush and pillar specimens of this charming Rose? I

have no desire to pry into such matters as his name and address. The county or some other rough index to locality will suffice, and much obliged, HORTIC.

Rose leaves diseased.—I herewith enclose you a few leaves from Beauty of Waltham grafted on Manetti stock. The plant continues to make growth, but the leaves go as enclosed, and fall off. I should be glad if you would tell me what it is, and the cure. They are planted in borders under glass, but no heat. I have about forty plants in the house, but this is the only one affected. It suffered the same last summer.—WM. LIGHTBOWN.

. Your Rose is attacked by a fungus, probably *Peronospora sparsa*. Is it in a less healthy position in the house than the other plants as regards ventilation and soil? Syringe well with from a quarter to half an ounce of sulphide of potassium in one gallon of water, and if the plant is not growing freely give some liquid manure.—G. S. S.

EDUCATION OF GARDENERS.

I AGREE with those who think a knowledge of all the "ologies and 'statics" enumerated in THE GARDEN not long since unnecessary to a gardener, especially in these days, although some of them, like geology, for example, are delightful to study and think about in themselves. I do not even admit that any extensive knowledge of botany is needed, but familiarity with vegetable physiology and some acquaintance with the nature and chemistry of soils is invaluable. The rest depends on one's own common sense and observation. I am speaking of practical gardening only, not of landscape gardening, which needs a faculty that none of the sciences supply. I certainly would not at the present advise any young gardener to lose time studying the dozen or more subjects enumerated by "H. J. H." (p. 374), and I never contemplated such a thing when I suggested a prize to encourage young men to learn their business (p. 271). With the handy-books and guides at his disposal now-a-days, all a young man wants to become a good gardener is a well-selected, small library, a good pair of hands, and a fair share of brains. Given the last two, the other will come. I have had to do with well-educated "clever" young men often, and when they happened to be good workmen as well, which is not always the case, and endeavoured to follow out and anticipate their masters' ideas and orders, and manage generally, we got on famously. When the last qualification was wanting, it was bad for somebody. It is a great thing to start fair in a good garden and under an appreciative head gardener.

We hear much of the superiority of foreign gardeners as regards their education, and I admit they seem to secure appointments abroad and elsewhere on account of their educational attainments, which are not to be despised or ignored on any account. To sum up the matter, a man who can work himself, who knows when others do their work, who is a fairly good reader, writer, arithmetician, and who can draw plans to scale, is fit for a gardener of the highest class anywhere.—J. S.

"Miltonia" appears to have been extremely unfortunate in his choice of young men when he says he generally finds the leaves of THE GARDEN uncut after being in their possession for a month. This is a sad state of things, but you will be glad to hear that it is not always the case; at least three copies of THE GARDEN are taken in here every week, and I venture to say they are cut within a few hours after they arrive. Perhaps "Miltonia" could improve matters somewhat by giving a little fatherly advice or by exercising a little gentle persuasion; if so, I am sure his time would be well spent. Indeed, I cannot agree with "Miltonia" when he says "the majority of young gardeners care very little about reading." During the fourteen years I served as an under gardener in private gardens I shared quarters with about forty young men, and I can safely say the majority of them were well read and thoroughly intelligent men for their station in life, and a good number of them are now filling responsible positions as head gardeners. I am not surprised to hear that young men take but little interest in a book that treats only of "outdoor

hardy stuff," seeing that this useful class of plants has been pushed on one side to make room for subjects of a less permanent character, but, happily, hardy plants are now rapidly coming to the front. We have plenty of gardening periodicals at present, and if "H. J. II." requires books treating upon the subjects he mentions (p. 374), he will readily get them at Cassell's. A good sound education is of great advantage to a gardener, but to cram his head with a lot of useless technical knowledge is to hinder rather than help him in his career.—E. B. L.

—Surely "Miltonia" in THE GARDEN (p. 414) does not mean what he has penned; if so, my short experience of young gardeners is quite the reverse, for I find no class of workmen so given to reading and study. After living for several years in some of the best places in the country I can candidly say I never saw any horticultural papers go uncult for one day, much more a month. In the rooms from whence I write there are six young men living, and as soon as the papers arrive it is generally a rush to have the first look at them, and as regards studious habits, some study botany, some geometry, and some literature. Therefore, what foundation "Miltonia" has to judge the majority of us young gardeners on I cannot see. I must, however, admit that there is a tendency among young gardeners to disregard the cultivation of hardy plants as well as that of vegetables, but such are not true horticulturists, and rarely make good gardeners.—C. COLLINS, *Howick*.

** No good can come from any further discussion of this question. The way to become a good gardener is to learn and work in good gardens; to take advantage of the best books and papers of the time; to keep the eyes open and the head clear, seeing as much as possible of every kind of garden, including the smallest. When vegetable physiology is really known to those who study it, we shall be able to judge of its use to gardeners. ED.

TREES AND SHRUBS.

VARIETIES OF PORTUGAL LAUREL.

(*CERASUS LUSITANICA*.)

OF a shrub so common and so well known as the Portugal Laurel there is no need to write about, but it seems to me that the varieties of it are very little known, and particularly the small-leaved form named *myrtifolia*, a name not very applicable, inasmuch as its foliage is no more like that of the Myrtle than the common Portugal Laurel is. A shrub so distinct and so handsome as this so-called Myrtle-leaved variety is decidedly worth knowing. It differs from the original by its smaller, longer, and narrower leaves, which, moreover, are more closely set on the branches, and therefore may be distinguished at a glance. Another and important characteristic of this *myrtifolia* variety is its tendency to grow erect; consequently it is not a difficult matter to train a young bush of it to form a symmetrical cone or pyramid, and in either shape it possesses a handsome appearance, and more like the Bay than anything else. In some styles of formal gardening primly trained cones and pyramids of the Myrtle-leaved Portugal Laurel are invaluable, as they are slow in growth and may be kept symmetrical in shape with very little trouble. I have had occasion to plant some cone-shaped specimens of this variety lately in a geometrical garden, and the effect they produced is remarkable, as they are so different from Yews, Hollies, Box or any of the Conifers. In the Bagshot Nursery a good deal of attention is paid to cone-shaped Myrtle-leaved Portugal Laurels, and the long lines of fine specimens attract the attention of every visitor. In an untrained state this variety is of much the same habit of growth as the ordinary

Portugal Laurel, though its smaller and denser leafage makes it different in appearance. It is about the same tone of green, is quite as hardy, and of the same rate of growth. The varieties named *angustifolia* and *ornistoniensis* are, so far as I can make out, identical with *myrtifolia*. A variety with short and rather broad leaves and of thicker texture than usual is called *crassifolia*, but it possesses no special feature to render it superior to the original type. The variegated form (*variegata*) is not particularly beautiful, and I cannot remember ever seeing a bush of it that had not branches of green leaves intermixed with the variegated, which always gives it a piebald appearance. A very handsome variety is that named *azorica*. It is altogether of stronger growth than the original, with larger leaves and of a richer green. The twigs, moreover, are of a decided reddish tinge, a hue which the young leaves assume in spring. Though a native of the Azores, it is found to

and its flowers are a mixture of yellow and reddish rose. It is called Gordon's Flowering Currant because the late Mr. Gordon, when he was chief of the arboretum at Chiswick, in olden days, used to pay a good deal of attention to the genus *Ribes*, and himself raised this hybrid.—W. G.

The Mahaleb Cherry.—Among all the trees of the Cherry and Plum tribe now in bloom the Mahaleb Cherry (*Cerasus Mahaleb*) stands out prominently by reason of its peculiar growth and profusion of bloom, and yet it is a tree very seldom seen in private gardens. At the present time some trees of it in the arboretum at Kew are entirely masses of white blossom, the leaves in the present state being very small and inconspicuous. It is one of the smallest-flowered of all the Cherries, but what they lack in size they make up in numbers, for every tiny twig carries a dense cluster of bloom, which is, moreover, strongly scented. It is a small-growing tree, with a dense, bushy head, and rarely is more than 20 feet or 30 feet high. The leaves are heart-shaped, not unlike those of the



The Portugal Laurel (*Cerasus lusitanica*); flowering and fruiting branches with detached flower and fruit, natural size.

be as hardy as the common form inhabiting the mainland.

All the varieties thrive under the same conditions as the type, preferring shelter to exposure, a light soil to a heavy, and a moist soil (not wet) to a dry one. The finest specimens one meets with in very old gardens are those growing under the most favourable conditions as to soil and shelter, and among all the beautiful Evergreens with which our gardens are enriched there are few more beautiful than a luxuriant Portugal Laurel, and much of the beauty of old English gardens is due to this beautiful, yet oft abused, Evergreen.

Ribes Gordonianum.—Gordon's hybrid Flowering Currant may not be considered by some so beautiful as the common *Ribes sanguineum*, but it is different from it, and that is a great point, for while the brighter flowering *sanguineum* is so common, Gordon's sort is very seldom seen, and therefore always attracts attention. It is exactly half way between *sanguineum* and the yellow *aureum*,

so that it may be at once recognised when out of bloom. There are a few varieties of it, none being more remarkable than that named *pendula*, which is of a decidedly weeping habit of growth, and when in full flower, as now, is extremely graceful, and particularly beautiful as a lawn tree, and a more suitable tree for a small lawn could not be named. Like most other trees of the Cherry tribe, the Mahaleb is specially adapted for planting on poor, dry soil, and this is well exemplified at Kew, where the soil is both poor and dry. The Mahaleb Cherry is a South European tree, and has been cultivated in England since 1711, and in the neighbourhood of London there are some fine specimens of it in old gardens—Syon, for instance.—W. G.

Spiraea prunifolia fl. pleno.—This *Spiraea* is one of the first to bloom, for even in this late season it was in full flower around London by the middle of May, at which time the earliest of the flowering Currants were on the wane. This *Spiraea* forms a remarkably pretty shrub, for if so planted that there is ample room for its full development, it will reach a height of 6 feet or thereabouts, and assume the character of a rather dense bush. The long, slender, arching shoots give it at all times a

light and elegant appearance. A great additional attraction is furnished by the blooms, which are quite double, pure white in colour, and arranged in little clusters along the branches for a considerable portion of their length. The neat lance-shaped leaves are of a cheerful shade of green, and in autumn before they fall are very brightly coloured. Another species that flowers about the same time as this last is *S. Thunbergi*, and the general characters of this are something like those of *S. prunifolia*. *S. Thunbergi*, however, does not attain to the same dimensions, and the blossoms are single. Both these *Spiræas*, in common with most of the shrubby members of this genus, are seen to the greatest advantage in fairly good soil and in rather a moist situation. At the same time a little judicious pruning is of great assistance in helping the display of bloom, for after a plant has been established in one spot for some time it often becomes a thick mass of slender twigs, which are greatly benefited by being thinned out, as it is on these long wand-like shoots that the greatest display of blossom is produced. The curious Siberian *S. laevigata*, which out of flower might be mistaken for a *Daphne*, is now in bloom, but though very distinct, its ornamental qualities are much inferior to the others.—T.

Andromeda japonica. This delightful little evergreen shrub is now conspicuous by its new shoots, which being of a bright roddy tinge contrast beautifully with the deep green of the old leaves, so that the bushes are scarcely less attractive now than when hung with drooping clusters of waxy white Lily of the Valley-like flowers. It is certainly a shrub that (to use a common expression) deserves to be better known. Many think it is a tender plant, but it is unquestionably quite hardy in the neighbourhood of London and south of it. The past winter has had no effect upon it whatever at such widely separated places as Knapp Hill and Kew.—W. G.

The tall Arbutus, or Strawberry tree.—The blooms of this handsome North American shrub, or small tree, are among the flowers of the week, and a very handsome appearance they make, as both foliage and bloom are beautiful. It is very different from the common Strawberry tree (*Arbutus Uuedo*), but a good deal like *A. Andrachne* in growth and foliage. Its leaves are broad, of leathery texture, and of a luxuriant shining green. The flowers hang in drooping clusters, each being urn-shaped and of a delicate greenish white. It is one of those trees whose beauty is not developed until they are fully grown; therefore, it is generally in old gardens that it is seen to perfection. It comes from the north-west coast of North America, being one of the introductions of the traveller Douglas sixty years ago. At Kew it is hardy, but it is undoubtedly tender in heavy soils to the north of London.—W. G.

A new variety of Spruce. Messrs. Veitch exhibited at South Kensington on Tuesday a new variety of the Norway Spruce that promises to be a most valuable addition to ornamental trees. It is named *Abies excelsa mutabilis*, presumably on account of the young shoots being of a pale green, changing at length to the normal deep green of the ordinary Spruce. The contrast between the tender green of the young shoots with the dark green of the old foliage is most remarkable, and one can imagine how effective it would be on a lawn. The new variety bears no resemblance to the variety *aurea*, inasmuch as the foliage of this is yellowish, even when fully matured, and instead of being ornamental gives the plant a sickly appearance. But in *mutabilis* the foliage at length returns to its normal green. It is, perhaps, not wise to form a hasty opinion of a new tree, but we shall be deceived if this one does not prove of great value to the landscape gardener.—W. G.

SHORT NOTE.—TREES AND SHRUBS.

Cupressus Lawsoniana in bloom.—Generally speaking, the male blooms of the different *Cupress* play but a very small part in the embellishment of the plant, but an exception must be made in the case of Lawson's *Cypress*, the beautiful plume-like branches are in some specimens

quite covered with the bright crimson male catkins, which cause the plant to be of quite a different hue. Not only do the feathery branchlets retain their freshness for a long time in water, but even these blossoms keep bright for a considerable period.—T.

DOUBLE VARIETIES OF AMERICAN AZALEAS.

THE group of these which Mr. Anthony Waterer sent to the meeting of the Royal Horticultural Society on Tuesday was one of an extremely interesting character. Though *Azalea nudiflora*, the progenitor of our deciduous American Azaleas, was introduced from North America as far back as 1734, it was not until some forty or so years ago that some Continental cultivators took up the matter of hybridisation systematically, and thus we obtained the brilliant varieties known as Ghent Azaleas. Previous to that some variation had shown itself, but such variations were chiefly in the form of sports or natural crosses, through the varieties being grown together. Mr. Anthony Waterer states that a semi-double variety, named Maiden's Blush, has been in cultivation for many years, but it would appear that it is about ten or twelve years ago when double forms began to show themselves among the seedling American Azaleas raised at the Knaphill Nursery; and on the 24th instant, Mr. Waterer was able to exhibit more than a dozen large specimens in full bloom. That they represent a very valuable break cannot be doubted, and the flowers, as is usually the case with double forms, are much more persistent than those of the single varieties. When grown as decorative plants in the open air, they last much longer in bloom, which fact adds greatly to their value, and then what superb conservatory plants they make at this season of the year. They require but very little forcing; they simply want to be brought on in an ordinary house, so as to have them in flower before they can bloom in the open air. Those shown at South Kensington by no means exhausts all the varieties Mr. Anthony Waterer has; some have rose and scarlet hues, and they are very attractive. To two of them (*Snowflake*, pure white, and *Peach Blossom*, bright pink, with a blotch of orange on the top segment) first class certificates were awarded. These double forms produce but little seed, and many of the seedlings revert to the single form. The best method of propagation is by layers. But little pruning is required, as the marvellous freedom with which they bloom checks anything like exuberant growth. R. D.

The Labrador Tea, as *Ledum latifolium* is called, is a pretty little shrub that should be seen in well planted gardens at this season covered with dense clusters of white blossom. It is the more conspicuous in bloom just now, as there are not many counter attractions in the shrubbery, its more showy relatives, the *Rhododendrons*, *Azaleas*, and *Kalmias*, not being in bloom yet. It is one of the few flowering shrubs that will thrive in a perpetually moist and even swampy spot, and it often exercises one's memory to think of shrubs that one would like to plant in a damp spot, such as at the edge of a bog garden, or a place where water collects. All the *Ledums* are partial to a peaty soil, but they will grow in a loamy soil, if it be lightened with Moss or leaf-mould.—W. G.

Double flowering Cherries.—Wherever a selection of flowering trees is made, some of the Cherries must be included, and where there is not sufficient room for the full development of the larger kinds, there are some that will not soon outgrow the space allotted to them. Of such, mention may be made of the Chinese *Cerasus serrulata*, which forms a low tree or shrub, reaching a height of 8 feet or 10 feet, with stout wide-spreading branches and but few laterals, so that it is readily distinguished from any of the others at all seasons of the year. The blooms are semi-double, and when first expanded pure white, but before dropping they become somewhat tinged with pink. The specific name is derived from the edges of the leaves being distinctly toothed or serrated. *Cerasus Sieboldi alba plena* and *rosea plena* are two pretty shrubs, with respectively white and rose-coloured flowers. The habit of these two kinds is rather

drooping, and on that account they are usually grown as standards. The pretty little slender-growing *Cerasus* or *Prunus sinensis* is earlier than any of the others, and is very valuable as a spring-flowering shrub, either under glass or in the open ground. The flowers are like little white rosettes, and the slender twigs are thickly studded with them. As the finest of all the double-flowered Cherries the place of honour must be assigned to the double variety of *C. avium*. When seen in the shape of a good sized healthy tree, and laden with its drooping clusters of pure white blossoms it is a most magnificent object.—T.

SOCIETIES AND EXHIBITIONS.

CRYSTAL PALACE.

MAY 21.

THE great summer show, held on Saturday last, was remarkable both for the quantity and quality of the collections brought in response to a fairly well diversified schedule. The arrangement taken as a whole was very effective and pleasing, but from the manner in which the collections in the same class were scattered, it would not appear that much thought or care had been given to the convenience of the judges. It is, in our opinion, very unfair to the judges to have competing collections staged widely apart, as it is quite impossible for nice distinctions to be satisfactorily adjudicated upon when so arranged, and this must be accepted as an apology for any slight discrepancies which may have arisen upon the present occasion.

Stove and greenhouse plants, *Azaleas*, *Ericas*, *Roses*, and *Pelargoniums* were shown in considerable quantities in excellent condition, very many of them being the same plants which figured so conspicuously at the meeting of the Royal Botanic Society last week.

For a group of *Orchids* in bloom, not less than forty plants, arranged with a few *Palms* for effect, there was keen competition, the successful exhibitors being Mr. Simpkins, gardener to Mr. Measures, Cambridge Lodge, Camberwell; Mr. Salter, gardener to Mr. J. Southgate, Selborne; and Mr. Cooke, gardener to Mr. De B. Crawshay, Rosefield, Sevenoaks. Mr. Measures's group contained about two hundred *Orchids* in flower, comprising nearly eighty distinct kinds; the groundwork was composed of *Pteris serrulata*, and edged with *Maiden-hair Fern* (*Adiantum euneatum*), the whole being very tastefully arranged. The most notable plants in bloom were *Oncidium Marshallianum* and *concolor*, numerous well-flowered *Vandas*, *Masdevallia Harryana* of various shades of colour, grand varieties of *Cymbidium Lowianum*, quantities of *Cattleyas Mendeli* and *Mossie*, some of which were extra fine varieties; *Cattleyas Lawrenceana* and *Aelandia*, *Odontoglossums Alexandra*, *cirrhosum*, and *citrosimum*, *Cypripediums caudatum*, *Stonei*, *levigatum*, and *ciliolare*, *Coclogyne pandurata*, *Laelia purpurata*, numerous *Dendrobiums*, and a magnificent *D. Griffithianum*, &c. Mr. Salter followed with a very artistically arranged group, intermixed with *Ferns* and *Palms* and edged with *Maiden-hair Ferns*; it contained *Cattleyas Warneri*, *Mendeli*, *Mossie*, and the rare white form of *C. Skinneri*, *Saccolabiums*, *Aerides*, numerous *Dendrobiums* and *Oncidiums*, *Masdevallias Chimera*, *Shuttleworthi*, *Harryana*, and various others, *Odontoglossum nevium majus*, excellent varieties of *O. vexillarium*, the rare *O. polyanthum*, which appears to belong to the triumphans type, sepals and petals tawny orange-yellow spotted and blotched with chocolate, lip deep chocolate, with a white serrated edge; *Cymbidium Lowianum*, well flowered, an excellent variety, &c. Mr. Crawshay's plants were remarkable for their quality, but the group was not quite so large. The most notable were grand examples of *Laelia purpurata*, fine forms of *Cattleya Mossie* and *C. Mendeli*, several very fine *Odontoglossum Alexandra*, *Dendrobium Jamesianum*, *D. thyrsiflorum*, *Odontoglossums citrosimum* and *Uro-Skinneri*, &c. Very pretty groups were also contributed by Mr. Luff, gardener to Mr. R. Hyatt, Streatham, and Mr. James, nurseryman, Norwood.

Nine distinct Orchids in bloom brought collections from Mr. Catt, gardener to Mr. W. Cobb, Silverdale Lodge, Sydenham, Mr. Hill, gardener to Mr. Little, The Barons, Twickenham, and Mr. James, and these were placed in the order here given. Mr. Cobb's plants were of the highest merit; they were *Masdevallia Harryana Dawsoni*, with twenty flowers of large size and deep vermilion colour; *Odontoglossum Alexandra*, ten fine spikes; *Cattleya Mendeli*, a fine variety, bearing ten flowers; the superb *Cattleya Sanderiana*, three flowers; *C. Skinneri*, thirteen trusses; *Laelia purpurata*, twenty-two flowers; *Oncidium Marshallianum*, three large branching spikes; *Celogyne Massingiana*, two spikes; and a magnificent *Odontoglossum (Miltonia) vexillarium*, bearing about 200 flowers, well produced above the foliage. Fine as these plants were, however, they were closely pressed by those from Mr. Little, who sent a fine variety of *Cattleya Mossiae*, with twenty blooms; *Cypripedium caudatum roseum*, four flowers; *Aerides Fieldingi*, four spikes, not quite open; *Cattleya Mendeli*, a fine form, bearing fifteen flowers; *Odontoglossum hystrix*, four spikes; *Cattleya Skinneri*, eight trusses; *Dendrobium thysiflorum*, about twenty trusses; *Odontoglossum Pescatorei*, sixteen spikes; and a very fine variety of *Oncidium Marshallianum*, with two spikes.

In the amateurs' class for six Orchids the successful competitors were Mr. Catt, Mr. Hill, and Mr. Luff. Mr. Catt's plants were *Laelia purpurata*, *Oncidium Marshallianum*, *Odontoglossum vexillarium* and *Alexandra*, *Cypripedium niveum*, and *Aerides Fieldingi*. Mr. Hill's chief plants were *Cattleyas Mendeli* and *Mossiae*, *Dendrobium thysiflorum*, and *Cypripedium ciliolare*; whilst Mr. Luff staged *Vanda suavis*, *Cypripedium villosum*, *Odontoglossum vexillarium*, *Oncidium Marshallianum*, *Lycaste Skinneri*, and *Phalaenopsis amabilis*. Single specimen Orchids were well represented by Mr. James, who was first with a fine *Laelia purpurata*, bearing about three dozen flowers; Mr. Hill, with a fine *Cattleya Skinneri*; and Mr. Wakeham, gardener to Mr. H. Barratt, North Dulwich, who staged a very good *Cattleya Mossiae*.

In the class for a group of miscellaneous plants arranged for effect on a space not exceeding 200 square feet, Messrs. Laing and Co., nurserymen, Forest Hill, deservedly carried away the leading honours with a magnificent group of flowering and ornamental-leaved plants, massive, yet by no means heavy, the whole being very skilfully and artistically arranged. Its chief features were graceful Palms, Ferns, *Dracaenas*, *Aralias*, and highly coloured *Crotons*, numerous well-flowered Indian *Azaleas*, *Erietas*, *Orchids*, remarkably fine tuberous *Begonias*, for which this firm has obtained a world-wide reputation, &c., &c. Messrs. Hooper and Co., Covent Garden, and Pine-apple Nursery, Maida Vale, also staged a very effective group; its leading characteristic was similar to the last, whilst the border was composed of *Panicum variegatum* and *Isolepis gracilis* arranged alternately. Mr. James, of Norwood, also furnished a somewhat similar group.

In the class for *Nepenthes*, not less than twelve specimens, groups were staged by Mr. James, Norwood, and Mr. Luff, Streatham. These plants did not show to advantage, arranged as they were upon a flat stage in a dark corner. They should be set upon slender, tall pedestals, in order to display their beauties in a natural manner. The best in Mr. James's set were *N. Mastersiana*, several varieties, *Williamsi*, *Rafflesiana*, *Stewarti*, *Hookeri*, *Dominiana*, *Courti*, *Harryana*, *distillatoria*, *hybrida*, and *robusta*. Mr. Luff's were mostly similar varieties, in addition to *Morgani*, *Chelsoni*, and *anerleyensis*.

*Sarracenia*s were staged by Mr. Luff and Mr. James, but neither of the collections were sufficiently advanced in growth to give an idea of their singular beauties.

Messrs. Carter, Dunnett, and Beale, Forest Hill, exhibited a large group of *Mimulus*; these were remarkable for the size of the flowers, their rich colours, exquisite spotting and blotching, and also from their character of coming true from seed.

Messrs. Barr and Son staged a magnificent group of cut *Narcissi*, which they appear to have in any quantity in their celebrated bulb garden at Tooting.

Stove and greenhouse Ferns were staged by Mr. Penfold, gardener to the Rev. Canon Bridges, Beddington; Mr. Bolton, The Gardens, Coombe Bank, Sevenoaks; and Mr. James, Norwood. Mr. Penfold's plants were large, fresh, and well-grown specimens of *Davallia fijiensis*, *Mooreaana*, and *polyantha*; *Lastrea laserpitifolia*, *Lomaria cycadefolia*, *Dicksonia antarctica*, *Woodwardia radicans*, and *Microlepia hirta cristata*.

Dracaenas in the amateurs' class were both good and varied; the first prize for six distinct kinds was carried off by Mr. King, gardener to Mr. P. Crowley, Waddon House, Croydon, his best plants being *D. Lindenii*, *majestica*, *anerleyensis*, *amabilis*, and *recurva*.

Dracaenas, distinct (open), came from Messrs. James, Luff, and Hooper and Co., the best amongst which were *Lindenii*, *salmonea*, *elegantissima*, *anerleyensis*, *albo-marginata*, *imperialis*, *Goldiana*, and *Baptisti*.

Caladiums came from Mr. Laing, Forest Hill, amongst which were notable *Leopold Robert*, *luteum*, *Clio*, *Comtesse de Condeixa*, *Sanchonanthum*, *Luddemanni*, and *Mithridates*.

Gloxinias were well shown by Mr. Luff, who carried everything before him with a beautiful lot of erect, spotted kinds.

Calecolarias were numerous and good. The plants sent by Mr. James, of Farnham Royal, Slough, were remarkably dwarf in growth, whilst the flowers were abundant, large, and of good form, but were scarcely so well diversified in colour as Mr. Salter's, of Streatham.

Miscellaneous groups were staged by Messrs. Paul and Son, Cheshunt, and by Mr. Ware, of Tottenham, and contained many plants of great beauty and excellence, the majority of which we referred to in our columns of last Saturday as having been exhibited at the Royal Botanic Society's meeting.

Plants suitable for table decoration were very numerous, but not of great variety; no novelties were introduced, and they do not call for special notice.

Cut flowers were staged in profusion both in the open classes and those confined to amateurs, but the stands contained nothing particularly notable. For the best vase or epergne for drawing room, Mr. Phippen, of Reading, was first, and Mr. Chard, Stoke Newington, second, with which decision our opinion did not coincide. The former's exhibit was a stand with branches bearing three tiers of circular cups and a terminal one, six in the lower tier and three each in the upper ones. Each one had for the centre a small seedling *Cocos Weddelliana* surrounded with cut blooms of *Orchids*, *Rhodanthe*, *Marzuerites*, *Lily of the Valley*, *Selaginella*, and *Maiden-hair Ferns*, &c., the whole having a heavy and massive appearance, entirely lacking the grace and elegance of that of the one placed second.

Bouquets and button-hole bouquets were numerous. Few, however, were characterised by much taste, whilst some of the bouquets appeared as if the object the makers had in view was to pack the flowers together as tight as the head of a Cauliflower. Bridal bouquets were shown by Messrs. Perkins, of Coventry, Mr. Chard, Stoke Newington, and Mr. Phippen, Reading, Messrs. Perkins being first and Mr. Chard second. These two were composed of very similar flowers, viz. *Stephanotis*, *Tuberoses*, double *Primulas*, *Eucharis*, *Bouvardias*, &c. The former's bouquet appeared to be much too tightly packed, and the latter slightly overdone with Fern.

The following certificates were awarded: To Mr. Laing, for *Begonia Princess Victoria*, *B. Duke of Edinburgh*, and *Azalea Francois Verveine*; to Mr. Ware, for *Moutan Paeonies Urtica*, *odorata Maria*, *Louise Mouchet*, and *Rinzi*; to Mr. Wiggins, Kingston, for *Pelargonium Henry Dawkes*; and Mr.

Little, Twickenham, for *Laelia purpurata Mrs. H. Little*.

A prize list is given in our advertising columns.

ROYAL HORTICULTURAL.

MAY 24.

THE exhibits at this meeting were not numerous. The following first-class certificates were awarded:—

Azalea Maiden's Blush. A hardy form, flowers creamy pink, stained with yellow in the upper petals (Messrs. Veitch and Sons).

Azalea Beauty, rosy pink (Messrs. Veitch and Sons).

Azalea Peach Blossom, a semi-double flower, rosy peach (Mr. A. Waterer).

Azalea Snowflake, pure white, semi-double, very fragrant (Mr. A. Waterer).

Odontoglossum Pescatorei (Pollett's variety). A form with the sepals and petals beautifully spotted (Mr. J. M. Pollett).

Mimulus Carter's Jubilee Queen's Prize, large, beautifully spotted and blotched flowers (Messrs. Carter and Co.)

Phalaenopsis speciosa, rich bright violet-purple, flowers (Major-General E. S. Berkeley).

Paeonia Moutan Balmieri, rosy magenta (Veitch).

Paeonia Moutan Isis, clear bright carmine (Veitch).

Abies excelsa mutabilis, young growths clear yellow (Veitch).

Paeonia Moutan lactea, white (Ware).

Paeonia odorata Maria, large soft blush (Ware).

Paeonia Moutan Zenobia, magenta-carmine (Ware).

Ranunculus cortusefolius, a bold-growing species from Madeira, nearly a yard high, with bright shining yellow flowers about 2 inches across (Mr. E. G. Loder).

The great features of the show were the beautiful hardy plants staged by Messrs. Paul and Son, Cheshunt, and Mr. Ware, of Tottenham. In Messrs. Paul's group were *Saxifraga Lindisiana*, *Houstonia scryphillifolia*, blue, with yellow eye; *Phlox nivalis*, vivid, *divaricata alba* and *Nelsoni*, which is undoubtedly the best white; a large mass of the rich blue *Gentiana acaulis*, and the smaller, but exquisite, *G. bavarica*; *Trillium grandiflorum*, flowers large, pure white; a large mass of the Prophet Flower (*Anemba echinoides*); *Lithospermum prostratum*; the red and buff-flowered *Orobanchium*; the lovely *Tiarella cordifolia*, with white *Spiraea*-like trusses of flowers; *Epinediums niveum* and *Kariso*; *Geum aureum*, with clear golden yellow flowers; and *G. miniatum*, orange-red; *Thalictrum anemoides*, with snow-white single flowers; its double counterpart, *anemoides plenum*; and *aquilegifolium rubrum*—the flowers, however, though beautiful, are nearer lilac than red. Poppies were represented by *nudicaule croceum*, large, rich golden yellow, and the orange red *miniatum*; *Anemone sulphurea*, with large, pale yellow flowers; *A. nemorosa plena*, dwarf, with large, snow-white double blooms; *Kalmia glauca*, *Veronica repens*, *Iberis jucunda*, *Primula Munroi*, delicate creamy white; *Ranunculus graminis*, *Androsace sarmentosa*, and *Trollius napellifolius*, its rich golden balls of flowers being very conspicuous.

Mr. Ware, Tottenham, staged a large group of *Moutan Paeonies*, bearing large flowers of rich and varied colours. This is a class that should be largely grown, as they have a beauty peculiarly their own. The alpine and herbaceous group comprised a grand mass of *Trillium grandiflorum* with extra large white flowers, numerous forms of the Japan Primrose (*P. Sieboldii*), *Cypripedium Calceolus*, *C. occidentale*, the curious *C. arictinum* and *C. pubescens*, *Orchis mascula*, various *Trollius*, &c.

Messrs. Veitch and Son, Chelsea, staged a group of *Spiraea confusa* profusely laden with corymbose heads of snowy flowers; this would appear to be an invaluable plant for forcing; a basketful of the lovely Japan *Azalea roseo-flora*, and *Abies excelsa mutabilis*, a form in which all the young shoots are bright yellow, contrasting beautifully with the deep green

of the old growths; several plants of hybrid hardy Azaleas, crosses between *A. mollis* and *occidentalis*, densely laden with large trusses of creamy rose flowers, having a stain of orange-yellow on the upper petals. A group of *Hydrangea stellata* fl.-pl., very dwarf plants, each bearing a large truss of bright pink flowers; the curious *Illicium floridanum*, with cinnamon-red double flowers; *Rosa lucida* Rose Button, very floriferous, lovely in bud; a double form of *Lilae* called *Lemoinei* fl.-pl., and numerous Mountan Paeonies, amongst which were *P. Isis*, clear bright carmine; *P. rosea superba*, bright scarlet; *P. Grand Duc de Bude*, rosy mauve and purple with feather-edged petals; *P. Caroline*, creamy pink; *P. Baineri*, rosy magenta, and *P. Urani*, deep rose. Some hardy hybrid Azaleas were sent by Mr. C. Vuytsteke, Ghent.

ORCHIDS.—Mr. Pollett, Fernside, Bickley, sent a beautiful spotted form of *Odontoglossum Pescatorei*. Mr. Philbrick sent *Hexisea bidentata*, a curious *Dendrobium*-like plant with somewhat small cinnamon-coloured flowers. Major-General E. S. Berkeley sent *Phalaenopsis speciosa Ludlemanniana*, the flowers wholly rich violet.

Mr. Loder, Floore, Weedon, sent three fine specimens of the Chatham Island Forget-me-not (*Myosotidium nobile*) bearing numerous trusses of its lovely blue flowers; and *Ranunculus cortusae-folius*, a gigantic species from Madeira, nearly a yard high, and bearing numerous large shining, bright yellow flowers. It is said not to be hardy at Floore.

Mr. A. Waterer sent three specimens of hybrid Azaleas of the mollis section bearing large, highly-coloured flowers; and also a group of his seedling double *Azalea occidentalis*.

Messrs. Wood and Ingram, Huntingdon, sent *Pelargonium J. Wood Ingram*, belonging to the show decorative class, very free-flowering; flowers intense fiery red; lower petals clear, upper ones heavily blotched with velvety black.

Mr. R. Dean, Ealing, sent *Polyanthuses Governor and Snowdrop* in fine condition from the open ground, and a dwarf strain of *Cineraria* called *Royal Blue*. The plants were said to have been wintered without fire-heat.

Messrs. Carter, Dunnett, and Beale staged fine groups of their *Mimulus Jubilee Queen's Prize*, *M. Princess Victoria*, and *M. Princess Beatrice*, bearing large magnificent flowers.

From the Society's Gardens, Chiswick, came a well-flowered plant of the old, but beautiful *Tropaeolum azureum*.

Fruit committee.—The labours of the committee on this occasion were very light.

Pears were exhibited by Mr. G. Beaton, The Gardens, Style Hall, Gunnersbury. They comprised *Vicar of Winkfield*, *Easter Bauré*, and *Suzette de Bayay*.

Mr. W. H. Hume Dick, Thames Ditton, sent a dish of very fine Asparagus, also a dish of Strawberry Anguste Nicaise, good in size and well coloured, for which he received a cultural commendation.

Mr. E. Ward, Stoke Edith, Ledbury Park, sent samples of good Broccoli.

Mr. Lockie, The Gardens, Oakley Court, Windsor, sent six fruits of a seedling Melon called *Beauty of Windsor*, the result of a cross between Dr. Hogg and *Victory of Bath*. It is a very handsome netted fruit.

Messrs. Sutton and Sons' prizes for Cucumbers were competed for on this occasion. Mr. Lockie, The Gardens, Oakley Court, Windsor, was first with a magnificent brace of Sutton's Improved Telegraph, measuring 21 inches in length; Mr. Waite, Glenhurst Gardens, Esher, second with a brace of Sutton's Purley Park Hero; and Mr. Downing, The Shrubbery, Enfield, third with Sutton's Improved Telegraph. Colonel Lee, Hartwell House, Aylesbury, Mr. Haines, The Gardens, Coleshill House, Highworth, and Mr. Kitching, Lauriside, Malvern, were the other exhibitors.

Scientific Committee.

Peristeria sp.—Mr. Ridley reported on the two forms exhibited at the last meeting, having discovered no trace of sexual difference, the colouring of the two supposed species being scarcely specific in character.

Plants exhibited (*Astelma eximium*).—Dr. Low exhibited specimens of this Everlasting, received from Lady Frere, and brought from South Africa. It was introduced into England in 1793 and figured *Botanical Register* (tab. 582), and the *Journal of Horticulture* (p. 233, March 24, 1881).

Ceratopogon pallidum.—Shown by Mr. Smee. It had been accidentally imported with Orchids from the Himalayas.

Ranunculus cortusae-folius.—A fine plant nearly 3 feet in height was sent by Mr. Loder. It is a native of the Canary Islands and Madeira (*Botanical Magazine*, t. 1625). It is said to be hardy, but has not proved to be so at Floore, Weedon. It was remarkable not only for the large size of the golden yellow flowers, more than 2 inches across, but from the seemingly total absence of the honey-glands at the base of the petals.

Cypripedium arcticum.—Mr. Ware sent a plant of this curious Orchid, figured in the *Botanical Magazine* in the year 1813 (tab. 1569). It is characterized by the anterior pair of sepals being free instead of coherent, as in most species.

Moustrous flowers.—*Calceolaria*, double, with the "slipper" repeated, sent by Mr. Veitch, and *Primroses* with foliaceous sepals free and coherent, also partially coloured, &c., forwarded by Mr. A. Dean.

LAW.

PURSER V. THE WORTHING LOCAL BOARD. (Before the MASTER OF THE ROLLS, LORD JUSTICE FRY, and LORD JUSTICE LOPES.)

THIS case raised the question whether glasshouses and greenhouses, in which fruit, flowers, and vegetables are grown in the way of a man's trade for market, are to be assessed at their full net annual value, or only at one-fourth thereof under sec. 211, sub-sec. 1 (b) of the Public Health Act, 1875, which provides, *inter alia*, that "the occupier of land used as market gardens or nursery grounds shall be assessed in respect of the same in the proportion of one-fourth part only of the net annual value thereof." George Purser was a grower of fruit, vegetables, and flowers, carrying on business at Worthing, and describing himself as a "market gardener and nurseryman," and he occupied a piece of land about 1a. 1r. in extent, upon which were sixteen glasshouses or greenhouses of various sizes, substantially built, and used by him for the purpose of growing Tomatoes, Cucumbers, Grapes, flowers, &c., in the course of his business. The Local Board rated him in respect of the glasshouses or greenhouses on their full net annual value. The Divisional Court (Mr. Justice Day and Mr. Justice Wills) held that the land covered with glass was a "market garden" within sec. 211, sub-sec. 1 (b) of the Public Health Act, 1875, and the occupier was only liable to be rated at one-fourth of the full net annual value. The defendants appealed.

Mr. Lumley Smith, Q.C., and Mr. English Harrison, for the defendants, contended that the glasshouses, which were substantially built, with brick walls let into the ground, ought to be rated as buildings at their full net annual value, and were only adjuncts to and not part of the market garden.

The Court yesterday dismissed the appeal. The Master of the Rolls said that the case was a clear one. This land was not used as a pleasure garden, but as a market garden. It was used for the purpose of utilising the soil to grow vegetables and other things which the market gardener sold in the way of his business. Was it the less "land used as a market garden" because it was covered with glass? Certainly not. That in reality was the whole case.

The Lords Justices concurred.—*Times*.

Gardeners' Orphanage Fund.—A meeting of the provisional committee was held at South Kensington on Tuesday last. Donations and subscriptions to the amount of £568 11s. were announced, and the following resolution unanimously adopted: "That the provisional committee is of opinion that the progress made is sufficiently satisfactory to warrant the calling of a general meeting to establish the same, and that such meeting be held on the 12th of July."

Opening of Richmond Terrace Gardens.—The Duke of Buccleuch having determined to sell his estate lying between the top of Richmond Hill and the river Thames, the inhabitants resolved to obtain this, and, with the sanction of the Local Government Board, purchased the property for £30,000. Last Saturday the upper portion of the grounds attached to Buccleuch House was opened by the Princess Mary of Teck as a place of recreation for the inhabitants.

We are informed that, through the kindness of Mr. A. H. Smee, any of our readers who care to come during next week may inspect his garden (the Grange, Hackbridge, Carshalton, Surrey). There are many fine forms of *Cattleya Mossie* at present in flower.

Royal Horticultural Society.—We learn that the council of this society have resolved to call a special meeting of the Fellows to be held at South Kensington on June 28, to take into consideration the present state of the society with a view to future arrangements.

Destruction of rabbits.—Can any of your correspondents suggest some way for the wholesale destruction of rabbits? Can they be poisoned or smoked out of the burrows? Here they are simply vermin.—S. W. F.

BOOKS RECEIVED.

"The Fungus-Hunter's Guide and Field Memorandum Book." By W. Delisle Hay. Swan, Sonnenschein, Lowrey and Co., Paternoster Square.
"Gleanings in Old Garden Literature." By W. Carew Hazitt. Elliott Stock, 62, Paternoster Row.

Names of plants.—*T. J.*—Cannot name varieties of *Gloxinias*.—*B. B.*—1, *Asplenium pumilum*; 2, *A. Belangeri*; 3, *Doodia aspera*; 4, *Adiantum concinnum latum*.—*H. F.*—1, *Erica aristata major*; 2, *E. perspicua nana*; 3, *Bromna elatior*; 4, *Leptospermum bulbatum*; 5, *Hypoclyonema robusta*; 6, *Drocephylum gracile*.—*Junio.*—1, *Broughtonia sanguinea*; 2, *Oncidium biflorum*; 3, *Epidendrum Wallesi*; 4, *Dendrobium superbiens*; 5, *Oncidium protractum*.—*A. M. G.*—1, *Lycaste ericenta*; 2, *L. macrobilbum*; 3, *Brasavola nodosa*; 4, *Microstylis calophylla*.—*Enquirer.*—1, *Oncidium phymatocidium*; 2, *Miltouia cuneata*; 3, *Dendrobium albo-sanguineum*.—*Gottlieb.*—1, *Arnebia chiodioides*; 2, *Ranunculus amplexicaulis*; 3, *Polemonium Richardsoni*.—*G. M.*—1, *Lepicystis incana*; 2, *Goniophlebium harpocodes*; 3, *Dioetyglossum japonica*; 4, *Pellea intramarangalis*; 5, *Odontoglossum auriculare*.—*J. C., Coleraine.*—1, *Fritillaria pyrenaica*; 2, *Narcissus poetensis*; 3, *Scilla*; 4, *Rhododendron Countess of Haddington*; 5, *R. Gibsoni*.—*B. J.*—Flowering specimen, *Lavatera arborea variegata*; striped leaves, *Reineckia carnea variegata*.—*M. G. S.*—Cannot name from leaves only.—*H. H. D.*—Specimen too much shrivelled to identify.—*H. B.*—1, *Cypripedium chlorale*; 2, *Maxillaria luteo-purpurea*; 3, *Bletia Sheperdi*; 4, an ordinary form of *Lelia purpurata*.—*A. Fowler.*—1, *Oncidium flexuosum*; 2, *T. bernaumburgiana coronaria*; 3, *Gesnera macrantha*; 4, *Tydaea*, apparently *ambilis*.—*H. E. B.*—*Ame-lanchier canadensis*.—*C. B. G.*—*Fritillaria pyrenaica*.—*Tyle.*—1, *Ame-lanchier canadensis*; 2, *Monochloa ensifolium*; 3, *Adiantum Paoti*, much shrivelled; 4, *Myriopteris lendigera*.—*S. G. R. M.*—A good ordinary form of *Cattleya Mossie*.—*J. R.*—1, *Oncidium leucocidium*; 2, *Gesnera tubiflora*.—*C. M. Terriagos.*—A very pretty spotted form of *Odontoglossum Pescatorei*, which may come more heavily spotted another season.—*J. M. G.*—1, *Veronica repens*; 2, *Viola pedata*; 3, *Iris multicollis*.—*H. M. P.*—1, *Geichenia alpina*; 2, *Liudsea linearis*; 3, *Asplenium flaccidum*.—*Captain E. Mackhom.*—Specimen too much shrivelled to identify; send better specimen in damp Moss.—*D. J. Yeo.*—*Echeveria retusa*.—*Amargyllis.*—1, *Amaryllis sulcata*; 2, *A. vittata*; 3, a form between the two; not worth growing when compared with the numerous beautiful hybrids now to be had.—*A. R. H.*—Blossoms of *Magnolia*; too much shrivelled to identify.—*S. Cl. Ick.*—1, *Oncidium divaricatum*.—*W. S. L. clauder.*—Large flower *Cypripedium barbatum grandiflorum*; small one the typical *C. barlatum*; *Odontoglossum Alexandrae*, fairly good varieties; *Mastodonia ignea*.—*T. J., Sheffield.*—1, *Adiantum sulphureum*; 2, *Nephrolepis cavalliodis*; 3, *Oncidium japonicum*; 4, *Selaginella atrovivida*.—*F. K., Edinburgh.*—1, *Gentiana verna*; 2, *Androsace sarmontosa*; 3, *Iberis juncunda*; 4, *Anemone Pulsatilla*; 5, *Phlox Nelsoni*.—*M. S., Ardmore.*—1, *Megacalinum flaccidum*; 2, *Angreum teretifolium*.—*Dr. P., Bridg of Allan.*—A good variety of *Chysis bractescens*; *Odontoglossum Reichenheimi*.—*K. pt.*—*Miltonia flavescens*.—*H. E. D.*—It frequently occurs in *Mycosotis*.—*M. B.*—Not uncommon.—*W. T.*—1, *Picea Menziesi*; 2, *Cupressus Lawsoniana* var (but not named); 3, *Juniperus drupacea*; 4, *J. communis* var.; 5, *Thuja plicata*.—*R. F. Hall.*—1, *Pyrus pinnatifida*.—*J. S. S.*—1, *Pulmonaria angustifolia*; 2, *Allium* sp.; cannot name unless we have flowers.—*H. Church.*—1, *Beberis barbinis*; 2, *Genista virgata*; 3, *Prisylhia viridissima*; 4, *Ribes aurea*.—*F. A. St. m.*—1, *Rhodiola minor*; 2, *Spiraea prunifolia*.—*P. Davidson.*—Your plant is *Polygala vulgaris*.

WOODS & FORESTS.

"YORKSHIREMAN."

THE NOOTKA SOUND CYPRESS.

(CYPRESSUS NUTKAENSIS.)

AT the late Colonial and Indian Exhibition one of the largest and most conspicuous samples of wood was a clean and well-polished specimen of the above tree, which clearly set forth the beautiful graining as well as large size to which it attains in its Canadian wilds. The specimen under notice was no less than 18 feet in length, 1 foot in width, and 2 inches thick, clean, smooth, and knotless as a piece of Yellow Pine, and as prettily grained and of as desirable a colour as could well be desired even by the most fastidious of wood-fanciers. To Professor Macoun, of Ottawa, I am indebted for a great deal of information regarding this and others of the Canadian woods, apart altogether from their value in a commercial sense and quality of timber, this latter being fully set forth in the exhibited specimens both of a manufactured and unmanufactured type.

The timber, which is of a pale yellow colour, is remarkably light, tough, close-grained, and durable, susceptible of a high polish, and has a pleasant fragrance not unlike that of Sandal-wood, this latter being retained unimpaired for many years; for we are informed that on cutting into the fallen trees of the woodland where they have lain for upwards of a century, the heart-wood is quite fresh and the pleasant fragrance distinctly detectable. The fragrance of the wood has caused it to be extensively used, particularly by the Chinese, in the manufacture of workboxes and fancy articles of many kinds.

Boats and canoes are likewise made of the timber of this Cypress, and have proved lasting and strong; while oars, paddles, furniture, fencing materials, wagons, and household utensils are but a few of the many uses to which it is applied.

How indestructible the timber is may be inferred from the fact that blown-over trees are frequently found in their native woods almost perfectly sound after the lapse of half a century and more, this being quite evident from the number of seedlings that have sprung up and attained to large size close beside the prostrate stems—nay, even in some instances on the very backs of their ancestors. The decaying leaves and branches soon envelop portions of the fallen stems, thus, combined with their Moss-covered bark, affording an excellent bed for the tiny seed.

Here, then, we have in one of the most valuable timber-producing Cypresses a tree that is peculiarly well adapted for cultivation in this country—a statement that requires nothing to back it up, save, indeed, a glance at the numerous fine trees to be met with in almost every collection throughout Britain. It is, indeed, not a tree of very rapid growth, but it makes up for this in its stout, well-formed stems and perfect immunity from harm, even during our most severe and long-continued winters. Rarely, indeed, is it that one hears of this Cypress having suffered from the inclemency of the weather, although it has been largely planted in all situations and exposures both in Scotland, England, and Ireland. A leader is rarely injured or a tree upturned during our most severe storms, so hardy and sturdy is this valuable Cypress. As regards choice of soil, I certainly know of no Cypress that is less particular, for we have it growing luxuriantly in all the intermediate gradations between gravel and clay. Even in reclaimed peat it forms a handsome, portly tree; indeed, the prettiest and fastest growing specimens I can at present remember are growing where peats for fuel were at one time obtained, but which now by draining, &c., is reclaimed into as good a soil for Conifers generally as one need wish to possess. Shingly, broken-up rock also produces excellent examples of the tree in question, the roots seeming to delight to wander amongst such, but particularly so where an excessive amount of moisture is present. Stiffish, but strong loam will also be found well suited for the wants of this tree, the finest specimen on this estate being planted in such. The largest tree I have seen measures 42 feet in

height, has a stem girth of 4 feet 11 inches, a spread of branches covering a diameter of fully 18 feet, is well clothed to the very ground level with an abundance of glossy foliage, and is growing in a kindly sandy loam, and at no great altitude above sea level. How long this tree has been planted I am unfortunately unable to say, but others of twenty years' growth are about 18 feet in height, and in the nursery four-year-old plants are a yard in height.

Generally speaking, under favourable circumstances and when the tree is perfectly established, the rate of growth upwards is about from 7 inches to 9 inches—rarely more than the latter—per year, but the growth produced is strong, elastic, and well matured. The increase of thickness in the lower portion of the stem of fair-sized trees of this Cypress is very observable, that for 6 feet from the ground being greatly in advance of that further up. In other words, the taper in the stem is considerable, more so than in the Cypress tribe generally.

In the nursery the propagation and management of this Cypress is of the simplest description, it being readily increased either from seeds or by inserting cuttings in sharp sandy soil during the latter end of August. The latter is the usual method of propagation, but, in our own opinion, an inferior way to raising from seeds, the produce of the latter seeming to start away with greater freedom than plants raised from cuttings. In raising this Cypress from cuttings these should always be chosen from the most robust-growing specimens, there being a dwarfish close-habited plant and a far more desirable form with an open spreading habit and more tree-like appearance in circulation. The typical *Cypressus nutkaensis* is a fine, spreading-branched tree, with a great exterior resemblance to *C. Lawsoniana*, but, we think, an inferior plant to that well-known species, in ornamental appearance at least. It is more stiff and rigid in outline than the Lawson Cypress, and wanting to a very great extent in the long weeping branchlets that are so characteristic of well-grown specimens of that plant. Usually the branches have an upright tendency, with numerous drooping branchlets thickly clothed with small, closely imbricated, sharp-pointed leaves, of a rich dark green above and slightly glaucous on the under side. The cones are produced in great abundance even on the lower branches, are about the size of a good large Pea, and contain usually two dozen seeds each.

There is a beautiful golden form of this Cypress which is far more ornamental than the typical plant, the tips of the branchlets being of a light and pleasant yellow colour. By far the finest specimen of this variety I have seen is growing on the lawn at Penrhyn, it being nearly 30 feet in height, with a spread of branches 18 feet in diameter, and a stem girthing 3 feet 2 inches at a short distance from the ground. It is undoubtedly the most distinct and ornamental Cypress I know of, the long, drooping branchlets hanging limp and easy for, in some instances, 30 inches in length. This is not the form that is usually sold by nurserymen under the name of *C. nutkaensis aureo-variegata*, for this latter differs nothing from the type except in the golden-tipped foliage, whereas in the specimen under notice the branchlets are lengthened to four times their usual size. I have never seen a tree at all approaching the Penrhyn one, and several 'cute tree-lovers to whom I have pointed it out declare that it is perfectly distinct from anything else at present known. Not a dozen feet from it is a fine specimen of the normal plant, placed, one might suppose, so as to show the great difference between it and its handsomer and far more desirable variety—if variety it be.

A. D. WEBSTER.

Mismanaged planting.—In reply to "Yorkshireman" in your issue of May 21 (p. 479), did ever "Rusticus" see a timber tree without a tap root, unless injured by transplanting? I beg to call "Yorkshireman's" attention to the Wych Elm, *Ulmus montana*; the English Elm, *Ulmus campestris*; the Lime Tree, *Tilia europæa*, the two latter generally being raised by layers. How does "Yorkshireman"

account for tap roots being on these trees, or has he ever seen them with them? If he has, he must have some other way of distinguishing a tap root from any other root than what the writer has. I have had occasion this last season to plant several thousand trees (Oak) from a public nursery. I fail to see the object of a bare tap root that has to be planted out in the woodland. Give me the plants that have been frequently transplanted with plenty of fibrous roots.—RUSTICUS.

THE PRESERVATION OF WOOD.

THE durability of wood—that is, its power of resisting the destructive influences of wind and weather—varies greatly, and depends as much upon the particular kind of wood and the influences to which it is exposed as upon the origin of the wood (timber), its age at the time of felling, and other conditions. Beech wood and Oak placed permanently under water may last for centuries. Alder wood lasts only a short time when in a dry situation; but, when kept under water, it is a very lasting and substantial wood. Taking into consideration the different kinds and varying properties of wood, and the different uses to which it is applied, we have to consider, as regards its durability, the following particulars: 1. Whether it is more liable to decay by exposure to open air or when placed in damp situations. 2. Whether it is, when left dry, more or less attacked by the ravages of insects, which, while in a state of larvæ, live in and on wood. Pure woody fibre by itself is only very slightly affected by the destructive influences of wind and weather. When we observe that wood decays, that decay arises from the presence of substances in the wood which are foreign to the woody fibre, but are present in the juices of the wood while growing, and consists chiefly of albuminous matter which, when beginning to decay, also causes the destruction of the other constituents of the wood; but these changes occur in various kinds of wood only after a shorter or longer lapse of time; indeed, wood may in some instances last for several centuries and remain thoroughly sound; thus, the roof of Westminster Hall was built about 1090. Since resinous woods resist the action of damp and moisture for a long time, they generally last a considerable time; next in respect of durability follow such kinds of wood as are very hard and compact, and contain at the same time some substance which—like tannic acid—to some extent counteracts decay. The behaviour of the several woods under water differs greatly. Some woods are after a time converted into a pulpy mass. Other kinds of wood, again, undergo no change at all while under water—as, for instance, Oak, Alder, and Fir. Insects chiefly attack dry wood only. Splint wood is more liable to such attack than hard wood; while splint of Oak wood is rather readily attacked by insects, the hard wood (inner or fully developed wood) is seldom so affected. Elm, Aspen, and all resinous woods are very seldom attacked by insects. Young wood, which is full of sap and left with the bark on, soon becomes quite worm-eaten, especially so the Alder, Birch, Willow, and Beech. The longer or shorter duration of wood depends more or less upon the following: *a.* The conditions of growth. Wood from cold climates is generally more durable than that grown in warm climates. A poor soil produces as a rule a more durable and more compact wood than does a soil rich in humus, and therefore containing also much moisture. *b.* The conditions in which the wood is placed greatly influence its duration. The warmer and moister the climate the more rapidly decomposition sets in; while a dry, cold climate materially aids the preservation of wood. *c.* The time of felling is of importance; wood cut down in winter is considered more durable than that felled in summer. In many countries the forest laws enjoin the felling of trees only between November 15 and February 15. Wood employed for building, and not exposed to heat or moisture, is only likely to suffer from the ravages of insects; but if it is placed so that no draught of fresh air can reach it, to prevent accumulation of products of decomposition, decay soon sets in, and the decaying albuminous substances acting upon the fibre cause it to lose its tenacity and become a friable mass. X.

No. 811. SATURDAY, June 4, 1887. Vol. XXXI.

"This is an Art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—*Shakespeare.*

FLOWERS IN THE HOUSE AND EDITOR'S TABLE.

Under this head we propose, during the present season of flowers, to notice things, from whatever department, that are pretty and useful for the house. Any reader who will help us by sending fitting things, or a word about them, will oblige. The simplest things from the smallest garden, and even from the woods and fields, need not be excluded.

WHITE WOOD LILY (*Trillium grandiflorum*).—Flowers with leaves of this gathered fourteen days ago are still as fresh as the day they were gathered. This proves its high value as a flower for the house.

THE SNOWDROP ANEMONE (*A. sylvestris*) always comes in so well after the Wood Anemone, that it deserves to be in every garden, though in some soils it does not flower well. It has a slight fragrance. From Mr. Kingsmill.

THE ENGLISH LADY'S SLIPPER (*Cypripedium Calceolus*).—A very beautiful form of this from Mr. Kingsmill. It is prettier with its dark chocolate and lemon flowers than most of the tropical sorts.

PEARL BUSH (*Exochorda grandiflora*).—The prettiest thing now in the garden is a bush of *Exochorda grandiflora*, with its lovely white half pendent racemes. It is charming in a vase, especially with blue Gentians.—T. W. G.

HONEYSUCKLE.—A bowl of the earliest Honeysuckle; a most welcome house flower. A pale buff kind, very free flowering; the flower in pyramid-shaped tiers of bloom, set in a great, round, leafy collar.—J.

SNOWDROP ANEMONE (*A. sylvestris*).—A good handful of this, with its leaves, and a few of the longer-stalked alpine Anemone make a very pretty bouquet with a few sprays of young ivy leaves, now at their brightest and glossiest.—J.

PARROT TULIPS.—For a bold arrangement of strong colouring, few flowers give so gorgeous an effect, and they twist and tumble about in a way that helps their manipulator to dispose them in natural-looking, informal groupings.—J.

LEOPARD'S-BANE.—*Doronicum Harpur-Crewe* is a grand flower for cutting of much endurance, good both by day and night. A bold bunch cut with long stalks looks well with Laurel branches of a pale yellow-green colour.—J.

THE GARLAND FLOWER (*Daphne Cneorum*).—The alpine garden sometimes offers its bouquet of modest dimensions. The Garland Flower, with its rosy blooms and crimson buds, a few flowers of the pure white *Primula Munroi*, and newly-developed fronds of Oak Fern make up a little bunch of singular beauty.—J.

YELLOW WALLFLOWERS.—A big patch of these close under one's eyes is perhaps not quite acceptable; indeed, a big mass of any striking colour presents usually the same objectionable

features. But when, as I see here, a large mass of rich yellow Wallflowers 40 yards off and seen forming a background of gold beneath and beyond the trees which break the view, and more remote a patch still of purple Honesty, I find then something which is beautiful and meriting the designation of a picture.—A.

INDIAN AZALEAS FROM CORNWALL.—We have grand masses of this in the grounds quite 12 feet over. They have never flowered better, though they have had to contend against 18° of frost during the winter.—SANGUINEA.

PRIMULA OBOVATA.—I send a few sprays of *Primula obovata*, taken from a plant, of which we have many, that have stood out quite unprotected through the past severe winter.—SANGUINEA, Cornwall.

HABROTHAMNUS FASCICULATUS.—I have sent you much finer branches of this before. The present is only to show you how it has behaved outdoors through the severe frosts it has been subjected to.—SANGUINEA.

** Brilliant flowers—better than we have seen indoors.—ED.

LILIES OF THE VALLEY.—The famous growers of these, Messrs. Hawkins and Bennett, bring us a beautiful bunch of their Lilies of the Valley, so well known now in Covent Garden, and of which they occasionally send 500 bunches to the market in one day. The kind they grow is known as Hawkins' Victoria, but we think that it is by good cultivation that the beautiful flowers they bring us are produced. But there are certainly distinct forms of the plant.

PRIMULA SIEBOLDI.—I send you with this a few *Primula Sieboldi* blooms (the foliage is very handsome) to show how well they have stood these very heavy hailstorms, eight years in one spot without protection of any kind! Also, *Aquilegia viridiflora*, because it is an old favourite of yours. Sweet-scented, and an absolutely hardy perennial.—A. KINGSMILL.

AURICULAS.—The border kinds are capital cutting flowers, lasting long in water. The colours are so various that they should be classed together in different bouquets, as crimson and dark maroons together; purples, self and shaded, with whites and greys, and so on. If beds of seedlings are grown, there are sure to be some worthless ones whose whole crowns can be cut for foliage; no other leaves suit them so well.—J.

THE FIRE BUSH (*Embothrium*).—Brilliant specimens of this from "Sanguinea," who writes: "There are many fine plants in this neighbourhood at present one blaze of flower. I never saw them so grand before. There are plenty of plants in Cornwall over 20 feet high."

** The most brilliant thing we have ever seen on a tree.—ED.

TUFTED PANSIES FROM EDINBURGH.—I send you some Pansies given to me at Pirig Park Nursery to-day. Scotland is certainly the home of Pansies and Violas. I also send an Indian *Vaccinium* and a seedling Sycamore from the same nursery. The latter plant keeps its light colour all through the season, and seems an effective variety. *Fritillaria recurva* is also enclosed. I wish I had added a spray of *Asparagus giganteus*, the long wreaths and rapid growth of which must make it a valuable climb-

ing plant for conservatories, and perhaps in the south for outdoor culture as well. I intend to try it out of doors in Ireland.—C. M. OWEN.

** Delightful tufted Pansies, extremely delicate and pretty in colour, some of which we regret we do not know the names of. We believe these flowers, taken altogether, have more good qualities than any grown in our open gardens. Their hardiness and their value for the spring and summer garden, and as flowers for the house are equalled by nothing we know.

THE VINE-LEAVED INDIAN MALLOW (*Abrutilon vitifolium album*).—I send you a spray of this. It is a shrub of great beauty, and apparently quite hardy in Devonshire. This plant is trained, about 12 feet in height by 6 feet, and it is covered with hundreds of flowers and buds. I have had a smaller plant on the open border as a standard all the winter, and it is unharmed by frost.—T. H. ARCHER-HIND, South Devon.

** Flowers large and of the purest white.—ED.

THE CAUCASIAN SCARLET POPPY (*Papaver umbrosum*).—This gloriously coloured Poppy is so hardy, that it defies all weathers. A mass of autumn-sown plants now rich in its first blooms is so beautiful as to command admiration. The intense crimson hue of the flowers is admirably contrasted with the black blotches at the base of the petals, and conjointly moderates the glare which otherwise might be felt when looked upon closely. Why does not someone of our public gardeners treat the London public to a mass of this Poppy in the spring? If sown in September the plants will transplant admirably in November, and give the bed a covering of green foliage all the winter and a wondrous glow of colour in the spring.—A.

THE WHITE MALLOW.—How much all who see the big clumps of the paper-white *Malva moschata* even now become desirous of possessing plants. I regard it as a valuable addition to our hardy border plants, if for its beautiful cut foliage only. Weather seems incapable of harming it, and all the winter the foliage is green and vigorous. Gradually the shoots ascend, but remain even when 15 inches high clothed densely with foliage, and at 2 feet in height will be in good bloom. Those who specially love white flowers, whether in single clumps or in big masses, should have this charming Mallow. It comes readily from seed, which should be sown at once, and it is a very hardy perennial.—A.

BEAUTIFUL CLIMBERS.—I have sent you a gathering of flowers from our stove. The *Bougainvillea* is grand. I have two plants planted out on the glass end of a span-roofed stove. I planted them there and trained them over the end to give a little shade, and it has thoroughly answered the purpose. It is now one mass of flower—quite a sight. The *Stephanotis* is also planted out at the other end and trained over one side, and it is also one mass of bloom. It has been in flower fully three weeks now. The *Dipladenia Beareleyana* and *Clerodendron Balfourii* are planted out on the other side, and are blooming very freely over the roof. I have two *Allamandas* in tubs, *nobilis* and *Hendersoni*, in the centre, their branches growing at will, and they look quite at home. There is a fine lot of *Gloxinias* in flower; also *Gardenias*, double *Primulas*, &c., and a few *Orchids*, with *Caladiums*, *Draenas*, *Acalyphas*, *Fittonias*, and *Coleuses*, &c., and the remainder made up with Maiden-hair and other Ferns. Altogether it has a very gay appearance, and is most en-

joyable.—E. E. UNDERDOWN, *The Gardens, Colchays, Bovey Tracey, Devon.*

* * * The darkness of a London 1st of June was dispelled for us by receiving the above lovely wreath of stove climbers from Devon.—ED.

RHODODENDRON NUTTALLI.—We send you a truss of *Rhododendron Nuttalli*. This is the first time we have succeeded in flowering this superb plant. It is, we think, the best of the whole genus; in a truss were seven large funnel-shaped flowers, each 6 inches to 7 inches in length. The buds open a deep straw, which gradually changes to pale delicate straw colour. Our plant has been growing in the open air some years. Last autumn we fixed a frame overhead; probably this prevented the buds from being injured during the winter.—CHAS. SMITH AND SON, *Guernsey.*

— I send you a cluster of *Rhododendron Nuttalli*, the smallest of eight such clusters. Several blooms have measured from 5½ inches to 6 inches in diameter. How seldom this is seen in private gardens. I cannot call to mind just now one other garden where it is to be seen. It is a great pity, as when not in bloom, its noble foliage gives it a grand appearance. The plant from which this truss has been cut is growing in an 18-inch pot.—JOHN EASTER, *The Gardens, Rathlauric, Monasterivan, Ireland.*

* * * A plant of it may now be seen in flower in the temperate house at Kew.—ED.

ROSE GARDEN.

T. W. GIRDLESTONE.

ROSE PESTS.

Now that a little growth is at last visible upon the Roses, grubs and caterpillars are energetically to the fore, and must be zealously watched for and picked off. These troublesome visitors seem to be unusually numerous this year, and are liable to be especially mischievous in consequence of the backward state of the plants. When a young caterpillar elects to lunch off a more or less developed Rose leaf, even if he be overlooked for a day or two, no greater harm will have been done than the partial disfigurement of a leaf or two; but when, for lack of leaves, the caterpillar is boarded out on a young Rose shoot only an inch or less long, then, in addition to being out of sight, and so more difficult to find and much more difficult to kill without injuring the growth, it is impossible even for the best intentioned caterpillar to subsist without preying upon the vital parts of the shoot, and so destroying the chance of bloom therefrom.

The most obvious indication of the presence of grubs on a plant before the leaves are expanded is the curved position assumed by the young shoots, the curvature being caused by one side of the shootlet having been eaten away, so that its growth is retarded, while the uninjured side grows on in the normal way. The only thing to be done is to hunt diligently for the depredator's lurking-place, and then, carefully separating the still closely packed leaves of the shootlet, to extract as best may be and with as little breakage as possible the tiny creature that is working so much destruction. It is about this time of year, when it is necessary constantly to examine each plant, that growers are liable to point out the advantages of growing standards, just as the flies are said to have converted an uncompromising budler into an advocate of Roses on their own roots. Certainly if there be one branch of gardening more

than another that requires "a cast-iron back with a hinge on it," it is the culture of dwarf Roses, for whether the operation of the moment be budding, tying, suckering, pruning, grub-hunting, or aphid-killing, one is always—like a certain celebrated heroine—in a peculiarly doubled-up position.

Aphides are not yet in evidence, and their presence can very well be spared. The conditions of the season so far bear considerable resemblance to those of last spring, when, it will be remembered, there were but few complaints of aphid; but a terrible infliction of red rust, or orange-fungus, was very general, and if a similarity of season should again keep the Roses free from aphid, the same influences may also again involve a visitation of the former more unsightly pest, of which indications already are not wanting in certain quarters. Unfortunately, no satisfactory means of destroying orange-fungus has yet been found; the only thing to be done is to pick off the affected leaves, but then the remedy is almost worse than the disease, and is seldom effective in preventing the spread of the complaint among the denuded plants.

Mildew also has not so far made its appearance, but if it does so, the best thing to check it is to syringe the plants with a solution of sulphide of potassium at the rate of half an ounce of sulphide to a gallon of water. In addition to being far more effective, this process is also much less unsightly than that of dusting the plants over with dry sulphur, and the solution is easier to mix than either paraffin or soft soap. It is worth noting that the finer the spray in which the solution is thrown on to the plants the better, as it then adheres more readily to the foliage, and at the same time economises the fluid.

The best pillar Roses.—I should say most decidedly the best pillar Roses are the Hybrid China and the Bourbon varieties. They are not only profuse bloomers, but vigorous growers also, and they make shoots generally from 6 ft. to 10 ft. long every season, and their branches are flexible as well as vigorous; the flowers also are large and of very fine form in most instances. Then they are perfectly hardy and require but little pruning, and to do them full justice they should be planted in rich soil. In pruning, the wood should not be shortened, but simply the old and worn-out shoots cut right back to the main stem, leaving the young ones of the previous summer to bloom. Growers say that the best flowers are produced on two-year-old wood. A few of the best in this section are Charles Lawson, vivid rose, large and full; Coupe d'Hebé, rich deep pink, large and very double; Juno, pale rose; Paul Ricaut, bright rosy crimson; Paul Verdier, bright rose, large and full; and Souvenir de Pierre Dupuy, deep velvety red, very large and striking. I may add that the Tea-scented William Allen Richardson makes an excellent pillar Rose, and is being largely propagated by some of our leading nurserymen, as it is in demand for this purpose.—R. D.

Rosa berberifolia. Mr. Ewbank is asking for information about this Rose. I am afraid he will not extract much comfort from the following description taken from Edwards' *Botanical Register* for 1829 (tab. 1261), where it is figured under the generic name of *Lewea*, and described by Professor J. Lindley:—

This plant resists cultivation in a remarkable manner, submitting permanently neither to budding, nor grafting, nor laying, nor striking from cuttings. Drought does not suit it; it does not thrive in wet. Heat has no beneficial effect; cold no prejudicial influence. Care does not improve it; neglect does not injure it. Of all the numerous seedlings raised by the Horticultural Society from Mr. Willcock's seeds and distributed, scarcely a plant remains alive. Two are still growing in a peat border in the Cliswick garden, but they are languishing and unhealthy; and we confess that observation of them in a living state for nearly four years has suggested a single method of improving the cultivation of the species.

—C. WOLLEY DOD, *Edge Hall, Malpas.*

ROSES ON OWN ROOTS.

HAVING given this matter a great deal of thought and experimented considerably for the past thirty years, I am convinced that 95 per cent. of the Roses grown to-day, whether for adornment of the flower garden or the forcing for flowers in the winter and spring, are better on their own roots; always provided they are propagated and grown from good healthy plants and given the required season of rest and change of treatment suitable to their several requirements.

If budding or grafting is practised at all, the stock and scion should be of the same family or as nearly of the same qualities in regard to time of growing, &c., as possible; perhaps the worst stock for Tea Roses, if the plants are required for winter forcing, is the Brier; after trying this stock in many ways for that particular purpose for the past thirty years, I have discarded it. This also is applicable to Hybrids for winter forcing, as they never do so well on it as they do on Manetti or Griffaria; the latter is the best of the three by a long way for Tea Roses especially, but for Hybrid Perpetuals for all purposes, if I had to choose between them, I should take the Manetti; but if once Hybrid Perpetuals are fairly tried on their own roots, I think the majority of growers would not want them on any stock. When a Rose is a weak grower, and it is necessary to get it into stronger growth, if it is a Tea Rose, then I would bud it on some good strong growing Tea stock, such as Souvenir d'un Ami, Marshal Robert, &c. To demonstrate this I imported a lot of Roses (Tea and Hybrid) last autumn from several European growers, and in due season potted them up, keeping each consignment separate, and at the same time potting up a lot of my own Roses on their own roots; in every case my own plants have beaten the imported budded plants, no matter what the stock was. Many growers who called here during the past season remarked the difference. I also saw a lot of Rose C. Mermet, imported budded plants, this season planted alongside others on their own roots, and I think I am safe in saying that the budded plants had not produced at the time I saw them more than two-thirds as many buds as those on their own roots, though placed in exactly corresponding positions and receiving the same care and attention.

For bedding purposes, where the plants are required to stand for years, I think the hardy Roses are immensely superior when on their own roots, for while the plant may not be as large when just planted, yet it will soon grow into size and keep on increasing, while budded or grafted plants will in nearly every case be virtually dead in three years, and 90 per cent. of such that are planted in this country every year do not live to see the third year. Why is it thus? Simply because the suckers from the bottom soon monopolise the plant. With inexperienced cultivators the result is disappointment—and when they get the proper attention it is a continual nuisance to have to look them over frequently for suckers and then in the end lose them, which is the case in a great many places I am familiar with. I have a letter lying before me now which will illustrate this better than anything I can think of just at this moment. The writer (a lady) says: "The two Roses Baroness Rothschild and Mabel Morrison you sent me in 1876 have grown to be very fine bushes. They were small plants on their own roots, and I thought when I planted them they would never amount to much, but taking your advice, after having tried a good many budded Roses before and always lost them after two or three years, I planted these two on a new piece of soil and was very agreeably surprised at their growth, and they continued to grow and bloom freely. Last season they presented a most beautiful appearance; the Baroness had over 100 buds and blooms on it at one time and was the admiration of every one who saw it; the M. Morrison was very fine, also many of the others I have since planted, all on their own roots. I do not want any others in future."

This is only one instance of many where Roses are doing much better on their own roots than budded or grafted have ever done.—*American Florist.*

MARECHAL NIEL ROSE.

THE behaviour of this Rose, whether grown in the open or under glass, is as perplexing this season as ever. In some cases it has passed through the long cold winter on walls facing east unharmed, while on southern aspects the wood is much injured. All the growers whom I have had correspondence with on the subject agree that all the injury has been done since the first day of March. Previous to that the plants in most instances were in the most promising condition. This seems to point to the fact that it is the extremes of temperature which cause the mischief. From 10° to 20° of frost at night followed by bright sun during the day, as was the case in the month of March this year, were sufficient to try any hardy subject, much less one so capricious and tender as the Maréchal Niel Rose. But while the cause of the injury to the wood can be pretty clearly traced, I do not see how it is to be prevented in the future. It seems to me to be just one of those penalties that we have to pay for trying to grow in the open air what can only be depended upon under glass. While saying this, I should be sorry to say a word that would deter anyone from planting this Rose against walls on the aspect in which they find it to do best, for if one only gets a few flowers every year, those produced in the open are so superior in point of colour, that I advise all to grow it on open walls who can, although here, in the genial climate of Somersetshire, it does not do well in one garden out of ten, and it is only in some favoured positions in Devonshire that it grows and flowers as freely as when grown under glass.

The behaviour of this Rose under glass is still more inexplicable. Last year I destroyed a plant that was planted in good soil in a warm corner and that only grew to a height of about 4 ft. in six years. At the same time I planted another that sent up a shoot 16 feet long in as many months as the other had lived years, yet I cannot in any way account for such singular behaviour. Both plants were on their own roots and treated precisely the same. I should like to ask if anyone can explain how it is that some plants never extend after they have once flowered. I have had plants behave in that way, and have seen them in the same condition in other places.

Canker is a dreadful enemy to this Rose both above and below the soil, and, no doubt, this is the cause of many failures. I have destroyed plants that have had the knotty burs upon the roots half as large as a hen's egg. These protuberances, it is well known, are the result of canker, and I know of no remedy that will reach this when it attacks the roots; but when canker attacks the stem just above the soil, one is able, by making a mound of earth as high as the affected part, to induce new roots to form, and by these means restore in some measure the vitality of the plant. But when once canker has set in, rooting out the old plant and supplying fresh soil and planting a young one is, in the end, the most satisfactory way of dealing with the disease. J. C. C.

Rose Reine Marie Henriette.—This is sometimes termed a red Gloire de Dijon, but as far as my experience goes, it possesses no quality in common with that floriferous variety, but rather resembles the Maréchal Niel as far as habit of flowering is concerned. At the Bath spring show there were some grand blooms of it staged, and Mr. Cooling informed me they were grown in a large unheated house with Maréchal Niel, the plants being treated exactly the same as that variety. The aim, then, should be to secure as many long and well-ripened growths as possible, and not prune these till after flowering is over. Thus treated it flowers freely, and is really very beautiful both in a bud state and also partially expanded.—I.

Roses planted out for cutting.—A friend who has a lean-to house with a good space of empty wall at the back is desirous of planting Roses against it for the purpose of getting a good supply of blooms. Position and aspect are in his favour, and he is certain to make up a good and suitable border. I have recommended him to plant Maréchal Niel, Mdme. Falcot, Mdme. Lambard, Safrano,

Niphotos, and Reine Marie Henriette, because these produce nice buds, and in that form he finds a ready and remunerative sale for Roses. He can give his house a gentle heat, and his aim is not so much to force as to have a supply between the forced Roses and those that bloom in the open. I think I never before saw Roses breaking with such fine and vigorous promise as this year. The few days ending the 12th of May helped them wonderfully; but, alas, it is again very cold, with a low temperature at night. Winter seems to be appropriating to itself the whole of spring, and treading very closely on the summer.—R. D.

MAGNOLIA CONSPICUA (YULAN).

ON a bye road, which has no outlet (or, rather, only one outlet), in this neighbourhood stands a cottage, formerly inhabited by an elderly Quaker spinster, who had a taste for good things in the gardening way, and who has left her mark on her former abode. At one side of the door is a good old plant of Magnolia Yulan, which fur-



The Chinese Lily Tree (Yu-lan), *Magnolia conspicua*. Engraved for THE GARDEN from a photograph sent by Mr. Greenwood Pim.

nished the subject of the photograph from which our cut is taken, and which every spring bears many scores, if not hundreds, of its snowy, richly perfumed flowers, which when cut resemble huge, waxy Water Lilies. At the other side is a *Magnolia grandiflora*, which is not so much at home. The railings which guard the steps are completely smothered in a dense tangle of *Clematis cirrhosa* (also figured in the cut), old-fashioned Roses, and the pretty variegated *Smilax aspera*, while a *Wistaria*, with stems as thick as one's arm, hangs its lilac clusters in myriads over the porch. Behind the house are some choice shrubs, amongst them a fine specimen of *Hypericum nepalense*, and others unknown to me. Few climbers are more graceful than *Clematis cirrhosa*, its delicately-cut dark evergreen foliage contrasting well with its curious and pretty, though not very showy, pale yellow blossoms. Its leaves are its strong point; anything more graceful than its shoots

and leafy tendrils can scarcely be imagined, and that they are as available in mid-winter in the open air as in summer, is a further item in its favour. I have even seen its bell-shaped flowers peeping from a canopy of half-melted snow. GREENWOOD PIM.

Monkstown, Dublin.

FRUIT GARDEN.

W. COLEMAN.

PACKING HOTHOUSE FRUIT.

MUSCATS.—Last week I briefly described my own method of packing Hamburgs, and, as a matter of course, similar varieties of Grapes, but time and space prevented me from exhausting the subject by touching upon Muscats. These and all the Frontignan race being more tender than Hamburgs require greater care, and the less they are handled the better they will keep, as any undue pressure causes them to change from their delicate amber to a dirty brown almost immediately after they are opened and exposed to the air. To avoid this, materials of the softest kind only must be used, and of these they must have sufficient to prevent them from moving on the journey. The width of the boxes in which the bunches are to be packed transversely must be regulated by the length of the latter, but, unless they are extra large and heavily shouldered, the depth need not exceed that recommended for Hamburgs; whilst for small taper bunches 6 in. to 7 in. will be found ample. Having thoroughly dried the materials, boxes included, prepare the latter by laying a good 2 inches of Moss evenly over the bottom, line the sides and ends with strips of wadding folded in silver paper, and proceed, as before, by poising the right-hand end of the box to a sharp angle. Place a double sheet of silver paper across the lower end of the box, allowing at least two-thirds to run along the bottom, previously papered to keep down the Moss. Cut the first bunch; lay it lengthwise across the end of the box with its shoulders in one corner; turn up the ends of the paper, and draw them gently, but firmly, over the bunch towards the lower end. Then take a strip of wadding, in length equal to the width of the box and 4 inches or 5 inches in depth; place it against the bunch to form a division; lay in another double sheet of paper, and proceed by laying the next bunch with the stalk in the opposite direction; turn up the ends of the paper as before, and draw the second bunch well up to the first. Introduce another strip of wadding, and repeat until apparently the box is full. This, however, will not be the case, for by raising it to a sharper angle very slight pressure against the last bunch will make room for one, perhaps two, more, which must then be added. Force a little Moss into all available spaces between the wood and the lining; fold the upstanding ends of the paper over each individual bunch, commencing with the first; enclose the weight, secure the lid with two very small nails, and cord singly, or two boxes together, tightly. Although wadding is apt to sweat and become hard when placed in contact with moist fruit or damp boxes, this does not happen when particular attention is devoted to drying, and double sheets of paper throughout prevent it from touching the berries. These directions apply specially to the packing of dead ripe or well-kept Muscats for long journeys in the autumn. Early summer Muscats, which growers cut as soon as they are passable for market, do not require, or if they do, they do not always get the wadding divisions between the bunches. Whatever is worth doing at all,

however, is worth doing well, and for this reason a matter so trifling should never be neglected.

THICK-SKINNED GRAPES, like Lady Downe's, Mrs. Pince, Black Prince, and Alicante, whose bunches are long and taper, pack best in the transverse way, but it is not necessary to place anything between them. Like Hamburgs, however, they should be placed very close together; indeed, the tighter they are packed the better they travel, as there is no possibility of friction. A box 6 inches in depth will be found quite deep enough for a very fine sample of Lady Downe's, but of two sizes it is better to have them rather deep than shallow, as the top berries must be clear of the paper, which should be drawn tightly over the box and nailed down with the lid. Where soft Moss is scarce, as I know it is in many parts of the kingdom, fine paper shavings form the best substitute. Whichever is used, it should be forced down between the sides of the box and the lining until it begins to form an arch next the lid, when the boxes may be turned wrong way upwards without injuring the Grapes.

EFFECTS OF THE WINTER ON FIG TREES.

MR. COLEMAN rightly accepts the past winter as a test one for the Fig in the open air. Possibly he is right in his conjecture that it has hardly passed through such a trying spring since Cardinal Pole laboured so zealously for its extended cultivation. As Mr. Coleman challenges non-protectors to record the condition of their trees, and almost promises to give up protection and all such fussy and untidy contrivances if the embryo fruit as well as the young wood are safe, and the trees give promise of one good crop of Figs, I respond to the challenge, and forward you a box of wood to enable you to judge for yourself. These are by no means from trees in a sunny corner, but from those on several aspects in a cold draughty yard, behind a lofty range of glass, in which sunshine is conspicuous by its absence. Whether the trees are "poverty stricken," or not, is another matter of which the accompanying cuttings will enable you to judge, and about which I shall have more to say, as I hold that a starving treatment is an essential element to the safety of the Fig without protection in the open air. By the way, as Mr. Coleman seems to have uncovered his Figs soon after April 20, and as he is specially anxious to know the condition of unprotected Figs, he will doubtless be so good as to inform us how it has fared with his Fig wood and embryo fruit exposed to the bitter weather occurring between April 20 and May 20. An answer to this inquiry may afford your many readers some satisfaction in regard to the weakest feature of protection, viz., its removal. It may sound like a bull, though it best expresses the most vital practical truth, to say that the dangers of protection do not consist in putting it on, but in taking it off. No fruits can look more promising than Figs when they are uncovered. No fear of any scarcity of living points well furnished with embryo fruits. But no one knows better than Mr. Coleman how often these embryo fruits are blighted, shrivelled up, or drop off after uncovering. When this happens, as no doubt it has in most cases this year, especially where Figs have been uncovered so early as the 20th of April, then the covered Figs start in the race for fruit a month or two behind the uncovered ones. Granting the latter will bear but one crop of fruit in the autumn, the covered trees that drop their embryo fruit after uncovering will ripen no fruit at all, as their shows will be too late to reach maturity before winter, and thus Fig protectors come to grief between two stools or crops. The fruit is so forward, that chills such as we have had this May bring them all to grief or the ground, the second being too late to ripen before the first frosts of autumn are upon them. Neither is it at all clear how Mr. Coleman's "plentiful feeding" will prevent this failure between

two crops, or foster the maturing of the wood. If you would have Figs from the open air, feed not at all would be my advice, as it is my practice, if practice may be defined as a negative, of doing nothing. While venturing thus freely to criticise some of Mr. Coleman's views, I heartily endorse his high estimate of the lusciousness and even commercial value of the English open-air Fig. It not only may be, but is grown year by year of a quality and flavour equal to the best hothouse fruit; while as to comparing Smyrna Figs with English, as well compare French or Italian Grapes with our finest hothouse fruit.

That Mr. D. Walker, of Tunbridge Wells, should have written to say that his open-air Figs are perfectly hardy, even under the pruning and training operations he describes, is not surprising. But their perfect hardiness in East Anglia, over forty miles from the coast and in a cold locality, is another matter, and is largely, if not wholly, due to the starving treatment to which they are subjected. As before stated in THE GARDEN, these trees are planted in a stoneyard, almost as hard as iron. This was fifteen or more years ago. No soil was given at planting; they have had none since, nor any liquid manure or water, only what falls upon them. So essential do I consider starvation to hardiness and fertility, that I do not believe these Figs would ripen if planted on Grass, like Mr. Walker's, or even if treated according to Mr. Coleman's instructions. The struggle for life must needs be severe, and is an important factor in establishing the hardiness and heightening the fertility of the Figs. No roots appear on the surface, and if they did they will quickly wither up and perish, or be crushed by cart or carriage-wheels. As to their numbers or conditions underground, we know little and care less, so long as the top growths are short, stout, fertile, and yield an abundant supply of fruits that develop into such masses of lusciousness as the season advances, that many of them rain down nectar from their opening ends, or almost open themselves inside out in the overflowing fullness of their saccharine qualities. D. T. F.

* * * Samples of Fig wood with embryo buds were sent with the above. The wood had been cut from plants growing without the slightest protection on four different aspects, viz., south-east, south, north, and north-west. All the specimens sent were uninjured by the late severe winter. The wood from plants on the northern aspect, on which the old Brunswick is said to ripen tremendous crops of fruit, was the strongest. The wood from plants with a southern exposure was very short-jointed, and showed a great quantity of embryo buds.—ED.

Hardy fruit prospects.—The terrific winds which prevailed throughout the kingdom about a fortnight ago led many people to think orchard fruits had been much injured. A careful inspection of a number of large Apple and Pear trees in this neighbourhood is, however, satisfactory, and, judging from the clean, healthy appearance of the foliage, combined with the lateness of the season, I have good reasons for thinking this important crop will be a good one. Cox's Orange Pippin and the majority of the choice varieties of Apples are unusually full of fine robust flowers, and being free from grub, the prospect is highly satisfactory. Many people like to see the leaves well in advance of the flowers, but, provided we escape late frosts, I prefer the reverse order, as late flowers often indicate imperfect maturation of the buds. Planters on the outlook for bright, handsome flowers should note Scarlet Nonpareil, Lady Heniker, and Izard's Kernel, now generally catalogued as Tom Pitt. The last produces handsome crimson fruit, alike good for vintage, the kitchen, or the market.—W. C.

Sparrows and fruit trees.—Within a few yards of my room window stands a Ribston Pippin Apple tree full of bloom. I have found a pleasant morning's amusement in watching the sparrows as they fly to and fro from house-roof and tall trees behind, alighting in the Apple tree and proceeding to peck about them vigorously in all directions, now at the flowers, now at the leafage, then cleaning their bills on the stems and hopping off to another

branch to perform further—what? Aye, that is the point, because at first sight it looks as if they were wantonly picking the flowers to pieces or else eating the pollen cases on the anthers, but for the fact that the foliage gets its turn also, and they do not seem to harm that. I gathered a bunch of the Apple bloom and could not detect mischief in any shape, or even aphid, but only two or three tiny black flies. I therefore infer that the sparrows were finding food in these little insects, which may have been harmful or harmless.—A. D.

RED SPIDER.

I AGREE with Mr. Coleman that the best way of repelling the attacks of this formidable foe is to adopt as generous a system of culture as possible. A point of the highest importance, however, is to maintain a very healthy, active condition of the roots. No plant is more open to the attacks of red spider than the one which is suffering either from a deficiency of roots or which has had them injured in some way. It is of but little use endeavouring to feed, for the purpose of resisting insect attacks, a plant whose roots cannot readily take up the nourishment given them. Market growers seldom suffer much from this pest, because their method of culture consists in promoting root-activity to the highest possible point, in conjunction with supplying their plants constantly with as much moisture and food as they are capable of taking. From the time the cuttings are struck until they become specimen plants they never want for anything needful to a healthy existence. It has often appeared to me that red spider is, as it were, continually hovering round those plants it loves to prey upon, waiting for the moment when a slightly feeble condition may enable it to obtain a footing. Why is it that no traces of this insect are seen all the time the plants are growing away luxuriantly? It fastens on them the instant they suffer in a dry time for want of moisture either at the roots or in the atmosphere; hence the necessity for a never-relaxing vigilance in keeping up a due supply of root moisture. Once red spider obtains a lodgment it is a matter of great difficulty to eradicate it, but taken in hand energetically on its first appearance its multiplication can be effectually checked. We grow here a quantity of Strawberries under glass, and, as everyone knows, they are extremely susceptible to the attacks of this insect. I always keep a solution of soap in readiness, and act on the stitch-in-time principle by immediately well washing the foliage with soapy water. This I repeat at intervals of two or three days for a week or two, which generally effects a cure. The great point is to have the solution always in readiness, so that not one day is lost in applying the remedy. I now make a rule of having the soapsuds from the house stored away in tubs, which saves trouble. If the syringing is timely done it is not necessary to use the solution strong. I put half a pint in a gallon of water. This does not discolour the foliage; on the contrary, I think that the leaves are improved in appearance, and it is sufficiently strong when frequently applied to render the under surface of the leaves unpalatable to the spider. It cannot be too well understood that a light syringing is of no use whatever. The water must be applied to the foliage with force, at the same time taking care not to injure it. The frequent overhead sprinklings that are generally practised often do more harm than good. Instead of continually wetting the upper surfaces of the leaves, the labour thus bestowed would be better employed in thoroughly washing the undersides of the foliage. Two good washings weekly will do more to keep plants free from spider than three or four daily sprinklings. One thing much favours the spread of spider, and that is allowing the temperature to rise suddenly before giving air, by which this pest is often largely increased. I have alluded to the importance of maintaining root-action at par, as one means of warding off this pest. This season I have had one more example of how a torpid condition of the roots invites its presence. It happened that one end of a long bed planted out with Strawberries under glass was much trodden on during the winter. When turned over in February

it looked rather close and sour. The consequence is a marked difference in the vigour of the plants; in that particular spot they have never grown freely. The other day I noticed spider on them, and examining the soil round the roots of the plants, I found that the roots had never started well in it. Where the soil was sweetened and the plants grew vigorously there is no spider. This is, of course, only what might be expected; anything that lowers vitality invites disease. It is as well, however, to direct attention to a fruitful, and I think, with many, an unsuspected source of evil.

J. CORNHILL.

ORNAMENTAL APPLE TREES.

SOMEONE was inquiring lately in THE GARDEN about Apples for ornament. The greatest difficulty would be to find any that were not ornamental. Left to themselves or to Nature, most Apples form noble round-headed trees, with form and foliage of the highest value in any landscape. The leaves of most sorts also fade into gold in the autumn that rival the beauty of their mellow fruits. And the latter are so richly painted with all the colours of the rainbow, and so infinitely varied in form, as to rival any tree or shrub grown for the ornamental results of its berries or fruits alone.

While as to Apple blossom, what colour or word-painter has ever revealed or expressed half its charms! Pink has done its utmost to exhaust its beauty among the Apple bloom; and the artist who would learn the inexhaustible prodigality of its wealth must go long to school and become an earnest student among them.

Next to the infinite variety of colour among Apple blossoms, covering the entire distance from the deep rose of the Manks Codlin to the blanched white of the Calville Blanche—a variety in which the bloom predicates the colour of the fruit—a rare thing among Apples—the amazing prodigality of bloom is the main feature in the superlative beauty of Apple trees.

Doubtless it was this feature that your correspondent had in view in his inquiries about Apples for ornament. For profusion of bloom there are perhaps no Apples that excel the common and some other Crabs, many of the cider Apples, chance seedlings, and most of the Codlins, such as the old Keswick, Lord Suffield, and the Irish, or Manks Codlin, already named. For bold, fine-coloured, rather large blossoms, the New Hawthornden, Non-such, Golden Noble, Norfolk Beautin, Cox's Orange Pippin, Golden Drop, Small's Admirable, Warner's King, and D. T. Fish are among the most conspicuous. King of the Pippins is also fine, but rather light, as are the following, some of which, and most notably the Worcester Pearmain, the highest coloured of all Apples, is pure white. The Juneatings are almost white, and large and cupped, and the following are large and light: Margil, Gravenstein, Norfolk Beautin, Red Astrachan, Cox's Pomona, and Alexander. These highly ornamental flowering Apples are very far indeed from exhausting the list. I trust others may be induced to add to them, and in doing so many will be surprised to find that few flowers vary more widely in size and colour than Apple blossoms; while even the variations in form are very much greater than any casual observer would suppose. Hence, while all are ornamental, some are infinitely more so than others, and more deserving of being planted in woods and parks, as telling and most attractive features in home landscapes.—D. T. F.

— Amongst rich-coloured Apple blossoms, I find none of so deep a hue as those of Nelson Codlin, a variety not too well known, but a most meritorious one. The tree in habit resembles Lord Suffield, but is more enduring; hence it does not grow large. It bears crops regularly, for my tree is never without fruit at the proper season. It opens its blooms later than Lord Suffield does, and is really a successional kind, the fruits being of the same shape as are those of that familiar kind, but are greener. It might have been a parent of Lord Suffield, so much does that kind favour the Nelson Codlin. Ere the bloom opens, the buds show petals of a deep blood-

red, and as the weight of fruit yearly pulls down the branches, causing them to become pendulous, the bloom-buds stand out with great effect. The flowers when expanded are large and high-coloured. Another very showy Apple when in bloom is Grange's Winter Pearmain, a little-known kind. I have several trees of this, strong growers, as much so as is Blenheim Pippin, but more erect. The fruits are large, conical, ribbed, and in the sun colour fairly well; good for kitchen or dessert, and keep well till March. Ordinarily a fair cropper, this season the trees are blooming with wonderful profusion, although the same thing can be said of many kinds, for I can look out upon hundreds of orchard trees all as full of bloom as well can be, although many lack colour. Whilst the recent hurricane has left Pears and Plums almost devoid of bloom, the Apple trees seem uninjured. Generally, little harm seems to have been done.—A. D.

SHELTER FOR FRUIT TREES.

SELDOM have we had a more striking illustration of the value of shelter or wind-breaks for fruit trees than during the past week, when violent gales of wind, accompanied by heavy showers of rain, more like mid-winter than the third week in May, made us tremble for its effects on our fruit trees just in full bloom. We had been congratulating ourselves that, after all the long and trying winter, we should at least be safe from spring frost, and that an extraordinary crop of hardy fruits must follow, when our hopes were rudely shaken by such a gale. In looking round after the gale has subsided its marks are plainly seen where it had full sweep, the tender foliage being quite blackened, and in many places torn from the trees, so that orchards fully exposed to its effects have suffered severely, and the crop must be very much reduced; but, thanks to an unusually abundant bloom, there may be enough left yet for a crop. Being situated close to the sea, we get quite a full share of wind at all times, and have therefore taken the precaution to provide shelter all round as far as possible, and find that a screen of trees appears far more effectual than a wall, for the wind gets more broken, as I observe in one of our fruit plantations the tops of the trees are cut down to the level of the wall as if a fiery blast had swept over them; while for a long distance inside the tree screen they are perfectly safe. It is a singular fact, that in different parts of the country one has to provide shelter in quite the opposite direction to what they do in others. When living on the east coast I well remember how the east wind used to cut up our gardens in spring; while here on the south coast, although nothing thrives during an easterly wind, the trees are not so much cut up as they are by the westerly gales, so that in laying down any rules as to shelter belts one must allow great latitude for the locality and prevailing winds. If situated close to the sea, I think the atmosphere gets charged with saline particles that add greatly to the destructive force of the gales, especially in their effects on tender foliage. People talk of the mild south coast as if it were a paradise for gardeners; whereas it is difficult to get a fresh green leaf even of the hardiest shrub in winter, as they get so cut up by the frequent buffetings of wind we get from the west. I think we must pay more attention to the matter of shelter for fruit trees than hitherto if we are to be successful in growing regular and constant crops; for, although we are apt to lay all the blame of loss of crop to spring frost, I question if they are really so disastrous as many imagine, as there can be little doubt but that the blossom fails to set and drop off from many other causes than being actually frozen, and there can be little doubt but that when cold, chilly winds prevail the sap of the trees gets so much checked that the bloom is literally starved on the tree and drops off from sheer exhaustion. We cannot hope to improve our climate, but we can do much to modify the harshness of the winds by providing tree screens on the exposed sides of our orchards, as the most casual observer will note that in the centres of the fruit plantations the trees shelter one another to a considerable extent.

Gosport.

J. GROOM.

AMERICAN NOTES.

THE largest American sweet Chestnut which we are acquainted with is the Great American, and it is a splendid nut indeed. It will pay our propagators to find these best sorts of our native Chestnut and propagate for all they are worth. The demand for trees is constantly increasing, and good varieties of the sweet Chestnut will be sought after.

The Yellow Transparent Apple.—All you say of the Yellow Transparent Apple is true, for great areas of our country, and even of the great West, but other members of this family we regard as still more valuable for the West, as the trees are hardier and less subject to twig blight. The Thaler, Grand Sultan, and Blushed Calville on our grounds give far better satisfaction, and their fruit is quite as early, handsome, and good.

The Dewberry and the Juneberry.—The Lucretia Dewberry is exceeding our expectations at the west, but on our northern borders it is soon to be eclipsed by select native sorts, which will soon be in the market. I am able to speak well of the Dwarf Juneberry. We have varieties from the Hartz Mountains, in West Europe, and from several points in East Europe. We also have fruited a dozen or more varieties found in the Eastern, Central, and Western States, and the Amelanchier alpina of Western Texas. From all sources the plants are perfect in foliage and hardy in winter, and all of them are immense bearers of good fruit. In some respects the variety from Central Russia and from West Texas we place ahead.

Juneberries.—The lusciousness of the Strawberry captivates on introduction; its peculiar combination of pleasant tartness and sugary sweetness, just at its season, conquers every heart and taste by storm. Two weeks of indulgence, however, bring out its acidity, and make it felt in a way less pleasant and agreeable, so that even the milder tartness of the Raspberry is often too much. Right here comes the Juneberry, with its unobtrusively mild and indescribably pleasant flavour. It does not take us by surprise. It is not a dazzling beauty, like the Strawberry, captivating our hearts by storm, but by its innate goodness it wins its way irresistibly into our good graces; and it stays there, too.

Selection of site for Peaches.—Years ago we were induced to plant quite a large Peach orchard in a sheltered location, high up on the hills of Western New York. The land, being in close proximity to the barnyard, was in a high state of cultivation, the result of previous repeated and, for farm land, almost extravagantly heavy dressings of stable manure. The varieties selected included the Crawfords, Early York, and other standard, but rather tender sorts. All made a rampant growth while they lived, but every spring following found a large percentage of the trees lifeless, until, about four years after our planting venture, the last one had departed this sub-lunary vale of tears. The forced, sappy wood was unable to endure the rigours of Western New York winters. Had we, instead, selected a piece of rather thin soil and manured it highly with potash and phosphates, especially with kaimit and wood ashes, and planted hardier trees, like Wager, Globe, Beatrice, or any of the first early sorts, the orchard, in all probability, would be flourishing and bearing fruit to this day, and have brought us some money, instead of a complete failure. Experience is a most excellent teacher, but a rather dear one, unless you learn from the experience which your neighbour is paying for. This is perfectly legitimate, and we tell our story that the young planter may be able to learn his lessons at the least possible expense to him.

How to make grafting-wax.—Melt and boil together one pound of rendered beef tallow, two pounds of wax and and three pounds of rosin. Some people prefer a pint of linseed oil in place of the tallow. For use in warm weather, a little more rosin may be added. When the mixture has been boiling for some time, pour into cold water and work as if "pulling" molasses candy.

Cheap fruit jellies and jams.—Dr. Cyrus Edson, one of the chief inspectors of the New York Health Department, tells, in "Babyhood," about the composition of cheap fruit jellies, as they are found

put in fancy packages in our grocery stores. A sample of a "currant" jelly consisted of the following ingredients: Dried Apples, water, low-grade glucose, tartaric acid, and arsenical fuchsine (a red aniline colour). To this mixture was added a sufficient quantity of French glue to give it the consistency of jelly. A large package of salicylic acid was also found stored away in a cupboard, which, after some pressure had been brought to bear on him, the proprietor admitted he used in warm weather "to keep his jellies from spoiling." These goods were seized and destroyed on account of the poisonous arsenical fuchsine used in colouring them. A thorough inspection of the jelly factories in New York City revealed the fact that all were manufacturing goods after similar formulas. The use of fuchsine and salicylic acid was prohibited, and the manufacturers compelled to substitute gelatine for glue. Commercial "currant" jelly is now composed of dried Apples, water, glucose, tartaric acid, carmine or aniline sugar-red, and gelatine. Mix, boil, and strain. Other fruit jellies are made by diminishing the tartaric acid and substituting other colouring matter. The dried Apples used in the manufacture of these jellies consists very largely, if not altogether, of dried skins and cores—the refuse of the large evaporating establishments (as we have learned by a thorough inspection of several of the latter). These jellies are far from being wholesome, and the whole business is a fraud on the public at best. We appeal to every true housewife and mother to avoid the cheap stuff and to rely henceforth on home-made fruit jellies. Buy good fruits and you can easily make all the wholesome jellies that your family will need. The formula is simple and the preparation easy. Here is Dr. Edson's recipe: "Take juice of fruit, freshly pressed, white sugar a sufficiency. Boil some time, strain and cool rapidly." The manufacture of adulterated jellies is a fraud, an injury to the health of the people (by substituting a nasty compound for wholesome fruit juices), and a threat to the fruit interest (by diminishing the demand for good fruits)—in short, it is the horticultural oleomargarine.

SEASONABLE WORK AMONG FRUITS.

ORCHARD HOUSES.

WHERE the forcing orchard house sends the first dish of ripe Peaches to the table, the early varieties, including the best English seedlings A Bee, Early Grosse Mignonne, and several of the American sorts, will now be ripe or approaching that stage. When this change sets in it is a good plan to place all the most forward trees in a dry, airy part of the house, in which syringing and watering can be reduced to a certain extent, as an excess of water is not conducive to good flavour. This change must not, however, be carried to an extreme, as Peaches in every stage must never feel the want of this life-sustaining element. When the most forward Peaches are fit for gathering they should be detached when dry and cool, and placed in shallow boxes in which they will keep for some days in a dry, airy fruit or Grape room. If wanted for market, full size and colour are the leading points, and as these are attained long before the Peaches soften to the touch they should be detached, sized, and packed, and sent off without delay. A few days often make a considerable difference in the price; add to this the fact that all large fruiterers prefer storing and ripening up the fruit themselves, as they can then pick them out without spot or bruise, and, whatever the consumer may think, the grower has two strong reasons for starting early. When the early trees have been cleared they will require good syringing to cleanse the foliage, and more water must be given to keep the roots in condition until the time arrives for potting.

Succession houses containing the leading mid-season sorts must now be freely ventilated, not only through the early part of the day, but again on mild evenings; a little time apparently may be lost, but if Peaches worth eating are the first consideration, a free circulation is quite as important as fire-heat and water. Good top-dressing, little and often, must not be withheld, and weak liquid of some kind will be found a very important factor. We now

syringe all our trees twice a day with pure soft water, to which once or twice a week a dash of clear soot water is added. The first being free from lime does not disfigure the fruit, and the second is an excellent insecticide and stimulating agent. The time for syringing now ranges from six to eight on fine mornings, and from three to four in the afternoon when the ventilators are closed, with sun-heat to favour swelling. The temperature is allowed to range from 56° to 60° through the night, with a chink of air, which is shut off at six o'clock, to favour the morning *douche*, and the house is kept close until sun-heat renders fresh air necessary. A gradual rise is then allowed, to carry the day temperature to 70° or 75°, when a few degrees more do no harm, provided the heat does not fluctuate to any extent and the house is freely ventilated. Next, as to insects, we find it the cheapest and best plan to smoke lightly for green-fly before these insects put in an appearance, and for spider we do not accept an excuse, as something must be radically wrong with the roots of the trees or the man who uses the syringe when this little pest gains a foothold. When the fruit in this house has passed the stoning process, the final thinning must be made with a bold hand, as the great failing, especially amongst amateurs, is over-cropping—that is, where they have a chance, although many of them know well that too much fruit means mediocrity and want of flavour. One full-flavoured Peach is worth a dozen bad ones, and when it is borne in mind that pot trees have barely a foot of compost to grow in, it is sheer waste of time and wrong to overload them.

Late houses.—Where these have had the assistance of a little fire-heat, the fruit will now be safe and fit for steady thinning. A few may be left to allow for dropping, but well-managed trees do not often cast their fruit in June and will repay timely attention to this important matter. Trees in late houses should be well disbudded and carefully pinched, to concentrate the sap and prevent them from becoming gross before they feel the weight of the crop, but the work should always be performed piecemeal. Many of the shoots run away quickly, especially near the tops of pyramids, and unless these are taken in hand in time they rob the lower parts, and the trees soon degenerate into half standards. If the fruit is wanted as late as possible, steps should now be taken for retarding its progress through the early stages of its growth by giving an abundance of air on all favourable occasions. Of this, however, there is little danger, as trees in cold houses to which fire cannot be applied are quite three weeks later than they were last year.

MELONS.

Where winter Cucumbers give way to Melons the plants should be a foot or more in height and thoroughly established in the fruiting pots in the nursing pit before the Cucumbers are destroyed. By adopting this plan the most will be made of the Cucumbers, and, provided the preparations are satisfactory, a very short time will suffice for running the Melons into fruit. One thing, however, is very important, and that is cleanliness; a thorough spring cleaning of all glass and paint with soap and water, and cleansing of the walls with a wash of quicklime and sulphur. The plunging or bottom-heat bed having been in work since last autumn, its entire removal will most likely be necessary, if not on the score of decay, certainly to favour the destruction of worms, woodlice, and a host of other marauders, which soon multiply in hothouse pits. When the pit is quite empty, it should be well drenched with boiling water and washed with hot lime, when a fresh start may be made with every chance of success. In order to dispense as much as possible with fire-heat the new beds should be well made of sound fermenting leaves and firmly rammed before the pots are plunged to prevent the heat from escaping. When the heat is up and satisfactory, the pots may be plunged nearly to their rims, a good sod of heavy turf being placed under each to sustain the crock roots and prevent them from running away into the decaying manure. When I adopt the pot system, I always plunge the pots 2 feet from centre to centre, and allow about 5 feet

run of trellis for the vines; if space admits, a second row is plunged in the same bed, and scarlet-fleshed varieties in 12-inch pots are grown over the top-heat pipes. Scarlet-fleshed Melons, never so good as the green, always attain their best flavour when finished off in the hottest and driest part of the house, and the better to avoid the drying of the roots, we place each pot in a shallow box containing an inch or so of rich compost. This material filters the liquid on its way from the crocks and forms a useful feeding ground for the roots when the fruit is swelling and requires rich stimulants. Pans or saucers might be used, but from these the water could not pass away, and, much as the Melon enjoys liquid, it does not thrive upon it in a putrid or stagnant condition.

Frame Melons, solely dependent upon heat from fermentation, have not had a good time; consequently they are much later than usual. Constant attention to the linings, which should be renovated back and front alternately, is still imperative, and good covering at night is equally important. As growth advances and the roots push through the hills, more compost which has been lying in the frame for some days to get warm must be added and firmly packed, or rammed, to give solidity. Many people go to unnecessary expense by giving frame Melons cartloads of soil where barrowloads would answer equally well, and then complain that the "light is not worth the candle." Quality is of more consequence than quantity, hence the importance of getting fresh stiff loam that will grow them well without the aid of manure, of compressing it into a firm mass, and feeding when the hungry roots have literally devoured it. Earlier plants now swelling off crops of fruit will require liberal feeding with diluted liquid, and good syringing under as well as over the main foliage, also round the sides of the frames, but on no account must the collars of the plants be saturated. Indeed, it is questionable if a semi-moist condition of the soil about the stems is not one of the most common causes of canker; therefore the better to escape sudden collapse each plant should occupy a cone that will carry it high and dry, even when the main body of the bed is flooded. When the Melons have been thinned it will be necessary to elevate them on inverted pots to keep them partially peeping through the foliage and safe from woodlice. Gradually the main leaves, which must be kept free from lateral growths, will subside, and the fruit will have full exposure to sunshine, which cannot be too strong for Melons in this country.

CUCUMBERS

in heated houses will now take thorough soakings of warm liquid once or twice a week, and copious syringing at closing time in the afternoon. We do not care to wet the fruit on bright mornings, but all available parts of the plants, the walls, and the beds are well moistened, and water is dashed over the floor to keep up a supply of vapour. Red spider is the worst of all enemies to the Cucumber grower, but it makes slow progress where water is freely and judiciously used, and good feeding and light cropping are strictly adhered to. Another important point is constant manipulation of the young growths, which should be pinched at the first joint beyond the fruit and neatly tied down to prevent the foliage from touching the glass, and ensure a continuous circulation of air. If this does not prevent flagging under very bright sun, some very light shade for a few hours in the middle of the day may be advantageous, but on no account must this be followed up until the foliage is too tender to stand without it. If old or heavily cropped plants show signs of exhaustion, the liquid waterings may be supplemented by extra rich top-dressings composed of light turfy loam, leaf mould, and old lime rubble, little and often whenever the roots show upon the surface, otherwise the first and last, minus the leaf-mould, will support a lasting growth and produce fruit of the finest flavour. Many people think one Cucumber is as good as another, but this is a mistake, as too much manure or too slow a growth produce fruit that is flat and bitter. Some sorts, again, are not so easily affected as others. Telegraph, for instance, is considered

one of our best all-round Cucumbers, and none, perhaps, can touch it for eight months out of the twelve, otherwise the handsome black-spined varieties, so well adapted for summer-frame culture, would not have dropped so completely out of our lists.

Frame Cucumbers.—Beds made up and soiled early in the past month will now have the best of the year before them. If the plants were put out very small and pinched, as I have often suggested after they got established in the soil, the young vines will now be pushing their way to the extremities, and any that are taking the lead may be stopped, not so much for fruit-bearing laterals as to throw strength into their weaker neighbours. The hills, too, must be regularly soiled, as the roots show through the sides and made more or less firm according to the nature of the compost. Like Melons, they sometimes receive more soil than they actually require, especially when the old-fashioned method of pegging down at every joint is practised and the crop is regulated by the wants of the family. The weather being so cold, with a sharp wind still blowing from the north, ventilation just now is a ticklish matter. Still, the plants must have air or constant shade; therefore, the best and safest plan is to tilt the lights in front instead of at the back until winter gives way to summer weather. Linings and coverings are still as necessary as ever, and must have regular attention. To maintain the bottom-heat of the bed, a good body of well-worked manure should always be on hand, and from this the linings back and front should be renovated alternately. In course of time it may be well to pull the linings down to the ground and rebuild them entirely anew with fresh materials; the work does not take up much time, and the improvement, provided steam is kept out of the frame, is truly magical. Early closing on the brightest afternoons is another great factor in the maintenance of health and the production of good fruit, which must not be overlooked. If hot, soft water at 80° or 85° can be secured, the plants and sides of the frames should be well syringed as the lights are shut down, certainly in time for the moisture-laden atmosphere to rise to a temperature of 90°. W. C.

Summer pinching of Currants.—I am quite unable to see how anything but a reduced crop is gained by the summer pinching of Currant shoots as directed by "J. G." in THE GARDEN, May 21 (p. 470). In the first place, there is the expense of going over and carefully pinching extensive plantations, and in the second place there is the certainty that every shoot topped "in the full flush of growth" is robbed of so many clusters of fruit that would otherwise have been produced towards its extremity, while the gain by driving the sap into the base buds is worse than nil. Black and Red Currant shoots produced annually from the older wood almost invariably bear at any joint their whole length, and the finest clusters are always nearest the top. "J. G." by pinching these best clusters off may drive a portion of the strength into the bottom clusters, but he hardly adds to their number, while he loses the top clusters altogether. There is no getting away from this conclusion, as anyone will see who chooses to examine his bushes at this season. Gross shoots or suckers proceeding from the root do not always bear all the way up, but such should not be permitted to grow at all except to fill up gaps. The main crop is borne on the lateral branches and shoots of the main limbs, and these nearly always bear their whole length. As regards the plea of excluding the light from the foliage, that is easily prevented by judicious thinning out in winter. Under such conditions the foliage of the Currant has always plenty of light and is well developed and ripened. If the Currant tribe did not ripen their shoots to their extremities it would be different, but they never fail to do so, and on healthy fertile bushes no "useless wood" is produced.—J. S. W.

Applying liquid manure.—It is chiefly in the summer-time when plants are in active growth that liquid manure is applied to them. It is a mistake to give plants that are not well rooted much of it, but when they have plenty of roots, and are growing

freely everywhere, it is very beneficial; but as liquid manure is often a scarce and always a valuable commodity, it should be used in such a way as to secure the best possible returns from it. In the case of plants in pots when they have many roots they are always apt to become quickly dry in hot weather, and many of them are often so dry that when the water is given them a large quantity of it passes through the soil and runs to waste. It is a mistake to allow manure water to be wasted in this way, as it does the plants little or no good. The most economical and advantageous way of applying it to all plants in pots is to make the soil and roots wet with clean water first, and then water with liquid, as the moist soil retains all the best properties of the manure, and this is the point to secure. This rule also holds good in the case of fruit trees of all kinds, and vegetables as well.—CAMBRIAN.

FLOWER GARDEN.

SABBATIA CAMPESTRIS,

OF which the annexed cut gives an excellent idea, both of its graceful habit of growth and floriferous character, is one of the most charming annuals we have, even taking into



Sabbatia campestris.

consideration the great numbers of showy plants we get from its native country, North America. It belongs to the Gentian family, and although the genus Sabbatia numbers a good many species, very few as yet have found their way into cultivation, and in all probability not more than two or three are to be found in gardens at the present time, *S. campestris* and *S. chloroides* being the most common; the latter is a biennial and a most charming flower. It grows from 1 foot to 2 feet high, and from a loosely plicated stem is produced a profusion of large deep rose-coloured flowers. It is found on the margins of brackish ponds, &c., from Massachusetts to Virginia, and flowers from July to September. It stands in the open, but we prefer growing the plants in pots in a cool shaded frame the first year, or through the first winter, and placing them in the open air about the end of March or early in April. A moist situation should be selected, well sheltered and shaded from the mid-day sun. *S. campestris* differs widely from the above in its requirements; the drier and sunnier the position the more satisfactory will be the result. Although

it does well sown in the open air along with other annuals, it is always late in flowering, and this plan is adopted to get a succession of flowers; the first flowers coming from those plants sown in pots about the beginning of February, and pricked out when all danger of frosts is gone. When sown in the open air, a nice sunny position should be chosen where the soil is rich and well drained; the seeds should be sown as thinly as possible. The flowers are lilac-coloured, over an inch in diameter, and produced in such abundance as to give a striking effect in large clumps or patches. Found on the prairies of Arkansas and Texas. K.

HARDY PLANTS FOR CUTTING.

This is a good time to make notes of reliable hardy plants for supplying the cut-flower basket, as it is only by making a careful selection of varieties to follow one another that anything like a continuous supply can be ensured. Where one has a good collection of flowering shrubs, beds of Roses, and a mixed herbaceous border, there is always something to cut; but, in addition to this, it is a great advantage to have a few good-sized beds of plants that one can cut from, and still find plenty of successional bloom, without disfiguring the beds too much. To obtain this, the plants must be well established, the soil well enriched, and a good mulching of manure applied in the winter. For the convenience of gathering the flowers, beds about 1 foot wide, with alleys between, are the best, as if they are put out in large breadths more shoots will get broken down in the constant visiting these beds get during the flowering season than would be got from the alleys if they were all planted. The list of good plants is very numerous, but the following will be found very suitable:—

ACHILLEA PTARMICA, with its innumerable heads or bunches of pretty little double white flowers, keeps on flowering nearly the whole summer, and the more one cuts the more freely does it produce flowering shoots. It spreads freely by means of underground growths that run like Couch Grass, and once established, all the attention it needs is a good mulching of rotten manure in winter and keeping free of weeds in summer; for wreaths it is well adapted, as the flowers, even when dry, look well, being of the nature of Everlastings.

CAMPANULA PERSICIFOLIA FL.-PL. ALBA is a real gem. Its blossoms, if gathered singly and wired, make a good substitute for Gardenias. It spreads freely, and may be increased by division of the roots in winter.

DELPHINIUMS are splendid flowers for cutting, and give a great variety of colour. If the central spikes are cut as soon as the flowers expand, the side shoots spring up and continue a long time, and are really more serviceable than the first bloom. If left to seed, the flowering is soon over. *D. formosum* is easily raised from seed, and makes a fine show with its rich blue spikes of bloom.

HELIANTHUS MULTIFLORUS, or perennial Sun-flower, is one of the best for supplying cut flowers. Once planted, a good top-dressing will keep it right until it requires taking up and dividing, re-planting, if possible, on fresh soil.

THE EVERLASTING PEA (*Lathyrus grandiflorus*).—The red and white-flowered varieties are invaluable for cutting, and if planted near a fence where they can climb over it, they will yield an unfailing supply of bloom, and make beautiful objects as well. They do best if left undisturbed for years. A top-dressing over the crown in winter is all they require.

PYRETHRUMS, single and double, are very beautiful, and they are now of so many varied colours that they are well suited for cutting from. The double whites are especially good. One of the very best of all this useful family is *P. uliginosum*, that comes in late when flowers begin to get scarce out of doors. J. G. H.

Lobelia speciosa Ingrami.—This appears to be the very best of all the pure white forms of *L. speciosa*. It is of a good compact habit of growth,

very free, the flowers large and well formed, and they do not become stained with blue, as is often the case with the white varieties. It will to a considerable extent reproduce itself from seed, but seedlings will be certain to revert to the old blue type. There is no mistaking the seed of a white variety, because it is of a whitish yellow colour, while the seed of the ordinary blue is chestnut-brown. But however carefully the seed may be saved, some blue-flowered varieties will be certain to show themselves. Thus it is that when a good white is obtained, like Messrs. Wood and Ingram's variety, it should be propagated by means of cuttings, and especially so when used for bedding purposes.—R. D.

RAIDS ON WILD FLOWERS.

I WAS pleased to see attention called to this subject as we are in great danger of having many beautiful plants cleared from their native haunts, and in some cases rendered extinct, as these beautiful wildings of the woods have only a brief existence if transferred to the smoky atmosphere of towns. In this locality we have a large vagrant population, half gipsy and half town-bred, that finds a precarious existence by collecting flowers, roots, or whatever they can pick up, and which appears to know the exact localities of any rare hardy plants that are to be found within twenty miles, and the best time for rooting them up. No county in England has more common and crown lands than Hampshire, and while our working population is going to the Far West in search of land to live on, thousands of acres in the New Forest and other parts of this country have never yet had spade or plough put into them, but, in fact, are held sacred to rabbits and Farze bushes, and form a hunting-ground for these wild-flower hawkers. At times these hawkers disappear or migrate for a time (as, for instance, when harvest or hop-picking comes round), but return again to resume their old occupation. The spring is a busy time, and of late there has been an unusual number with baskets and truckloads of roots. Daffodils are dug up just as they show the flower-stems, and later on the bloom is gathered and tied in bunches. Primroses and Snowdrops are treated in the same fashion. Ferns are one of their chief resources, as they are rooted up at all seasons, and may be sold so readily, more especially just as they are unfolding their fronds. Some of the common kinds, such as the Hart's-tongue, increase so rapidly, that little harm is done by thinning them out. But the rarer *Osmunda regalis* is quite exterminated in many woods where it used to be plentiful.

Later in the summer the watercourses afford plenty of blooms of Water Lilies, Bulrushes, &c., that sell readily for room decoration, and some of these collectors go quite twenty miles to get a supply, and cross over from the mainland to search the Isle of Wight for its rich store of floral treasures. Autumn brings Blackberries, and then all hands go picking these, and hundreds of gallons are sold in Portsmouth and the locality, and when these are over the winter is close at hand, and many flock into town again to swell the list of hawkers there, except the more robust ones, who go collecting Briers for Rose stocks, which they dispose of to nurserymen in London and provincial towns. One man told me that he had an order for 30,000 for one London firm, and he in turn employed a lot of other collectors who search the country round for miles. Then Moss, which is hand-picked and tied in bunches, is another thing they get in winter. Of late the fashion of wearing bunches of prettily coloured Ivy leaves that grow wild on trees, fences, &c., has proved quite a boon to these collectors. I presume it is the nature of the soil, for these Ivy leaves are really very pretty, especially in winter, when flowers being scarce they sell readily, and are also used, mixed with Moss, for making up wreaths for funerals, so that with only a few flowers inserted in them they look not only pretty, but are much more durable than if composed of flowers only.

Thus it will be seen that this flower-gathering does some good, but what your correspondents

evidently object to and deplore is the ruthless way in which beautiful trees and shrubs are stripped of their branches and disfigured by well-to-do people who have no excuse for acting in such a senseless and inexcusable way, far less those whom sheer want compels to adopt any safe means of meeting their bare needs of existence. Sundays are the days on which most damage is done to suburban trees, shrubs, and hedgerows, when townstolk flock into the country, and one sees them in the evening returning loaded, and the way they rush into any open gate and snatch off flower or branch has often made me wonder why the contents of gardens are less carefully guarded by the police than the contents of shops, for you will hear people declare that this sort of conduct shows a growing taste for flowers. I must candidly confess that, fond as I am of flowers, I do not wish to see this way of showing increasing regard for them spread any further. A few salutary examples made of flower-destroyers would do a deal of good. It would be a great pity if owners of beautiful parks were compelled to close them on account of the folly of the few, when the majority look on the indulgence shown them with pleasure and enjoy it in a rational way. I have seen many thousands of working people at fêtes and other open-air gatherings in parks and not a twig broken, and when in charge of gardens myself was pleased to see the public admitted on specified days. But sometimes it seems as if a mania for destruction prevailed, as the most unlikely looking people will prove the most ruthless destroyers.—J. G. Haunts.

I am much interested in this subject, and have been engaged for some years in beautifying odd corners, woodland walks, &c., with such plants as are suitable for that purpose. Mr. Coleman's timely article is to the point, and my experience proves that he is perfectly right when he speaks of the ruthless way in which wild flowers are carried off. "J. S. W." does not agree with Mr. Coleman's remarks, but would have the readers of THE GARDEN believe that the inhabitants of the north do not strip the parks or other places of recreation thrown open to them. If this wholesale destruction is not going on, will "J. S. W." tell us what has become of the many British Ferns, &c., that used to be found growing in a great many parts of England? Are they not to be seen exhibited for sale by the London costermonger almost all the year round? If these are not rooted up and carried away from some place where they grow wild, where do they come from, and where are our wild flowers gone to?—G. M. W.

Lilium auratum.—If one year's trial is of any value, I may say that English raised bulbs grown both in pots and in the open ground are far more satisfactory than imported ones. The growth in the second year from a larger number is stronger than I ever had on imported bulbs, and I have not experienced any losses, whereas in the case of imported roots we always lost some. I was, however, somewhat disappointed in the behaviour of the English raised stock, for I fancied that they would come up as strong the second year as they did the first, but they have not done so, and I begin to despair of ever keeping up a stock of this Lily, except by buying every season.—J. C. C.

Seedling Hollyhocks.—Experience in the raising of Hollyhocks from seed has shown that, as a rule, the larger portion come true to the colour of the parent plants. That is the case also when seed is saved from a number of plants of the same colour. I was, however, hardly prepared for such an experience as noted just recently in connection with seedling plants raised under glass from a sowing made at the end of March last. The seed was saved from special plants only, and when the young plants had made strong leafage I found that not only was the distinctive character of each kind strongly marked, but that the foliage of each colour differed distinctly—in one case it was lighter; in another more rounded; in another more woolly—thus giving conclusive proof that Hollyhock flowers, even in plants growing side by side, are not inter-

crossed, and reproduce themselves fully. As a rule, also, the quality or doubleness of the flowers is equally well reproduced, and sometimes even in better form. The knowledge of this fact may perhaps tempt some who admire a fine old garden flower to purchase seed and sow in colours. It is late now to look for bloom from such seedlings this year, but seed may easily be raised in the open ground, and the plants when strong can be dibbled out to where they are to bloom next year. The best preservative from the fungus which still pursues our Hollyhocks is found in deep holding soil partially enriched with manure, and which promotes clean, quick growth. Strong seedlings are less liable to attacks than are older or propagated plants. Once a good stock is obtained, it is easy to save seed from the best and raise plenty of seedling plants every year.—A. D.

DWARF PHLOXES.

THOUGH considerable advances have been made in the improvement of several species of Phlox, much remains to be accomplished by the skillful hybridist to further develop their good properties.

To begin with *P. Drummondii*. What a wealth of beauty awaits the exercise of ordinary intelligence to multiply to an almost unlimited extent even more lovely forms than we at present possess, and how suitable and interesting it would be for ladies and boys to undertake so delightful a task. It may be urged that, being only an annual, its most beautiful seedlings are with difficulty perpetuated, but is not this objection an argument in favour of an attempt to discover a perennial species that will hybridise with it, producing either a fertile race or, if only a barren one, originating perennial and hardy varieties?

Nelsoni well merits attention, as a plate of its seedling varieties published in THE GARDEN shows ample material for still finer productions either by judicious crossing or through the aid of hybridising. *Decussata* and *suffruticosa* are capable of displaying fine properties in addition to those they at present possess. How easily may striped and mottled varieties be originated, adding to our gardens additional charms.

Sterile hybrids can be raised, though with considerable difficulty, by the use of high-coloured *P. Drummondii*, for seed-parents, fertilised with the pollen of crimson, salmon, scarlet, and striped varieties of *decussata* and *suffruticosa*, which hybrids would well repay the nurseryman for his labour.

In conclusion, the difficulties of manipulation named by Henri Lecoq, in his work on "De la Fécondation Naturelle et Artificielle des Vegetaux et de l'Hybridation," are quite imaginary, and it gives me pleasure to be able to assert that the Phlox may be brought as much under the command of the florist as if it were diaceous, and that we ought to depend more on our own resources for novelties rather than trust to Continental seedlings.

An examination of the structure of Phlox flowers shows that its base is so slightly attached to the calyx, that a gentle pull will disengage it even in the bud state, removing the pollen before it can exercise its fertilising influence. By thus preparing the flower the stigma is prematurely exposed; it may, therefore, be wise to keep the seed-bearing plants in pots, so as to be able to remove them from strong sunshine during the hottest part of the day.

A. CLAPHAM.

Mimulus Brilliant.—We have few forms of these beautiful annual *Mimulus*, which give such rich colour as does this variety Brilliant. It is well named, for the flowers, though but medium-sized, are of rich red-maroon, of good form and substance, and profusely borne. Anyone wanting a bed or mass of rich hue in gardens where the soil is holding, will find a bed of this kind easily and cheaply produced. A packet of seed sown in a pan in March, the seedlings when strong enough being dibbled out into other pans, and from these transferred to the open ground in May, gives a glorious mass of rich colour at a very trifling cost. *Mimu-*

luses are fairly hardy, and may be planted out much earlier than ordinary bedding plants.—A. D.

THE NEW HARDY WHITE PASSION FLOWER.
(CONSTANCE ELLIOTT.)

Your plate and description of this semi-novelty (p. 120) direct careful attention to this beautiful variety of an old favourite. Your descriptions are mostly so moderate, exact, and able, that one seldom has occasion to remark upon them. To praise perfection would be presumption; to criticise it would be stupidity; and in this instance it is only an apparent over-estimate of the new form over the old species that calls forth any remark. Your plate and woodcut of the species on the next page place the merits of both well before your readers. But neither these nor the facts as recorded seem to warrant the following sentences in "W. G.'s" otherwise admirable description on pp. 420-21:—

The Constance Elliott variety, moreover, is a vigorous grower and exceptionally floriferous—much more so, in fact, than its parent. In every place where the common Passion flower succeeds, this new white variety will no doubt supplant it, on account of being more attractive in flower and a more delightful garniture for a verandah, alcove, wall, &c.

As to vigour and amount of bloom, it seems physically impossible for the white to excel the blue when the latter is placed in favourable conditions, or, say, the two are placed side by side. After a time the shoots of *P. carulea* look as if they were wholly composed of flower-buds and golden fruits, and it seems impossible for the white to be more floriferous. Enormous differences, however, may be noted between the amount of bloom on blue Passion flowers in different soils and on different sites. The warmer the latter and almost the poorer the former, the more bloom, and *vice versa*.

The other sentence objected to expresses a mere matter of opinion; but it would surely be a misfortune were the new white to supplant the old blue on account of any assumed superiority. How much better to blend the new with the old, as we would probably all agree that the two combined or alternated would have higher decorative merits than either of these colours singly. This would be the more desirable, as "W. G." is silent on the fruiting properties of the Constance Elliott Passion flower. Those most familiar with the decorative value of the old blue will be ready to allow that under glass the rich golden drooping fruits almost match in decorative effects the inimitable grace and maze-like prodigality of greenery and beauty produced by their shootlets, foliage, tendrils, buds, and blossoms. The combined results of all this grace and beauty are so unique and rich, that in this case I would respectfully decline to be off with the old love before being on with the new, and would much prefer to run the two hardy Passion flowers abreast. HORTUS.

SHORT NOTES.—FLOWER.

Passifloras.—Can any of your readers give me the address of any firm, English or Continental, that makes the Passiflora family a speciality? I want to get some of the old species that have ceased to appear in the ordinary nursery catalogues.—J. M. *Charmouth, Dorset.*

Eurybia stellulata is in beautiful bloom now with me against a wall. I would like to photograph it. What a plant to grow in pots for early bloom. *Veronica Girwoodiana* and *Banksian Roses* also beautiful. Daffodils all over, and the foliage getting quite yellow, particularly *Arg-Rich* and *pallidus precox*. This latter dies out in England. They do not know how to grow it. *Capax* is its double form. No doubt of it.—W. B. HARTLAND.

Helleborus viridis.—In THE GARDEN MAY 28 (p. 488) "J. C. B." recommends *Helleborus viridis* as a market plant to be grown for the sake of its winter foliage. The misnomer was probably from inadvertence only on the part of "J.C.B.," but as *H. viridis* has no winter foliage, his advice, if followed, might lead to disappointment. The plant intended is, of course, *Helleborus fetidus*.—T. H. ARCHER-HIND, *South Devon.*

Narcissus incomparabilis semi-partitus.—I am informed that the double form of this *Narcissus* mentioned in THE GARDEN, 21st May (p. 450), is the same as that exhibited by Mr. Ware. Mr. C. R. Scrase-Dickins, the secretary of the *Narcissus* committee, to whom a couple of flowers were sent, says in his reply, "they appear to be precisely similar to those which were shown at the last meeting of the committee."—J. H. KRELAGH, *Hampton.*

Zinnias.—These are splendid annuals for flower-bed decoration in the open air in summer and autumn. They are easily raised from seed, grow freely, and always bloom with great certainty. There are double and single flowering va-

rieties, both of which are very pretty. They grow from 1 foot to 18 inches in height, become bushy, and flower at every point. Plants raised in a frame and planted out in May or early in June will begin to flower in July, and continue to do so until November. I do not know of any class of annuals that present such a beautiful variety of lovely colours as Zinnias.—J. MEIK.

Wild flowers. I have just visited a bleak elevated spot that has so far escaped the hand of the ruthless plant-destroyer one often meets about here with his hamper on his back. On the south-west side of the hill we found in abundance the early *Orehis* of many shades, carpeted with the pretty silvery *Cudweed* and *Bitter Vetch*; these should be seen in masses on a vast open tract to be enjoyed. We saw them with the *Saxifragas* now in flower on the jutting rocks and the gardens of wild golden *Pansies*. Now is the time to look out for the very interesting little *Adder's-tongue* Fern amongst the Grass often on stiff land.—GEO. BOLAS, *North Derbyshire.*

* * Mr. Bolas sends our old friend the mountain *Cudweed*, which is a pretty rock garden and edging plant.—ED.

Crimson Antirrhinums. Last summer when at Wolverhampton I visited the public park there, and was much struck with the effective manner in which Mr. Thomas, the superintendent, had used a remarkably fine strain of crimson *Antirrhinums*. They were in lines as edgings to shrubbery borders, and in groups here and there, and so were seen to the best effect. Mr. Thomas has done much in the way of selecting this particular colour, and I thought it the finest form of a crimson *Antirrhinum* I had ever seen, and it would appear that it comes pretty true from seed. The colour is of a rich blood-crimson, very striking when seen at the close of the day with the setting sun. In the case of a fine variety of this character it is best to propagate it by means of cuttings. In the Tom Thumb section some very fine crimson varieties can also be found. Good self colours are, perhaps, better adapted for decorative purposes than the striped varieties, beautiful as the latter undoubtedly are.—R. D.

Pinguicula grandiflora.—The great Irish *Butterwort* is one of the most handsome plants for bogs at this time of year if well taken care of. It stands the winter very well, being found abundantly in the counties of Cork and Kerry, but during the season is often destroyed by the birds unless protected with netting of some kind. I do not think the birds eat the small bulbs, but the damage done by their becoming exposed is often very great, and is, we believe, a common source of failure. A sure preventive is a small piece of inch wire netting bent over and the ends closed. The display of large blue-purple flowers from a rosette of handsome leaves fully compensates for the little extra trouble required. It prefers a shady spot, but when growing in a well-watered artificial bog, it does very well when fully exposed to the sun. We have found it equally useful as a pot plant; it flowers abundantly, the plants being correspondingly strong and vigorous; others equally useful for the bog are *P. vulgaris*, *P. alpina*, and *P. lusitanica*, the last small, but very pretty.—K.

What is an annual?—In THE GARDEN (page 467) "J. C. C." says that he prefers to treat *Anemone coronaria* as an annual. A friend writing the other day said that he purposed to grow *Primroses* as annuals. There seems to be some incorrect notions as to what constitutes an annual amongst plants, but I always imagined that it comprised those which, sown in the spring, flower, fruit, and die ere the year expires. That section of plants is a large one, and can hardly be mistaken. Some few annuals are so far hardy that they may be sown in the autumn, and standing through the winter will flower early and soon after die. These remain annuals all the same. Biennials, on the other hand, can hardly be classed or treated as annuals, even with artificial treatment. *Wallflowers*, *Brompton Stocks*, *Foxgloves*, *Sweet Williams*, *Canterbury Bells*, are a few of many real biennials, because, sown them as early as we may, they will not bloom till the following year. *Antirrhinums* and *Pentstemons* are both too tender to be treated as biennials, although when so grown produce by far the finest results. They will bloom freely in the autumn,

and if spared by the winter will flower in great profusion and finely in the following summer. Practically, these, with *Hollyhocks*, are biennials. But *Anemone coronaria*, even if sown ever so early in the spring, will not bloom its best until the following spring. The plants, if well done, may carry some straggling flowers late in the autumn, but such blooming does not constitute it an annual; indeed, this *Anemone* can only be fitly described as a perennial, in spite of its few weeks of defoliation in the summer when the tubers are at rest. *Primroses* sown ever so early in the spring in the same way give ever so few flowers that same year, and are not really in bloom till the following March; hence, no form of culture can convert these perennials into annuals. There may not be much in the term "annual," but its frequent use in alliance with certain plants may prove misleading.—A. D.

Narcissus Sir Watkin.—Has "S.W." in THE GARDEN, p. 467, got bulbs of the true variety? I mention this, as I understand a large number of another one has been distributed under this name, or has he got his labels wrong? For why call *Horsfieldi* yellow, it being yellow and white, and perhaps the best of the bicolor section? While to my mind *N. Sir Watkin* is far the best of the selfs, and, taking size of flower, the way it is set upon the footstalk being at such an angle as to admit of its beauty being seen without stooping or turning up the flower, its floriferousness, and, further, its delicious sweetness into consideration, I question if it is not unequalled, and has the good quality of forcing with ease and certainty. The flowers of *N. Horsfieldi* turn almost down, and although large, I have never seen flowers measure 4 inches across; while *N. Sir Watkin* has been measured considerably over 5 inches across, and when planted in a mass is readily distinguishable from all others at a distance of 300 or 400 yards. The leaves of both are exceedingly handsome, those of *N. Sir Watkin* considerably longer, but not so glaucous as *N. Horsfieldi*, as you will see by the few leaves I venture to send by this mail. I have just counted the leaves of what were single bulbs planted in November, 1881, under precisely the same conditions in fairly strong loam with the following results: *N. Horsfieldi* with sixteen and *N. Sir Watkin* with fifty leaves; *N. Horsfieldi* with six flower-stems, while *N. Sir Watkin* with sixteen. J. B. T.

* * The foliage of *N. Horsfieldi* is more obtuse, dwarfed and more glaucous than that of *N. Sir Watkin*, according to the specimens sent by our correspondent.—ED.

PROPAGATING.

GLOXINIAS.—Where *Gloxinias* are raised from seed the earlier ones will by now be commencing to flower, and should any of them be of unusual merit, leaf cuttings may, if desired, be made at once in the manner detailed earlier in the season. Even if the beauty of the plant must not be impaired, a leaf or two can generally be taken off without being observed, and in this way several plants of any particular variety can be obtained without injuring the parent. The leaves, if small, may be dibbled in as other cuttings, while if large they can be cut up into three or four pieces, or, better still, laid on the surface of the soil in a pot or pan, an incision being made through the midrib in two or three places, from whence roots will be produced and young plants in time make their appearance. The leaves must be treated as cuttings of the shoots, viz., kept close in a warm house till rooted.

IVIES.—The propagation of *Ivies* will seem but a very simple matter, yet there are some varieties that do not strike well, more especially the different forms of the *Tree Ivy*. Of the common free-growing kinds, cuttings may be struck in the open ground during the early autumn months, but the more delicate varieties strike far better when protected by a frame, which may often be spared now for such a purpose, and if put in now they soon root. Some of the more delicate kinds are by no means strong growers, and the fact that a cutting, if protected by a frame, need not be above half the length

of one for the open ground is an important item in the case of some of the weaker varieties. Where a considerable number of plants is required, the cuttings may be put in without using pots by just covering the bottom of the frame with drainage material, and over this place about 6 inches of sandy soil sifted fine. This soil having been pressed down tightly and slightly watered will be ready for the reception of the cuttings. They must be dibbled in firmly, and after a thorough watering the lights put on and kept close and shaded from the full rays of the sun till the cuttings are rooted. A length of from 1 inches to 5 inches, or longer if they can be spared, will be a very suitable size, and for the purposes of insertion the bottom leaves must be removed. For such things as these a very good soil is furnished by the refuse of the potting-shed, which generally consists of a mixture of different composts, and if all is passed through a quarter of an inch sieve it may be used for many purposes, this included. The better way to treat the young plants is, as soon as they are rooted, to pot them off and plunge in a sheltered position till spring, when they can be planted out. Of course, before potting them they must be inured to air and sunshine, as if shifted directly from a close and shaded frame to the open air, the effects would be disastrous. Where there are but a few cuttings they may be dibbled into pots, and if kept in a close frame may also be used for striking several things during the summer—viz., many kinds of hardy shrubs, greenhouse plants, soft-wooded subjects, and others. We have an ordinary cold frame set aside for that purpose, and large quantities of different subjects are propagated therein during the summer. Many of the hard-wooded greenhouse plants do better if stood in the frame for a time to allow them to callus, and if placed in a little heat afterwards they soon root. The more delicate Ivies, especially the variegated kinds, are often grafted on strong-growing stocks, which is a much quicker mode of increase than by striking them from cuttings, as they make more progress during their earlier stages. Grafted plants, however, are liable to send up suckers from the bottom, which if not soon removed will rob the graft of its principal nourishment, and to prevent this as far as possible the stocks should, when potted, have all the underground buds removed, for it is far more convenient to have the stocks established in small pots, as they can then readily be placed in a close frame, and space is much economised thereby. Side-grafting is the best for the purpose, and this may be carried out at almost any season of the year, provided the plants are kept close and well shaded till a union is complete, which will be the case in about a month. Provided there is a suitable place for the plants when grafted, no clay or grafting wax will be needed to cover the point of union. The Tree Ivies are the most difficult to root, and they are generally grafted on one of the common kinds.

AZALEAS.—The different Azaleas, including the various forms of *A. indica* and *A. amena*, will, where they have been subjected to an ordinary greenhouse temperature, be in full growth, and just now a favourable opportunity occurs to propagate any that may be required by means of cuttings. The shoots that strike the quickest are those produced in the forcing house early in the season, and at that time instructions were given for their treatment; but these later shoots are by no means difficult to root, provided they are placed under favourable conditions. For cuttings, the side shoots rather than the more stout and vigorous ones should be chosen, and they must be taken off quickly and inserted without delay, as if much exposed they soon flag, and when that happens the chances are that many of them will not strike. If not more than 4 inches or 5 inches long the entire shoot should be taken as a cutting, selecting it at that stage when the very succulent character is just past. The pots for the cuttings must be well drained and filled with very sandy peat, pressed down firmly, with just a little silver sand on the top. Now the propagation of bedding plants is over, there will be more room to spare in some of the cases, and these Azaleas strike best where there is a gentle heat: indeed, a propagating case in the cool end of the stove, or in an

intermediate house, just meets their requirements. If the shoot is cut off cleanly just at its base, and a leaf or two removed, the cutting is complete, and they can then be dibbled in firmly. If a good watering is given, and the pots placed in the case, very little attention will be needed till the plants are rooted, except watering and shading when necessary. Should any signs of decay set in, a little air must be given for an hour or two each day, for if kept too damp a sort of mildew is sometimes liable to attack the bark of the cuttings just level with the surface of the soil, and if not guarded against will sometimes carry off great numbers. If bushy little plants are required, a good plan is to pinch out the top of each shoot as soon as rooted (which will take from six weeks to two months). When the plants recover from this stopping they may at once be potted off, and if kept close in an ordinary cold frame will become well established before winter.

MACKAYA BELLA.—The flowering season of this pretty greenhouse shrub being just over, attention may well be directed to the readiness with which cuttings of it can be struck. The best for this purpose are the young shoots, and if these are taken off and inserted in the ordinary manner they soon strike. To be seen at its best this Mackaya must be grown on rapidly from a cutting till it attains flowering size.

PRIMULA JAPONICA.—As this *Primula* is now in flower a good opportunity occurs to mark the best varieties, if seed of any is required for the purpose of increase. The seed of this should be sown as soon as it is ripe, otherwise it is liable to lie in the ground a very long time before germination takes place, while if sown directly it is gathered the young plants quickly make their appearance. A great many seeds besides these germinate far more quickly if sown as soon as they are gathered. In some cases the difficulty of keeping the young plants of *Primula* through the first winter is a stumbling-block, but, provided they are kept in a cold frame and in rather a dry condition, they will pass through the winter unhurt. T.

ANOTHER PROTEST.

TO THE EDITOR OF THE GARDEN.

SIR,—I can thoroughly sympathise with "E. X.," who describes so graphically the treatment to which he has been subjected by nurserymen, and shall enumerate one or two instances in which I consider I have been somewhat similarly ill-treated in a way that was particularly annoying. The first case was that of a certain *Magnolia* on which I had set my heart, and when going around a nursery with the proprietor I made known to him my wants, and inquired could he supply me with the required article? He said at the moment he was sold out of that variety, but expected a consignment in a short time from the Continent, and at the same time he strongly recommended a certain other variety as a much better one than what I required. But as I knew both varieties, and also naturally knew what I wanted better than he could be expected to do, I declined to take the plant pointed out to me. Thus the matter remained until the following year, when I wrote to the same nursery for my longed-for *Magnolia*, and in reply had the very plant which a year before I had refused to take packed off to me. I was so annoyed at this impertinence that I at once sent back the plant, and along with it a letter of indignant remonstrance at such treatment. The next instance was that of some specially-selected shades of *Clematis* of the *lauguosa* type, which I required for planting out in a conservatory, and for which I wrote to another nursery. As the proprietor did not happen to have them in stock, he coolly substituted other varieties, saying he was quite sure I would find those sent would suit my purpose, and that they were newer and better varieties. Need I say these plants also had to undergo the fatigue of a return journey.

Then, as to the number nuisance, I would say it is sometimes rather irritating, for I have at the present moment in one of the houses several plants, under numbers only, which I wrote for two years

ago, having got the names out of a catalogue which was lent to me for a day or two, and as the plants came to hand with only a number affixed, thus they remain, as I had no means of knowing which they were without writing again to the nursery for a catalogue. In one case I had to write to a foreign country again, as the plants sent from a nursery there under numbers appeared in the catalogue with the names only.

Lastly, as to the compensation-for-carriage nuisance, I find that the plants which are most frequently sent to me for that generous purpose are such choice subjects as the *Winter Heliotrope* and *Anemone japonica*, the former an insidious pest I have in vain tried to eradicate, and the latter a plant I would willingly give my benefactor a bushel of if he would kindly relieve me of its unwelcome presence. How much simpler for the nurseryman to add a duplicate of some plant ordered than to rack his brain at a busy season to try and find out the supposed wants of his victim.—ONE OF THE INJURED.

— I wish to join in the protest with "E. X." (p. 473), and to supplement his remarks with one other. I protest against nurserymen putting into their catalogues the names of plants they have not got. I have frequently sent for a perhaps not very common plant, and added a few others to make up an order, not caring to send for a single plant. I receive all but the only one I really want with the remark, "Regret so-and-so is not in stock." Ought this so to be?—A. R.

GARDEN FLORA.

PLATE 599.

HERBACEOUS PÆONIES.

(WITH A COLOURED PLATE OF *P. DECORA ELATIO*, *LOBATA*, AND *ANEMONÆFLORA*.)

CULTIVATORS of hardy plants should not be slow in adding as many of these charming plants to their collections as they can gather together, as not only are they the most handsome and striking amongst outdoor flowers at the present time, but their amenity to ordinary garden soil gives the grower no excuse at all for their exclusion. Shade as well as full sunshine seem to bring out the natural beauty of these flowers. We have seen them in the wood, or on the border of the little brook shedding a rare splendour along its banks, and giving the *Pæony* a character we rarely see when grown in the ordinary flower border. The great secret in growing *Pæonies* successfully is no doubt a good supply of water during the growing season, with liquid manure at intervals. As they are gross feeders, our plan is to mulch heavily early in spring, just as the young shoots are beginning to peep above ground, keeping them well watered at intervals during the summer months; indeed, the most robust plants we ever saw were in such a low position as to allow of their being deluged with sewerage water at regular intervals. One thing to be guarded against, especially with the European species and officialis in particular, is deep planting, as if planted too deeply they are apt to rot even after having grown 6 inches or more above ground. *Pæonies*, as a general rule, are so easily increased, either by division or seed, that there is no excuse for their scarcity in gardens where there is plenty of space that can be devoted to their cultivation. Where opportunity offers they should be largely planted in the park, semi-wild parts, by the woodland walks, &c. The effect of a group of these, well clothed with elegant foliage and surmounted by their numerous large, handsome, variously-coloured flowers, is very fine, and has only to be seen to be generally adopted. Even when grown in full

* Drawn for THE GARDEN by H. G. Moon, in Mr. Bair's garden, at Tooting, September 30, 1885, and printed by G. Severeys.



CHAMP BÉGINNES
1. BE. NUDIFLORA BENTLEY. 2. PALMATA. 3. ANEM. URPELLIQA

shade the colours are very bright, and, being a fortnight or so later, succeed those in the open.

The following are short descriptions of those figured on the annexed plate, a description of the albiflora section having been given, with a plate of Adrian, a few months ago:—

P. DECORA.—This is a very handsome species, and, as Anderson remarks, well marked out from all the others by the elegant stateliness of its habit; each stalk accompanied by its horizontal leaves diminishing as they ascend, and terminated by its



Peonia sinensis (P. albiflora).

flower, supported on a long peduncle, exhibits somewhat of a pyramidal figure. It is clearly allied to *P. arietina*, although when seen growing side by side with that species the distinction is wide enough for all practical purposes. In *P. decora* the leaflets are tripartite, narrow, oblong, blunt, and hairy underneath; flowers medium-sized, purple, red, or crimson. *P. d. var. elatior*, well represented in the accompanying plate, is also one of the varieties described by Anderson. It was first seen in Messrs. Chandler and Buckingham's nursery, and was believed to have been introduced from Holland. The leaves are much broader than in the type, the plant altogether more robust in habit and more hairy.

P. D. VAR. PALLASI has narrow, oblong leaflets, flowers very large and open, not unlike a large Poppy, deep rich crimson, changing to a bright rose as it fades. It was first introduced by Messrs. Lee and Kennedy, who received the seed from Pallas.

P. LOBATA (a coloured illustration of which will be found on the annexed plate) has been placed as a variety under *P. officinalis* by Mr. Baker. It is, however, perfectly distinct as a garden plant, not only in its dwarfer habit, its narrower and more numerous leaflets, but also in the very unusual colour of its charming flowers. It forms an erect little bush about 18 inches high, the leaves much divided, and slightly hairy underneath. It produces numerous cup-shaped flowers, pale rose-red, with a tinge of yellow—a very unusual colour in a flower, on which account it is very interesting. It grows freely in ordinary garden soil, and we have found it very useful for the rockery, in the spring displaying its purple stems and flowers, and all through the summer and early autumn its handsome foliage.

P. OFFICINALIS AND ITS VARIETIES.

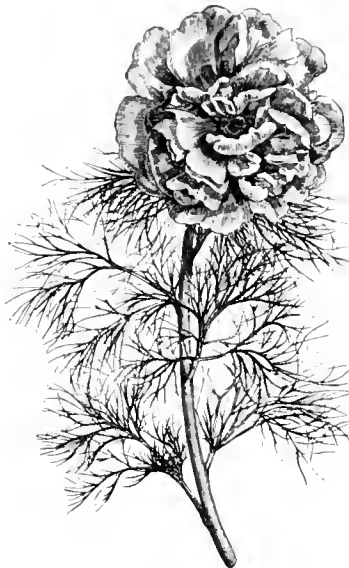
The numerous florists' *Pæonies* we possess at the present time, excluding of course *P. Moutan* and its varieties, have nearly all been derived from the variable Chinese *P. albiflora*, a species extremely fertile in variety of form and no less so in range of colour, almost every conceivable shade of rose, crimson, pink, &c.,

as well as many shades of white, being abundantly represented. Many of them are very fragrant, and in some few we have a very good imitation of the Rose. Although both numerous and variable, it is very questionable if they are so widely circulated in the old hardy flower gardens as the old European *P. officinalis* and its varieties, a half dozen or so being cultivated at present, and have been common, we are told, in almost every cottage garden in England since about 1580. There can be very little doubt now that the double forms of this species are the same as those spoken of by the old writers, large clumps of many of which may be seen even now in the places that escaped the general destruction of good old plants caused by the bedding mania.

P. OFFICINALIS, the type, is perhaps not so common in gardens as it might be; it is not so striking as the varieties, but it has a grace of its own that entitles it to a place amongst all old flowers. It grows between 2 feet and 3 feet high, stems stout and one-flowered. The flowers are dark crimson, overlapping one another, and nearly orbicular in form; leaves oblong, narrow, and pointed, dark green above, and generally very pale underneath. It begins to flower about the middle of May. It is a native of Southern Europe, and said by Turner to have been grown in our gardens as early as 1562.

P. O. ANEMONÆFLORA (see the accompanying plate) is a handsome flower, crimson shaded magenta, and slightly flaked with purple. There is also a double form, very desirable, with irregular petals, not unlike a double Anemone, but twice the size.

P. O. ALBICANS (the old double white of gardens) is first recorded by Tabernaemontanus in 1590, and must have come into cultivation about the same time as the double red. The flowers when first open are of a delicate pale pink, and as they become older are almost white; it is not so free as the red-flowered one, but will be found a useful companion and a first-rate plant for rockery or woodland walks, &c., where it attains extraordinary dimensions.



Peonia tentifolia.

P. O. VAR. BLANDA.—The leaflets of this variety are somewhat narrower than in *rosea*, the margins less undulated, and of an uncommon light green colour, rarely, if ever, seen in the typical plant; the habit is much more spreading than in the variety *rosea*, flower-stems reddish, flowers blush-coloured, very striking and fine.

P. O. VAR. CARNESCENS (the double flesh-coloured *Pæony*).—This is perhaps, with the exception of *anemonæflora*, the newest form of the group described

here, having first been recorded by Morrison about 1699; on first opening the flowers are of a fine rose colour, and as they advance become pale flesh-coloured. It is a charming plant, and should be in every garden as a companion to the double red, flowering as it does about the same time.

P. O. VAR. ROSEA.—This handsome variety is said to have been found by Mr. Sabine, along with *blanda*, in the Oxford Botanic Garden, but no account of their history previous to this has been recorded; they are supposed to have both been there for a considerable time previously. The leaves of *rosea* are very large, leaflets broad and undulated, blunt, very dark green, and often tinged with red on the margins; the prominent ribs on the under surface of the leaflets are sparingly covered with longish hairs; flowers of a beautiful rose colour, produced about a fortnight earlier than those of *P. Sabini*, in ordinary seasons about the middle of May.

P. O. VAR. RUBRA.—This is no doubt the old double red of gardens, the first account of which we have in Lobel's "Icones," 1581. The grand double *Pæonies* from China, magnificently rich and striking as they are, cannot be compared with this common denizen of our old gardens. It has long held the first place amongst hardy border plants, and is likely to do so, notwithstanding the tendency of fashion for single flowers. The flowers are rich crimson, very large, and produced in the greatest profusion, lasting a considerable time in their full glory.

P. O. VAR. SABINI.—It appears that a few years previous to Anderson's "Monograph of the *Pæonias*," in the 12th number of the Linnean Transactions, the single-flowered *P. officinalis* had become so rare in gardens, that it was scarcely known to writers of that period; in fact, a single-flowered form was not believed to exist in a living state until Mr. Sabine had the fortune to find a plant in the corner of an obscure old garden in Hertfordshire. It differs but slightly from the type, the flowers exactly corresponding in colour to those of the double red, opening a few days earlier, and not lasting nearly so long in bloom; the leaves are much less undulated than the type, the plant being more robust in habit. The above represent two sections of this charming genus, *officinalis* and *lobata* representing the section to which *tentifolia*, *anomala*, *Emodi*, *peregrina*, *mollis*, and *paradoxa* belong, and *decora* representing *corallina*, *Russi*, *Broteri*, *triternata* (*daurica*), *cretica*, and *arietina*—all sufficiently distinct and handsome as to make them a desideratum of every grower who has space at his disposal.

D. K.

STOVE AND GREENHOUSE.

T. BAINES.

AOTUS GRACILLIMA.

IN this we have one of the numerous hard-wooded New Holland plants that was extensively grown for some time after its introduction, but which has given place to things that can be cultivated with a minimum amount of skill and attention, and which are quickly got up from the seed-pan, or cutting-pot, to a flowering state. For some time after this *Aotus* made its appearance it was often met with in competing groups at exhibitions; so used, when represented by a well-managed specimen, its distinct habit of growth seldom failed to make it an object of interest; but its pretty, small, pea-shaped red and yellow flowers, though produced in such profusion as to literally crowd the thread-like shoots to an extent that is seen in few other things, are not so showy as those of many plants that come from the same part of the world, hence it is now rarely seen on the exhibition stage. The extremely elegant habit which it possesses is not the least of its merits. In fact it would be difficult to find amongst all the plants that are subject to pot culture any that surpass it in this respect. When strong and in good condition, the annual shoots are from 2 feet to 2½ feet in length, though no thicker than fine whip-cord; they are clothed with long, very narrow leaves, and droop much in the way of a Kilmar-

noek Willow. To this drooping habit the plant owes much of its distinct and elegant appearance. Although by no means a plant of strong and vigorous habit, it nevertheless grows much more freely than the generality of hard-wooded species, and is less liable to get out of order unless subjected to neglect; with ordinary care it will continue to thrive for a long time. This combined with its distinct character makes it a desirable plant for greenhouse decoration, where, to those who appreciate elegance of habit, even when out of flower, it is attractive. It can be easily struck from cuttings, which if taken off when the growth is half matured in the latter part of summer seldom fail to root. The cuttings should consist of the points of the shoots about 2 inches long, and may be put 1 inch apart in 5-inch or 6-inch pots filled with sand; cover with a propagating glass, and keep the sand moderately moist. Stand them in a greenhouse and shade from the sun until their base is callused, then remove them to a house or pit where a moderate amount of heat is kept up, and during the winter they will make roots. In spring put them singly in small pots, using good fibrous peat, adding a moderate quantity of sand; it will be best to sift the peat whilst the plants are small. Keep in an intermediate temperature, standing the pots on material that will hold a little moisture. Give a thin shade in bright weather, but plenty of light, admit a moderate amount of air, and sprinkle overhead with the syringe daily. Treated in this way the little plants will make progress. From the decided inclination which the shoots of this *Aotus* have to droop it is better to grow it in the form of low standards about 15 inches or 18 inches high; consequently the leading shoots should not be stopped in the manner usually done with plants of more erect habit. Instead of this secure each to a thin stick until the requisite height is attained, after which pinch out the points to induce them to branch out.

During the summer it will be necessary to give a shift. Four-inch pots will be about the right size. Use sifted peat similar to that in which the little plants were first placed. After this second potting, continue to keep in a genial growing temperature until the roots have taken to the new soil; when more air may be given, discontinue the use of fire-heat, and cease shading and syringing. Through the winter a temperature of about 15° in the night should be kept up, as young stock of this, as of most other plants that come from the same part of the world, do not move so freely when the spring comes round if allowed to be too cold in winter. In the spring a little before the growth begins, cut the shoots back to within about 2 inches of where they spring, and as soon as the young growth is moving freely, give pots two sizes larger. Now use the peat unsifted; pot moderately firm, and keep the atmosphere somewhat close for two or three weeks until the roots begin to enter the new soil. Shade when the weather is bright, and encourage growth through the summer by keeping the material on which the pots are stood and the floor moist. Syringe in the afternoons when the house is closed, which should be done early enough to shut in the sun-heat that is so important an agent in helping the free development of the shoots. There must be no attempt at shoot-stopping in the way usually practised with most hard-wooded subjects, farther than if there happens to be odd branches that take an undue lead so as to outgrow the remainder, they may have their points pinched out; but whatever requires doing in this respect must be attended to early in the season, otherwise the requisite balance in the strength of the shoots will not be secured. All in the way of stakes and ties that will be required by the plants, or, in fact, that is admissible, is a stick to support the main stem, leaving the branches to assume their natural drooping form. Winter as before. As already said, this *Aotus* is a very free bloomer, so that if all goes well, the little plants may be expected to flower in May. Even in this small state they are effective. Whilst in bloom keep them cool and shaded from the sun, so as to prolong the flowering period. After the bloom has faded shorten the shoots back to within 2 inches of where they were cut to last year, and encourage the plants

to break by syringing and keeping them in a growing temperature. When they have broken and the young shoots are an inch or two long, move into pots about two sizes larger than those they have already occupied; treat as advised for the preceding summer, and winter as before. Again in spring after they have bloomed, shorten the shoots, and give additional root-room as required. By following this treatment the plants may be expected to last for many years, increasing in size and in their annual display of bloom. Though, as already said, this *Aotus* is wanting in the showy appearance of its flowers individually, it is always effective; even when out of bloom its slender, pendulous shoots afford a contrast to everything else with which it may happen to be associated.

I have hitherto said nothing about its requirements in respect to water; although, in common with other hard-wooded greenhouse species, it will not bear neglect in this matter, yet it is by no means a ticklish subject to deal with, provided the two extremes of allowing the soil to get unreasonably dry or of saturating it with water are avoided. With fair attention it seldom gets out of condition.

A climber from Nice.—You would kindly oblige me in naming the climbing plant sent herewith. It is a very large creeper; the tree it strangles is quite overhung with its golden garlands. I send also a very bad photograph of a flowering *Dorvanthes* (?)—flower brilliant scarlet without, white inside. I hope to send you a better one soon.

E. KORSCHGREY, *Villa Montharon, Nice.*

** The strangler is a very beautiful one—*Bignonia*.—ED.

Vitis heterophylla variegata.—This slender growing Vine is occasionally seen bedded out during the summer months, but perhaps the most useful purpose to which it can be applied is as a foliage plant grown into neat little specimens and kept under glass. If stopped once or twice during its earlier stages and secured to a single stick it will assume somewhat of a pyramidal habit, and is then very useful for a variety of purposes. The variegation of the foliage is most irregular, some leaves being nearly all green, but most of them are beautifully mottled and marked in different ways with white, many of the younger ones being almost entirely of this latter hue, while the bark of the young shoots being of a pleasing shade of purplish pink is conspicuous against the light-coloured foliage. This Vine is, like the rest of its class, deciduous, and may be kept in a dormant condition in the greenhouse during the winter, and if started in a gentle heat in early spring will soon be in full leaf. Propagation is effected by means of the young shoots, that strike readily enough if taken off at a joint, and dibbled into pots of sandy soil and placed in a propagating case soon form roots. H. P.

Sea sand for plants.—There seems a great diversity of opinion about using sea sand for plants, yet I have used it for all purposes for which sand is required. I never take the trouble to wash it, but use it just as it comes from the coast with the water dripping out of it. In the autumn of 1884 I had a lot of seedling *Cinerarias* planted under a north wall, in about one-half sea sand and burnt earth on a solid clay foundation. They were put there in the early part of the summer, being the surplus of what I had after potting off the seedlings. They grew very strongly, and after throwing away a lot of *Coluses* in autumn I lifted about four dozen, and as a load of sand was received on the same day, I used the wet sand to mix with the potting soil. I potted them into this mixture, and I never saw a finer lot of plants. They were put into 8-inch pots and afterwards into 10-inch and 12-inch pots. The leaves resembled those of *Blubarb*, and the heads of bloom were nearly 3 feet across, and would have been more if they had been tied out. Being only a mile from the beach, it only costs 2s. per load, and I have used over a dozen loads to dig into flower borders to lighten them, and as the soil was very heavy I used it in summer when bedding out. I put sand all round *Iresines*, *Lobelias*, and all fine-rooting bedding plants. I also used it

to strike cuttings of all greenhouse stuff, and for striking *Iresines* and *Coluses* nothing is better. I used about half sand and half *Cocoa* fibre. I have also grown *Gloxinias* and *Begonias* in it. I see "J. M., Charnouth, Dorset," says that it killed a lot of his plants, but, except two or three *Coluses* and about half a dozen other miscellaneous plants, I never lost any. When I examined those that died with me I found that they were all water-logged, so that I could not say whether it was the fault of the sand or the careless watering. I trust other correspondents will give their experience, as I think many do not use it because they are afraid it will do harm. When at Messrs. Cunnell's at Swanley the other day I saw a lot of it, and they say they always use it.—NEMO.

GREENHOUSE RHODODENDRONS.

THESE are by no means common, as many gardens may be visited without finding one of them; they are, nevertheless, showy plants, and should be grown in every greenhouse. *Azaleas* are noted for their attractive flowers, but these *Rhododendrons* are far in advance of the best of the *Azaleas* in the beauty of their chaste and gorgeous blossoms, and the delicious fragrance of many of the *Rhododendron* flowers is not excelled by any other flower in the garden. When in bloom about Easter and Whitsuntide they are very beautiful. I am greatly astonished that they are not more plentiful, as there is much space and attention given to many plants not one quarter so valuable. If all who take an interest in the highest classes of greenhouse flowers would obtain half-a-dozen of these *Rhododendrons* and see them bloom once, large additions would soon be made to their stock, as it is impossible to over-estimate their merits. The following are all charming sorts: *R. fragrantissimum*, flowers pure white, deliciously fragrant; *R. Pink Beauty*, flowers of a delicate pink colour; *R. fulgens*, fiery crimson, compact growth, very effective; *R. Countess of Haddington*, large bluish white flowers; *R. Daviesi*, magnificent flowers of a bright orange-red colour; *R. jasmiflorum*, very free blooming, white, fragrant, excellent for bouquet-making; *R. Jenkinsi*, flowers very large, funnel-shaped, snowy white, very beautiful; *R. Rosalind*, compact habit, delicate pink flowers, charming. There are many others equally good, but the above would readily give so much satisfaction to anyone as to fully establish greenhouse *Rhododendrons* in their favour. They may all be grown very successfully in pots. Now is the time to repot them. Do not give them too much root room, but they may always be safely transferred into pots 2 inches larger than those they previously occupied. They do not require to be potted every year, and if carefully potted now they may not require this attention again for two or three years. The pots cannot be too carefully drained. The potting mixture should consist of two parts peat, one of loam, and one of sand. When the plants are turned out of their pots every particle of the loose soil that does not contain any roots should be removed, but the roots must not be broken. Pot very firmly, ramming the soil all round carefully with a blunt-pointed stick. Use the soil moderately dry and water thoroughly soon afterwards. As soon as potted it is important that the roots and shoots make free growth, and to assist them in this, place them in a moist atmosphere where the temperature is about 70°. Ainery not too far advanced is a good place for them, as they are benefited by a little shade at first and until the growths have developed considerably, but they should be well exposed to the sun and air when the buds begin to form, and during the autumn months they should be placed in the open air altogether, the main points necessary to secure abundance of bloom being a luxuriant growth in the first place, and a thorough ripening of the wood afterwards. Badly-ripened wood will never produce many or good blooms. The foliage is apt to harbour insects at times, but a free use of the syringe when the plants are making their growth will, as a rule, keep them clean and healthy. CAMBRIAN.

Sweet-scented Rhododendrons.—A great many greenhouse *Rhododendrons* have their blo-

soms more or less scented, but those in which that character is the most pronounced are a few hybrid varieties claiming parentage either from *R. ciliatum* or *R. Edgeworthi*. The progeny of this last are all remarkable for the fragrance of their blossoms, and include among their number *R. Princess Alice*, the result of a cross between *R. ciliatum* and *Edgeworthi*; *Sesterianum*, between this last and *R. formosum* or *Gibsoni*. A great many varieties raised between *R. Edgeworthi* and the twiggy growing *R. multiflorum* are as remarkable for the fragrance of their blossoms as for their free-flowering qualities. The hybrids raised from *R. Veitchianum*, beautiful though they be, are not so fragrant as those above mentioned. With regard to the beauty of its blossoms, this species (*R. Veitchianum*) is surpassed by none, as in the best variety the blooms are large, very wax-like in texture, and pure white in colour, except a yellowish blotch at the base of the upper petal. The edges of the flowers, too, are beautifully crimped. In this respect they vary greatly; indeed, there is a variety (*laevigatum*) with the edges of the petals smooth, but it is not so attractive a flower as the other. Seedlings of these different *Rhododendrons* vary considerably in their ornamental qualities, some being in this respect much superior to others, so that in order to increase the finest type it is necessary to propagate it by cuttings or grafts. H. P.

Lemon-scented Verbena. This is a favourite plant with many. It is frequently grown in pots, and a few specimens of it are very useful in the greenhouse, and it also succeeds well in the open air in summer. It should be planted against a wall or in a very sheltered sunny position. I know of several large wall specimens which have been cut down lately or during the last winter by the frost, and as it is not quite hardy it should be protected when left out all winter, but although some of the branches may appear dead—in fact, may be quite dead—for a considerable distance down, the roots are more difficult to kill, and the plants should never be thrown away as dead in spring until they fail to show life in summer.—J. MURR.

Capsicums and Chillies.—It seems strange at a time when ornamental fruit-bearing plants are so much sought after that these are so little cultivated in this country. In scarcely one garden in twenty, with abundance of glass, is little or any attention devoted to these truly ornamental, as well as useful, plants. They were more generally grown by the old gardeners, and even within living memory most gardens with a few frames contained some pots of Capsicums, and nice specimens they frequently were. They well repay a little extra care. I suppose novelties have thrust them aside. A spur would be put to their popularity if at flower shows prizes were offered for, say, twelve pots of not less than six kinds. I submit this to the committees of horticultural exhibitions; I am sure it would be an interesting and attractive feature. In America, where they are largely grown, many varieties are obtainable, yielding fruits varying in size from a large barley-corn up to a goose's egg, crimson, scarlet, yellow, and bi-coloured, but I always think the reds most attractive; it is, however, perhaps a matter of taste. I apprehend that, although treated as annuals, most or all are perennials in the Tropics. I have kept them for three years, and generally keep them over the second, the advantage of which is their fruiting so much earlier. Such plants I have now with half-grown fruit on them, while this year's seedlings are not even yet showing bloom. Of course, they can only be wintered in a stove, but everyone possessing such a structure should find room for a few specimens, and their sight will be gratified with the handsome fruits for months.—J. M., *Charmouth, Dorset*.

Manure water for Camellias.—On reading the article in THE GARDEN (p. 462) on "Manure water for Camellias," by "Hortus," it brought to mind a few facts in my own experience in this matter. Upon taking charge of the gardens belonging to a gentleman in the midland counties some years ago, I found in the collection of plants a *Camellia reticulata*. This was thought a good deal of by my employer, and I was told that it had

produced "four large flowers all open at the same time." I was rather amused at the statement, but said nothing, as it was very plain that the plant could be made to produce better results. It was a lanky, straggling plant, and the first thing I did was to take out the terminal buds in order to get shoots to break from the old wood. It was very much pot-bound, but I determined not to repot it, but see what could be done by the use of stimulating food in the form of liquid manure. The way I made this was by pouring large quantities of water upon the manure in the stable manure pit, and allowing the liquid to flow into a catch-pit outside. This was used diluted with water at a strength of about one gallon to four of water, and the plant was always watered with this when dry till its growth was completed. It threw out shoots from the old wood even beyond my expectations, and in the course of three or four years became a well furnished plant, and instead of producing four blooms "all open at the same time," there were two dozen all open at once. I believe that many *Camellias* are ruined from overpotting and subsequent injudicious watering.—R. LLOYD, *Brookwood*.

THE CALCEOLARIA.

Those of us who can look back over a period of but thirty years can contemplate with satisfaction the great improvement made in that time in this very showy greenhouse plant. At that time Mr. Kinghorn, now of Sheen Nursery, Richmond, was an industrious raiser of new varieties, and sent out many which were great improvements on the old forms, under name, for at that time when a distinct and good variety was produced it was propagated at once by division of the plant, and a good stock was obtained the first season. Another very intelligent cultivator was Mr. Joseph Plant, of Choadle, in Staffordshire; he was also a raiser of seedling forms, and produced a type with distinctly striped flowers, but at that time the plant grew very tall and the striped varieties were no exception. In Scotland the prevailing type had golden yellow flowers of excellent form, densely spotted with red, crimson, or maroon. There were also seeds of many colours which have been improved through successive seasons, until the latest improvements exhibited at the recent flower shows, notably by Mr. James, of Farham Royal, have eclipsed anything hitherto seen in cultivation. It is not to be expected that improvement can go on so rapidly in the future as it has done in the past, nor does it seem to be necessary, as the standard of perfection has almost been attained. The plants now in cultivation are of dwarf, compact habit. The heads of bloom are very large, and the flowers possess the requisite properties of good form, size, richness, and diversity of colouring. The set of twelve plants which was awarded the first prize at the Crystal Palace contained the best examples of culture ever seen in London. The individual specimens were of large size, and the well-formed, richly coloured flowers were $2\frac{1}{2}$ inches in diameter. One had flowers of a rich deep yellow, densely dotted and spotted cinnamon-red; others yellow, blotched maroon; primrose, lightly spotted crimson; yellow, sparingly spotted with red; crimson-scarlet, and yellow self-coloured flowers. How are such handsome specimens produced? is a question many persons have asked. In the first place, a good strain of seeds must be obtained. Mr. James has, by careful selection through a long series of years, brought the *Calceolaria* to its present state of excellence. He also has a thorough knowledge of the requirements of his plants. The seeds may be sown now or in June and July; they are of very small size, and a packet obtained from the seed shops is so minute, that a careless person, in opening the packet, has jerked all the seeds out of it, and innocently insisted that it never contained any. A 5-inch pot is the right size for an ordinary half-crown packet of seeds. The pot should be well drained, and filled to within an inch of the rim with ordinary potting soil. The half-inch on the top must be finished up with finely-sifted sandy soil and made quite level; on this sow the seeds, and just sprinkle over them some

fine sand. It is a good plan to lay a square of glass over the top to keep the soil in a moist condition, for if it should become over dry during the germination of the seeds, probably the whole of them would perish. I generally place the pot containing the seeds in a hand-glass or frame, on the north side of a wall or fence, to prevent any injury from the action of the sun. When the tiny seedlings are large enough to be pricked out, a dozen of them may be planted in a 3-inch pot, and when the leaves of these pretty well cover the surface they may again be potted off, three into the same sized pot, to be again repotted with one in a pot. After this they grow very freely when the conditions are favourable to their perfect development; and those conditions are, first, good potting soil, composed of three parts good turfy loam, one part leaf-mould, one part decayed stable manure, and a little turfy peat. The plants must also be kept steadily growing in a greenhouse, kept close to the glass, and shaded lightly from the mid-day sun. The plants must be repotted before they become in the least root-bound. They like ample ventilation, but if the wind is high and dry the ventilators must not be opened on that side from which the wind blows, as a high, drying wind causes the leaves to flag as if the plants were suffering from want of water. This is another thing that must not happen, because a plant that suffers from over-dryness once will never make such a perfect specimen as if this had not taken place; but if this should occur more than once, the probability of successful results is very remote. Further, any plants that receive a check to their growth are almost sure to become infested with green-fly sooner than those that are kept in a healthy growing state. In fact, it must be noted here that no plant is more liable to be attacked by green-fly, which would render the plants worthless if not constantly destroyed by fumigating with Tobacco smoke. Besides the raising of plants from seeds, they can readily be propagated from rooted offsets. These are obtained by placing the plants when they are past flowering into a cool pit or frame; some good compost may be placed over the bare stems, and roots will speedily push out from the part of the stem nearest the leaves. Whenever these roots are formed the plants may be divided, and the small portions be repotted into 3-inch or 1-inch pots. At one time nearly all the plants grown in gardens were propagated in this way, but they are not so free in growth, nor do they make such handsome specimens as seedlings do.

J. DOUGLAS.

Bossiaea linophylla.—This is a pretty plant, belonging to the Leguminosae family, and is remarkable alike for its grace and elegance as for its profusion of blossoms. It is of very slender habit, and is seen to the greatest advantage in the shape of a good-sized specimen, with the centre branches secured to a stake and the others allowed to hang down naturally. In this way the lesser shoots will droop as much as those of the Weeping Willow, and will be now clothed for the greater part of their length with bloom. The individual flowers are Pea-shaped, rather small, and of a bright orange colour. The leaves are narrow, and by no means densely arranged on the branches. This *Bossiaea* is a native of South-west Australia, and the treatment usually accorded to *Chorozemas* and similar subjects will suit it perfectly. Cuttings are by no means easy to strike, but as a set-off to this seeds may often be obtained.—H. P.

Kennedyia Murrayatae.—One great merit is certainly possessed by this beautiful greenhouse climber, viz., that of continuous flowering, for, provided the roots are in a healthy condition and not too much restricted, it will grow and flower nearly all the year. It is certainly a climber that should be made a note of where a selection of these plants is required, for, in addition to its free-flowering quality, it is altogether of easy culture. Cuttings are not difficult to strike if formed of the young shoots at this season, selecting for the purpose those with short joints rather than the more vigorous ones. Seeds, too, often ripen, and though plants raised from cuttings are more floriferous in their

earlier stages, seedlings, generally speaking, grow more quickly, which last is an advantage in the case of a climbing plant. If in rather a hot situation near the roof, a liberal use of the syringe will be necessary to keep down red spider, which, once they effect a lodgment on the foliage, are difficult to eradicate.—H. P.

SEASONABLE WORK IN PLANT HOUSES.

STOVE.—CLERODENDRON BALFOURI.—The value of this *Clerodendron* for decoration can scarcely be overrated, especially when the length of time during which, with a sufficient number of plants, a succession of its flowers can be had is taken into account. By starting some early in the year, with others to follow, it may be had in bloom from the beginning of April up to the latter part of summer. Moderate-sized examples, such as can be grown in 13-inch or 14-inch pots, are the most useful. A well-managed plant in a pot of this size will produce a large quantity of flowers. It is an easy matter to confine the specimens to this size, as the plant will bear cutting closely in after flowering and much of the old soil being shaken away. By this means new material can be given it annually. Plants of the size named, as they go out of flower, may have their shoots cut back to within 4 inches or 5 inches of the base. This *Clerodendron* is a remarkably free grower. If after being shortened back it is placed in moderate stove heat and syringed overhead daily, it will break in a fortnight, when the plants should be turned out of the pots and have a good portion of the old soil removed. Such as are in pots of the size above named, and that are required to be kept in this size, may have half or more of the old material taken away, removing the long straggling roots that will have found their way down to the drainage. Repot in good turfy loam, to which add about one-fifth of rotten manure and some sand; pot firmly, and stand them in a house or light pit where a free growing temperature is maintained. The young shoots should be trained to thin strings, secured to the roof in a way that will keep their points upward. If a sufficient number of shoots is present, there must be no attempt at stopping, as, if the plants are strong, it is more likely that they will require reducing. Examples of the size named are better with about fourteen or fifteen strong growths than if consisting of more and weaker. The object is to get them as strong as possible, with the wood hard and short-jointed. To secure this they must be kept close to the glass, and as soon as the roots have got fairly hold give manure water every other time the soil requires moistening. Admit a moderate amount of air in the middle of the day, and syringe freely at closing time. By following this course as the plants go out of flower with half a dozen specimens, a lengthened succession of flowers may be relied on next year.

IXORAS.—Where there is a regular demand for choice cut flowers there are few things that are more useful than *Ixoras*, provided the plants are well grown. If in indifferent condition they are of little use, as in place of blooming more or less through the autumn season, as *I. coccinea* will when well cared for, and giving separate crops of flowers, as most of the seedling varieties do, they make only a meagre display for a short time in the summer. The essentials to success are a good light house to grow them in, with sufficient heating power to keep the temperature well up in winter, no stint of pot room and regular attention in keeping down insects, which, if once they get a footing, increase apace. In respect to re-potting, it is not well to confine the operation to some particular period, such as often practised with plants of many kinds. If several small examples of the same kind of *Ixora*, all of one age and alike in condition, are taken in hand, it will almost invariably be found that some will outgrow the others to an extent that does not usually occur with most things. This is more apparent in *I. coccinea* than any of the other species or in the numerous hybrids now in cultivation; when it happens either with young plants or others that have attained more size, but are not fully grown specimens, more room should at once be given, as if the roots get pot-bound the growth immediately feels

the effects by becoming weak and stunted, in which case it is difficult to afterwards get the plants to move freely. To grow *Ixoras* successfully they require to be pushed along during the early stages of their existence, giving them larger pots proportionate to the size they attain than almost any other stove flowering plant with which I am acquainted. The present is a good time to shift any that need it, as there is plenty of time for the roots to get fully hold of the soil; this they will do even much later on than this, provided enough warmth is given them during the autumn. The best fibrous peat with a moderate addition of sand is the only material I should care to give them; the hard, close-textured peat that has had *Heather* growing on it is wholly unsuitable for *Ixoras*. In this kind of soil I never saw them make half the growth that they should. Rather than use peat of this description I would pot them in good turfy loam with plenty of vegetable fibre in it, shaking out half the earthy matter before using it. Few plants are so persistent in pushing their roots down to the bottoms of the pots amongst the drainage, and in removing this more than ordinary care should be used so as not to injure them. With care in this respect there need be no hesitation in potting such as want it, even if there is a crop of flowers on them nearly ready to open, as if the roots are not disturbed more than is necessary it will have no perceptible effect on the bloom. Pot moderately firm, give a little shade when the sun is powerful, and keep the atmosphere close and fairly moist afterwards.

CALLICARPA PURPUREA.—Though this plant is seldom met with, it is one of the most effective of all the berry-bearing kinds. Its flexible shoots, when laden with their highly coloured fruit, are very effective when used in a cut state with Ferns or other green foliage, and the plant is equally attractive during the lengthened period that the berries remain fresh on it. Cuttings that were struck some time ago and have since been put into little pots should, as these become moderately filled with roots, be moved into others from 8 inches to 9 inches in diameter. The plant will grow in either peat or loam, with a little sand and some manure added. Stop the shoots so far as seems necessary to ensure a sufficiently close condition of growth; it is not desirable to have the plants too dwarfed, as they look better when allowed to grow to about 2 feet or 2½ feet in height. Ordinary stove temperature, with a moderately humid atmosphere and air in like quantity as given to other occupants of the stove, will answer for them. Use the syringe freely every day, and stand the plants well up to the glass. Old specimens cut back freely after the berries are faded should, when they have broken into growth, have the balls so far reduced as to get all the soil away that can be removed without unduly interfering with their roots. A little more room may be given, but it is not desirable to have plants of this character in pots that are too large, as the effect produced by the presence of several medium-sized examples is better than a few large ones. Where there is any deficiency of stock, cuttings may now be put in. Young, soft shoots, when a few inches long, will strike treated in the usual way.

GREENHOUSE.—TUBEROUS BEGONIAS.—Like most other things that become popular and that are easily raised from seed, the number of named varieties of these plants is now so numerous that a selection of the best becomes perplexing, especially as individual tastes differ in the matter of shades and colours. The aim of most of the best growers who raise new sorts in quantity appears to have been directed to the production of varieties—double as well as single—that bear enormous flowers; but, taking all properties into account, varieties that bear medium-sized flowers are the best. A stout, robust habit of growth that will enable the plants to hold their shoots erect with little support is essential, and a disposition to push up several growths from the bottom is equally important, as where the plants run up with a single shoot they get more or less into a straggling condition before the end of the blooming season. Large old tubers that were started some time ago will now have made considerable progress. If the pots in which they

were started do not seem large enough to keep the plants growing to the end of the summer, others a size larger should at once be given. Yet it is not well to overdo them in this direction, as this section of *Begonias* will do with somewhat less root room than some things, especially if manure water is given after they have got well established. From the time the tops begin to move, the plants should be kept where they receive plenty of light; without this it is useless to look for the best results in the shape of close compact growth and an abundant head of flowers. Young plants raised from seed sown in heat early must be well attended to, being careful not to let them stop too long in little pots; 5-inch or 6-inch pots, according to the size and strength which the plants have now attained, will be large enough for them this season. A good strain of seed such as now obtainable may generally be relied on to produce varieties that will bear well-formed flowers. The young stock ought to be grown in such a way that the plants will be in a condition to admit of a correct estimate of their habit and the character of their flowers being formed. With this object they must have plenty of room, and to prevent the growth getting drawn they should be stood close up to the glass until they come into flower.

T. B.

FERNS.

W. H. GOWER.

GLEICHENIAS.

THE whole of the plants included in this genus of Ferns are very beautiful and thoroughly distinct in their general appearance. They are widely distributed throughout the tropical world, and have been divided into two groups, viz., true *Gleichenia* and *Mertensia*. The plants in the former group to which we confine these remarks are characterised by a wiry creeping rhizome, rigid opaque fronds, which are more or less dichotomously divided, the pinnules being linear, pinnatifid, and the ultimate divisions or pinnae small, orbicular, and for the most part revolute at the margins. The members of the true *Gleichenia* group are all natives of the Australian continent, New Zealand, New Caledonia, and a few other neighbouring islands. Their general appearance is admirably represented by the accompanying illustration. Under cultivation these plants have in some instances attained dimensions of 5 feet and 6 feet in diameter; their fronds are indefinite in length; naturally they scramble amongst low shrubs and bushes, oftentimes forming dense, almost impenetrable masses.

On account of the long, wiry rhizomes these plants throw out, and from which the young fronds rise, it is at once evident that surface space is of more importance than depth, and as the plants increase in size, boxes will be found more adequate to their requirements than ordinary pots. Drainage is of the greatest importance to the well-being of *Gleichenias*, for the moment this becomes choked, the fronds assume a rusty hue, and the plants are permanently disfigured. These plants, like all Ferns, enjoy a copious supply of water to their roots, but they are not improved by overhead sprinklings, and although they are usually designated greenhouse Ferns, it will be found most conducive to their health at this time of the year and until their growth is mature to give them the temperature of a warm greenhouse or intermediate house, and during the winter months also slight warmth is essential to their well-being. During the time they are growing the plants should be kept near the glass, exposed to sun and light, but as the sun increases in power they should be well shaded from its scorching rays.

In some instances *Gleichenias* are grown in soil principally composed of fibrous peat, and this, we believe, is congenial to some of the tropical kinds belonging to the *Mertensia* group; but for the true *Gleichenia* section the soil should consist of good turfy loam, leaf-mould, and a good portion of sharp sand. *Gleichenias* do not readily reproduce themselves from spores under cultivation, although some few Fern growers have been tolerably successful in this way; but the most frequent method of increase is by division. This is effected by cutting the rhizomes through with a sharp knife and allowing them to remain until each portion becomes well rooted. The best time to divide them is early in spring, just before the young fronds

slightly downy, but the fronds are smooth; the segments or pinnae are small, bright green on the upper side, paler below. It comes from Tasmania, and thrives in a lower temperature than most of the other kinds.

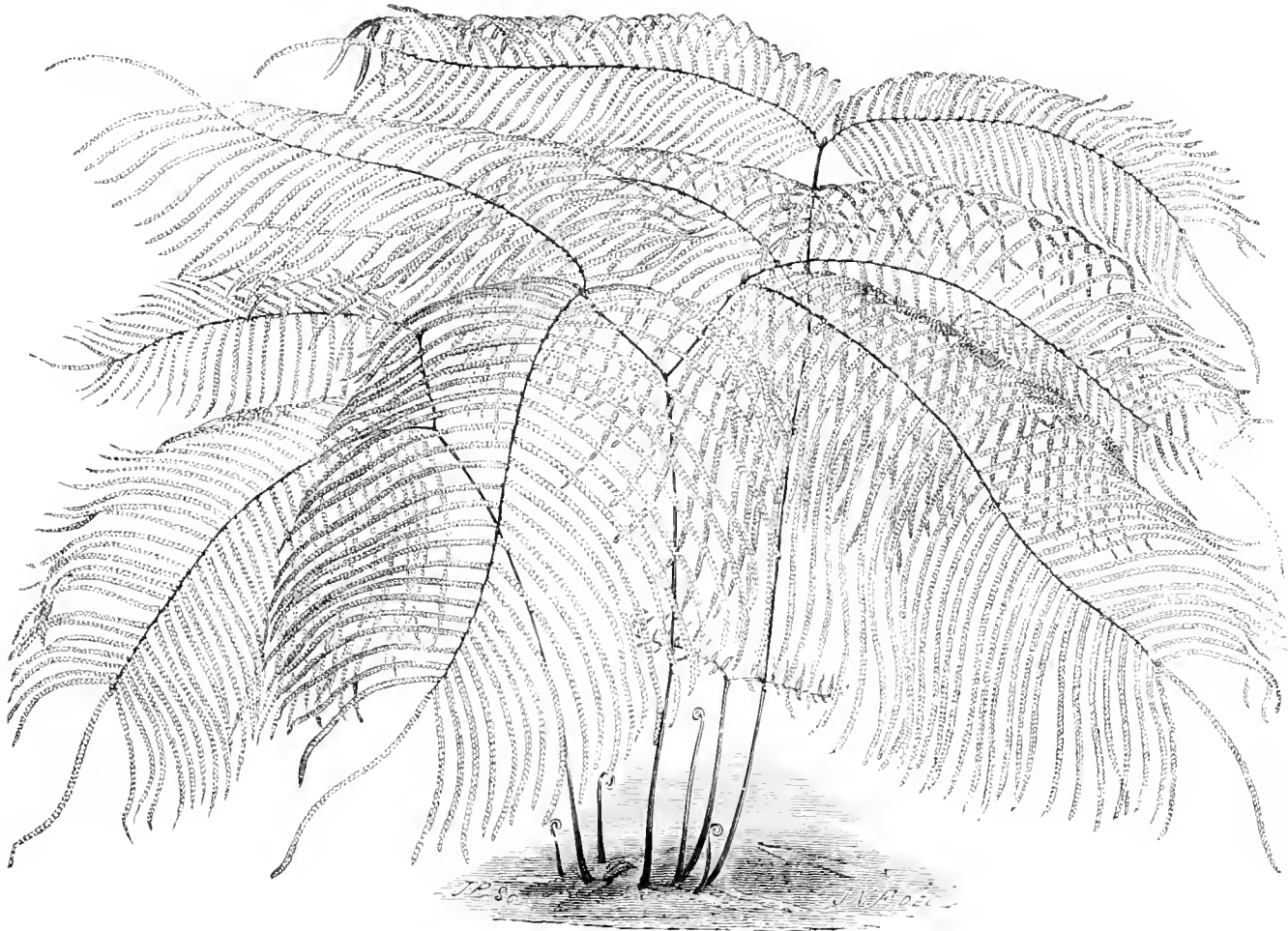
G. DICARPA LONGIPINNATA, which we here illustrate, was introduced by Mr. B. S. Williams, of Upper Holloway, and in whose nursery this and many other kinds are just now in admirable condition, treated to the warmth of an intermediate house. It is distinguished from the previous kind by the great length of the pinnules, by its fronds having a metallic tint of blue over the bright green of the upper surface, whilst beneath they are glaucous; moreover, it is said to be much freer in its habit of growth. It comes from Australia, but the particular district is not stated.

somewhat high temperature during its season of growth.

G. SEMIVESTITA is found in New Caledonia and Malacca, and enjoys the warmth of an intermediate-house all the year round. In habit it somewhat resembles *G. microphylla*, from which, however, it is easily distinguished in a growing state by the dense rusty red branches when in a young state, being somewhat more lax in its growth, and by the pinnules being longer.

G. HECISTOPHYLLA.—This is a New Zealand plant with much-branched fronds and long pinnules.

G. SPELUNCÆ is a distinct, somewhat lax-growing plant. It does not appear to grow so freely as any of the other kinds. It comes from New South



Gleichenia dicarpa longipinnata.

begin to rise. There is a considerable similarity in this section of plants, and hence those who study them in the herbarium only in a dried state are apt to be misled by not being able to distinguish differences which are easily defined when living plants are examined, and although these differences may not be of sufficient importance to constitute specific rank, a distinguishing name is requisite for garden purposes. It must be confessed that *Gleichenias* are about the most difficult plants in the whole Order to grow into good healthy specimens, but this fact should never induce a lover of plants to discard them, more especially as they present such a unique and charming appearance when success is achieved. The following kinds are all deserving the careful attention of Fern growers:—

G. CIRCINATA, perhaps better known by the name of *microphylla*, is found in New South Wales and Tasmania. The stems and branches are sparingly furnished with short rusty hairs.

G. CIRCINATA GLAUCA, also known in gardens as *G. Mendeli*, differs from the preceding in its more robust habit of growth, in the thick coriaceous texture of its fronds, and by the beautiful whiteness of the under side of the segments, which, combined with the deep green of the upper side, renders it one of the most beautiful, while at the same time it is one of the rarest. It is said to come from New Zealand.

G. RUPESTRIS is a native of New South Wales, and by general consent is considered the handsomest of the true *Gleichenias*. It is a bold-growing plant, the stems reddish purple; fronds much ramified and dense. This kind appears to enjoy a

Wales and Tasmania, and varies considerably from different localities.

A natural picture.—At the close of last week, when the strong west wind was carrying over huge masses of rain-laden clouds, I saw towards evening one of the most beautiful of natural and all too fugitive pictures upon which the eye could rest. Away to the east hung a grand background of intensely blue-black cloud, colours such as an artist could hardly portray without charge of exaggeration. Suddenly the sun burst through the clouds in the western sky, and there sprang out from the bank of cloud a magnificent bow glowing in hues of luxuriant radiance, whilst above it was seen its reflection hardly less brilliant than the bow itself. In the background beneath rose up tall Chestnuts, Elms, and other trees, now rich in their green shades of leafage; beneath these

were scores of Apple trees in glorious bloom; still beneath these in the foreground, the rich denser green of the Currant and Gooseberry bushes, and in the immediate foreground flowers of many hues and forms. Through one part above the bushes might be seen the diverse green tint of a field of young wheat. The picture was all too fleeting, but endured for a few minutes, the sun lighting up each leaf and flower with a wondrous glow of colour enhanced by the humidity of the atmosphere. We hear or read of the wondrous beauty of scenery found in other countries. I doubt whether within the moderate radius over which this picture extended any other view could excel it for variety and beauty. So much of colour and beauty enclosed in a double framework of rainbow is rare, and merits description.—A. D.

KITCHEN GARDEN.

W. WILDSMITH.

POTATOES.

THE long-continued cold weather is most harmful to the Potato crop, and is seriously discounting its prospects. Generally, the plant growth is three weeks later than in average seasons, and a check through coldness of soil and general lowness of temperature is very harmful to the tubers and their growth. Over large areas of ground, from tubers planted some seven or eight weeks, growth is not yet visible, or but just pushing through, and the cold nights with fierce winds and rains are not helping development. There is, of course, ample time for development, and when warm weather eventually comes that growth may be rapid, but all experience shows that slow growth at first, checked by cold, is rarely productive of abundant crops. The early kinds will be perhaps most seriously affected, because these are always the most tender, and being checked are no longer early; hence we shall probably see the second early or mid-season sorts turning in so close upon the heels of the first earlies that the chances of these latter being rendered profitable are doubtful. We have before us in this matter plain evidence of the effect of climatic forces upon our gardening labours. It makes no difference if we plant at the usual time, and go on in our usual routine just as if the weather would be favourable at our bidding. We have had little seriously discouraging weather this spring, for frost has spared the abundant bloom on the trees, but still there has been such a continuation of low temperature that growth is wonderfully slow, and the summer, such as it will be, must inevitably be a short one. Experience serves to show yearly how dependent our garden and field crops are upon sunshine, and failing warmth there exists no power or policy the which can adequately make amends for the loss lack of warmth entails. But the efforts of the Potato grower must of course be bent upon rendering to his checked crops what help he can, and in no way can that assistance be better rendered than in stirring the soil freely between the rows of plants, admitting sun-heat, and by pulverising the surface enable the roots to run freely and form tubers readily. Free motion of the surface soil is wonderfully helpful, but except where there is ample space between the rows it must not be too deep. Potato plants root much nearer the surface than is usually supposed to be the case, and large growers who send their horse hoes deeply set through their Potato fields whilst moving the soil literally show little regard for the stolons of the roots. Ordinarily, in fields rows are too close together, probably from 24 inches to 27 inches. In such case not more than 6 inches width of the intervening soil may be moved to a depth of 1 inch, whilst the surface nearer the plants should not be worked deeper than 2 inches. Where a space of from 30 inches to 36 inches between the rows is given—none too much in good soil for strong-growing kinds—much greater liberty may be taken, and in gardens, stirring the intervening soil with a fork to a liberal depth may be safely indulged in with good results.

One common fault in Potato cultivation is in too liberally heaping up soil about the stems early, and

often burying or injuring the foliage. We are pretty well agreed as to the value of earthing up the plants. By its practice we give the stems support in rough weather. We keep the tubers under the surface, and thus prevent them from greening and being by exposure rendered unfit for food. We protect them also appreciably from the ill effects of heavy rains when the disease spore is prevalent, as it is well known now that these minute bodies are washed into contact with the newly forming tubers and penetrate the tender skins direct as readily as they do the leafage; thus moderate and careful moulding affords some appreciable protection from that evil. Then in large broadths very often it is not possible to get up the crop until long after the plant growth has decayed. Earthing up assists to find the rows; indeed, very markedly designates them, and is most serviceable even in that way. Altogether, experience has shown that earthing or moulding has many valuable features, and it seems probable that we shall not forsake the plan at present. Those gardeners who are blessed with warm sheltered borders and soil that is deep and rich find the production of early Potatoes less difficult, because they can provide artificial aids. Still, even these cannot compensate for lack of sun warmth. They, too, are ever in search of first early kinds, if any such can be found, which will give good crops with quick returns. Still there seems to be a limit to the earliness of the Potato plant, as the old Ashleaf remains one of our very earliest, though by no means one of our most productive kinds. For garden work or where the soil is light and warm Mid-summer Kidney has been found very early, large-tubed, and productive, and the more it is grown the better it is liked. In fields, however, the American Beauty of Hebron is the most favoured because it is fairly hardy, and if not of first-class quality at least is early and productive. On dry soil its quality is far better than on wet ones. Its white-skinned sport, White Beauty, or Duke of Albany, is also becoming highly favoured. There is still a useful field open to raisers for the production of really first early Potatoes. A. D.

Late spring Broccoli.—This useful vegetable has this season been unusually late, for even in this southern part of the kingdom capital close heads of Champion and Eclipse, and other late types of Broccoli are still plentiful. The heads now being cut are from seed sown in May last year, and put out after Potatoes came off, without any digging or manuring of the ground. They were dwarf and small-looking when winter came on, but if the stems are stout it is surprising what fine heads they will develop in spring.—J. G. *Hants.*

Ruby Rhubarb.—The description given by Mr. Lloyd to the Rhubarb he has under the above designation seems to be very applicable to that high-coloured kind, Hawkes' Champagne, or perhaps to Johnstone's St. Martin, both excellent early sorts. It may be but a local seedling so named, but then we know that Rhubarbs reproduce themselves almost so faithfully, that real deviations from established kinds are rare. Perhaps Mr. Lloyd would not mind next autumn sending a root to the Royal Horticultural Gardens, Chiswick, where it could be tried against all the best-known kinds, and if found distinct and meritorious, would certainly receive its meed of praise. Naturally, on hearing of any good thing said to be new, we wish to learn how far it may be so, and also whether really distinct from standard kinds.—A. D.

Failure of early Potatoes.—"E. C. M." has probably satisfied himself ere now that his early planted kidney Potatoes were not dead, but sleeping. Even so far south as the metropolitan area, which is usually regarded as early in the matter of Potatoes, very few of the earliest sorts planted in March before the last snowfall are through, or, in any case, coming only with exceeding irregularity. This lateness is entirely due to the coldness of the soil, which still remains cold so far that runner and dwarf Beans lie longer in the soil before germinating than I have ever before noticed, and the plants now are coming so irregularly, that large growers

are fearful of comparative failure. Then I observe that all early Peas sown before the snowfall have come very unevenly; indeed, in many cases not more than one third of the seed has germinated, whilst later sowings show a first-rate plant. Broad Beans are looking well also, but these are indifferent to cold. Generally, all vegetables, but especially those of a tender nature, are late and irregular.—A. D.

NEED PEAS BE STAKED?

GARDENERS in private places are so accustomed to regard the sticking or staking of their Peas as an indispensable part of their culture, that quite probably the above question will be a surprise to some of them. We have always staked our Peas ourselves, as much from habit, I am open to confess, as anything else, for I am not quite persuaded that sticks are necessary to ensure a good crop. I notice every year that, although we give our Pea rows the maximum amount of room—that is the height of the sticks or more, viz., 3½ feet to 6 feet or 8 feet—the Pea haulm, as a rule, overtops the sticks, the taller sorts often growing to the height of 9 feet, and hence the best bearing portion grows over to the lee side and hangs down quite off the sticks, and often gets very much broken and injured in high gales. The same thing happens elsewhere. I observe the height of the Peas varies according to soil and culture. But what I wish to point out is that the Pea haulm appears to grow taller the taller the sticks are, being drawn up, as it were, by the partly shaded position. I want to put the question therefore—Do Peas need sticks to produce a good crop? Would the plants bear well enough without them, and, if so, why stick them? I saw last year a grand crop of tall field Peas, quite as tall as some garden kinds, that bore as fine a crop as anyone could desire; and I know a raiser of garden Peas who uses few or no sticks for his crops, although he has a greater interest in getting good crops than gardeners have in private places. The rows just lie on the ground and support themselves, producing plenty of flowers and pods, and not growing very tall.

Sticking Peas is the most expensive and troublesome part of their culture. Our rows require each, at least, 400 sticks, which cost us 1s. 3d. per hundred in the wood, another 1s. 3d. to fetch home, trim, and sharpen; 1s., at least, per hundred to put to the Peas and carry off the ground again in autumn, which make 3s. 6d. per hundred, or 14s. per row, not to speak of labour caused in stirring the ground and cleaning up after sticking. One-third of our crops—say the dwarf earlies—are staked with the best of the old sticks shortened of their decayed ends and re-sharpened; but the remainder and later Peas have new sticks every season. In plenty of gardens 50 rows of Peas are nothing unusual, and the total cost of sticks and sticking cannot be much less than £30 annually. Good Pea sticks are readily saleable on most estates. We can never find sufficient for our customers, so that they must not be reckoned as of no account in the home garden. I put aside the cost of culture in other respects, and leave the gardener to find out how much he is in pocket in his Pea crop by the sticking practice. W.

Broccoli with variegated foliage.—I send you a specimen of Broccoli with variegated foliage. Two years ago a similar plant came in a row of, I think, Barr's Mayflower. I saved seed, and have now two rows of beautiful plants, about 75 per cent. being variegated, some perfectly white. You have no idea how pretty the rows look—quite equal to a row of variegated Kale. I may claim something for it, too, in the way of hardiness, for when I tell you we had sixty-three frosts in the first quarter of the year and twenty-three more in April, with the thermometer at 15°, you may judge we have not had summer weather. Of course, the severity of the winter has somewhat damaged the plants, and the heads are not so good as otherwise they would have been, for the original plant bore a very fine head. I should have sent a specimen to the Horticultural Society's meeting, but Tuesday is an awkward day for us who are so far away. We have to

run the risk of packages arriving too late for the committee. In cooking, the variegation of the foliage is of course lost, but the effect of a row in the garden is very pleasing, and as the quality is quite equal to other sorts, it is, at any rate, worth preserving. —A. RAWSON, *Windermerre*.

. A very striking variegation.—Ed.

KITCHEN GARDEN NOTES.

CAULIFLOWER AND BROCCOLI.—We have made the last planting of Early Dwarf Erfurt Cauliflower and a first one of Veitch's Autumn Giant. The latter variety, in addition to its other good qualities, will also continue for a long time in a usable condition; that is, the heads do not quickly burst open, even if left on the ground, whilst if lifted and boiled in on a north border it remains good for a very long time, thus rendering frequent successional plantings of the variety unnecessary. It also stands the heat of summer better than any other variety, but to the other extreme—frost—it soon succumbs, so that it cannot be depended on later than November, and therefore to succeed it, and which will probably be ready as soon, the first planting of autumn protecting Broccoli has been made, and other plantings of the variety will follow as soon as ground becomes vacant, and will be closely succeeded by plantings of Early Penzance and Snow's Winter White.

SAVOYS AND COLEWORTS. All our ground is so fully cropped, that we have been compelled to plant a small batch of Savoys down the centres of the rows of Potatoes; such double cropping is not to be commended, and ought not to be had recourse to except under very pressing circumstances, as, apart from the plan being somewhat of a lottery as regards the well-doing of the Savoys, the Potato haulm is likely to get trodden down, and of course the crop suffers proportionately. In the present instance the Potatoes, being our earliest open-air lot, are in such a forward state of growth, that we have no fear of such a result, but if planted amongst late kinds, great care will need to be exercised to guard against injury to the plants by the haulm overtopping them, and of injury to the plants from treading down the haulm when doing what is necessary to keep the Savoys in good growing condition. We have also made a planting of Coleworts that will come in useful at the end of summer and during early autumn when French Beans and Cauliflowers begin to get scarce, and these occupy space on an east border between rows of seedling Asparagus that are wanted for permanent planting next year. The lines of Asparagus are 30 inches apart, and a single row of Coleworts is put down the centre 9 inches from plant to plant. Early London is the variety, and they are planted in shallow drills.

CELERY.—Planted the earliest batch in double lines a foot from plant to plant. Having been pricked out on a shallow bed of soil the bulk of it leaf soil—the plants moved with good balls, and being planted carefully, there is no trace of check to growth, and therefore little danger need be feared of the plants bolting or prematurely seedling, this state in most instances, and with most vegetable crops, being the result of a check in the early stages of growth. The spaces between the rows of Celery, the soil of which will presently be needed for earthing up, are for the present cropped with Radish, Lettuce, Spinach, and Turnips, all of which crops rapidly mature, and will therefore be off the ground before the soil is needed for earthing up.

POTATOES.—Despite the cold and backward season, these have come up well, and the earliest Ashleaf, planted at the foot of a south wall, will soon be fit to dig. Two or three of the handsomer varieties, as well as some seedlings that are being grown for trial, have had the weakest portion of haulm pulled off, two and in some instances only one strong shoot being left. By this means, if we do not get numbers we get the finest tubers, and can the better form an opinion as to the merits of each variety. The present is a good time to apply artificial manures; to some on poor ground we have applied a dressing of soot, and the refuse—burnt ash—after sifting out the charcoal, we use for potting purposes. Earthing up is an unnecessary

operation, and we only practise it from necessity, that is, to protect the haulm from frost and to prevent the tubers being exposed to the light and greening, owing to shallow planting. On retentive soils the practice of earthing up is desirable, but it is the opposite on light land.

HERBS.—Planted out seedling kinds that were raised in heat, which include Knotted and Sweet Marjoram, Chervil, Basil, Thyme, and Sage; old plants of the two last have been cut back to keep the plants full of young shoots. Tarragon and Mint are constantly kept in bushy growth by the longest shoots being regularly cut for use.

GENERAL WORK includes the sowing of Veitch's Perfection and Ne Plus Ultra Peas, and of Canadian Wonder Dwarf French Beans. Thinned out those first sown to a foot apart and slightly earthed them up. Made another sowing of Paris White Cos Lettuce, and also made the principal sowing of Turnips. A piece of ground with a northern exposure is the most suitable on which to grow Turnips in the summer-time; on such an aspect they is never very troublesome. W. W.

CHRYSANTHEMUMS.

E. MOLYNEUX.

PLANTS which had received the protection suggested in my last notes will present a much better appearance than those which were standing unprotected and in the full force of the terrible hurricane experienced last week. I hear of many plants which had of necessity to stand out in the open which are now in a sorry plight, the leaves in many instances being so broken and whipped that they are now rendered useless, and in consequence the plants must receive a serious check.

Plants that have been grown from cuttings struck at the times I have advised, and have been grown by being shifted into larger pots as required, placed in cold frames, and attended to in the matters of airing and allowing sufficient room, will now be ready for their final shift into the pots in which they are to bloom. In a former number of THE GARDEN I gave the sizes of pots which I considered the best for the various styles of growth under which the plants were being grown, and for the information of new readers I will shortly repeat the sizes of the pots I gave. To have blooms of the finest quality for exhibition or home use 9-inch pots are the best for single plants, and two plants may be placed in an 11-inch pot. For large specimen-trained plants 11-inch and 12-inch pots are suitable sizes. Single varieties and Pompons may be grown in 8-inch and 10-inch pots, the last size being suitable for ordinary conservatory use. It is not possible for Chrysanthemums to produce the finest flowers upon plants which are soft and sappy in their growth. The branches as they grow should become solidified and in time partly ripened, or failure is the consequence when the blooms are required. Well-ripened wood always yields flowers of the finest order of merit, such as size, solidity, form, and colour, and power to remain in perfection the greatest length of time, and this is influenced considerably by the manner in which the plants have been cultivated. All the difference, then, is made in producing what is required and aimed at, and what is not wished for, through the perfect or the imperfect manner in which the final potting is performed. To the inexperienced growers potting these plants is of no more consequence than any ordinary soft-wooded plant. Pot them loosely, and they will grow strongly and produce large leaves and stems which will be devoid of that solidity which is essential to success; this, then, is in my opinion

one of the chief causes of failure. To have growth which will develop suitable flowers, the soil should be rammed very firmly with a blunt stick. In soil of a light character it is hardly possible to pot too firmly, but it is not so necessary with heavier soil, as the water will not percolate so freely, and should the drainage become defective, trouble may ensue through the soil becoming waterlogged. When the plants are potted firmly the growth is not so rapid early in the season, but it is rendered solid and firm as growth proceeds, and is more likely to mature its branches in a wet autumn through the growth being slower and of a harder kind during the summer months. The pots and the crocks used for drainage should be perfectly clean, and the latter should be free from any grit. Careful and free drainage is essential to success; it is common in some places to throw the crocks into the pots in a careless manner, but I find when the operation is carefully and properly performed, success is more likely to follow. For the largest pots 2 inches of drainage is not too much, allowing a little less for smaller pots. The piece placed in the bottom of the pot should be much larger than the hole and quite hollow, and smaller crocks placed over this. Over the drainage place a layer of the roughest parts of the compost to prevent the fine soil running down, and thus preventing the free egress of water. The best material for this purpose is pieces of thin newly cut turf, as this does not decay so soon and is not so liable to clog the drainage. Where the soil is of a heavy character use less turf over the crocks and add a few fresh leaves and some charcoal. On soil of a light nature sprinkle a small quantity of soot; this prevents to some extent the ingress of worms when the plants are standing out of doors, and the soot also acts as a stimulant.

The soil should be firmly rammed down with the blunt end of the stick previous to placing the plant thereon. Do not cover the top of the ball of soil attached to the plant previous to this shift too deeply; just add a little to cover any roots which may have become bare through watering, but leave a depth of about 1½ inches to allow space for water and top-dressing at a future opportunity; if the soil is moist (as it should be at potting) no water will be required for three or four days, after which time a good soaking may be given if the weather be dry, but an occasional wetting of the foliage with the syringe will be found beneficial in the afternoons of fine days. After potting is completed the plants are generally placed together in a snug corner, as it is yet too early to stand them thinly in their summer quarters, as more cold easterly winds are almost sure to take place, which do a vast amount of harm to the newly potted plants. There are many excellent varieties which cannot, owing to their delicate constitution, be dispensed with altogether, and at the same time do not succeed thoroughly under the same treatment as do the ordinary kinds; therefore any extra trouble that may be spent upon such sorts will be well repaid in the end when the blooming season comes around; these varieties I will class as weak growers, and for the information of those persons who do not know them, I add a list of them, selecting only those which are meritorious. One reason of their weakness is, that they do not, of course, make roots in the same proportion as the stronger growing sorts, and therefore pots a size smaller should be provided for them; neither will they require nearly so much water at the roots at all stages of their growth as those of stronger growth. The soil should also be of a lighter character than for the ordinary hardier and more robust kinds. To render the compost suitable,

add to that previously recommended more leaves, charcoal, wood ashes, and sand, taking care that no loam only that which is fibry shall be used; removing the fine by sifting carefully; do not pot quite so firmly, and add a little more drainage. It is a good plan to place such plants as require special treatment as that named by themselves, as they are more likely to have better attention, as regards watering, than when placed along with the bulk of the plants; stimulants can be more easily applied to the plants in proper quantities. Such delicate kinds do not make so many roots, and, therefore, cannot assimilate strong stimulants in the same proportion as can the stronger growing sorts.

The next important matter to consider is the selection of a suitable site for the summer season where the plants can have the full benefit of the sun all day, and still be protected from east and south-westerly winds. These latter often play sad havoc amongst the plants during the month of September, just at a time when the buds generally are swelling, and when the points of the shoots are soft and easily snap off by the force of the wind, thus causing much disappointment. Of course, those plants which must from necessity be tall to produce the finest blooms suffer the most, but all kinds do the same more or less. Select a position away from the immediate shade of overhanging trees, which tends to render the plants weakly and prevents to a large extent the wood becoming sufficiently ripe. For those plants intended to produce large flowers, and which naturally grow tall, no better position can be found than by placing a single row of plants on the side of a path running east and west in the kitchen garden; or one row on each side of a broad path running north and south answers admirably, as, where such positions can be afforded, the plants can be easily attended to in watering and regulating their growth during the summer; but where this is not convenient and the plants have to stand together, select the most favourable site, placing the rows running east and west and at such a distance apart that the shade caused by one row of plants does not fall upon the row behind. To effect this, a distance of 5 feet between the rows should be allowed. If the space at command is of such a size, that several rows may run parallel to each other, the tallest growing plants must be arranged at the back with the dwarfer in front. This should be attended to both for appearance sake and the welfare of all the plants. Means must be taken to secure the plants firmly in position when they assume natural heights. There are several ways of effecting this, which I will describe in another issue. The foundation on which the plants rest should be well drained, that no superfluous water lies about; a thick layer of ashes answers this purpose, and also retains a cool, moist bottom, which is beneficial to the plants during the summer months.

LIST OF WEAK GROWING VARIETIES.

Japanese.	Cherub
Balmorean	Empress Eugénie
Criterion	Lady Carey
Golden Dragon	Lady Hardinge
Garnet	Mrs. Bunn
Agéments de la Nature	Mrs. W. Shipman
Japanese	Nonpareil
J. Debonx	Princess Beatrice
Margaret Marrouch	Sir Stafford Carey
M. Ardène	Angelina
Mrs. Mahood	Lady Slade
Mr. John Laing	Le Grand
Scéptré Toulousain	
Beauté des Jardins	
Martha Harding	
Mary Major	
	<i>Anemone.</i>
	Fleur de Marie
	Mlle. Cabrol
	Madame Cloz
	Sœur Dorothee Souille
	Princesse of Anemones

Plants grown in the "bush" form or as trained specimens should be secured from the winds, as a disfiguration of the foliage in these cases means almost ruination to their appearance. Where the space is of sufficient size they may be arranged together in one block, allowing sufficient space between each plant for attending to their requirements of watering and regulating the growths. A layer of ashes also should be provided whereon the pots may stand in this case also.

TREES AND SHRUBS.

W. GOLDRING.

THE SNOWDROP TREE.

(HALESIA TETRAPTERA.)

THE COMMON NAME Snowdrop tree is known to all who take an interest in trees, yet the tree itself is not at all common, and it is only in old gardens that mature specimens of it can be found. It is a very old tree in English gardens,



The Snowdrop tree (*Halesia tetraaptera*); flowering and fruiting twigs with detached flowers and fruit (natural size).

having been introduced from South Carolina as long ago as 1756. It is very pretty when in bloom where it succeeds well, but it fails to thrive in most places, it being somewhat tender and peculiar in its requirements. At the best it is but a small tree, rarely exceeding 20 feet in height, forming a wide-spreading and rather dense head. The form of its foliage, flowers, and fruit is so well shown in the accompanying engraving, that a description of the tree is unnecessary. It is an early flowering tree, being in full bloom in this country about the latter part of May. A plant of it profusely laden with bloom has an aspect different from all other hardy subjects, as each bloom is pure white, bell-shaped, or, in fact, like a miniature Snowdrop. It is decidedly partial to a moist soil and situation, and the finest tree I have seen of it was growing by the side of a lake, where no doubt the roots were perpetually moist. In dry soils it forms a mean, scrubby tree, and does not flower so profusely. It likes shelter from strong winds, but fails if the situation is shaded. It is, in short, a most desirable and interesting tree, one that I should always plant if I wished

to have trees out of the ordinary run. Good plants of it may be obtained from the best tree nurseries for 1s. 6d.; therefore there is no reason why it should be so seldom planted. There are two or three other kinds of Snowdrop tree which are perhaps only geographical forms of one species. *H. parviflora*, a native of Florida, is an old introduction, but not such a desirable tree as *H. tetraaptera*, and the same may be said of *H. diptera*, which is found in Georgia and Carolina.

Prunus Pissardi.—If "J. C. C.," in THE GARDEN (p. 474), expects this *Prunus* to bear purple-coloured flowers, he will be disappointed, for it is now generally recognised as a variety of the Myrobalan Plum, and, in common with the type, the flowers are pure white in colour. At the same time opinions differ as to the season of the year at which this *Prunus* is seen at its best, for while the writer of the article in question extols the beauty of its unfolding foliage, the dull purplish green tint is to me by no means attractive, and I think that this shrub is seen only at its best during the latter

half of the summer and early in the autumn. When the roots are in a fairly cool, moist soil, and the head of the plant fully exposed to the sun, it acquires by August a depth of colouring that renders it a formidable rival to the best forms of the purple Beech. I tried this *Prunus* for forcing earlier in the season, and though it was very pretty from the profusion of its white blossoms, the dull purplish foliage played but a small part in the embellishment of the plant. That *Prunus Pissardi* is a great acquisition to our hardy shrubs is now fully recognised, but, in my opinion, its prominent features must be sought during July, August, and a part of September rather than in the earlier months of the year.—T.

Akebia quinata.—This pretty Japanese climbing plant is bardy in some parts of England, and around London it will survive most winters if protected by a wall or other shelter, but it is as a greenhouse climber that it is seen at its best, and extremely pretty and useful it is for that purpose. The small claret-coloured flowers are borne just now in great profusion, and the divided foliage, which is of a bright green tint, is also very pleasing. It is a slender climber of rapid growth when once established, and is best when but little tied or cut in, for then, where sufficient space exists, it will form

graceful festoons, and always bears a light and elegant appearance. Perhaps at no time is it more attractive than when allowed to take possession of a neighbouring shrub, as it will quickly establish itself thereon. This Akebia certainly displays its charms to a much greater advantage when grown in this way than if secured to a wall, as cold, cutting winds late in the spring are very apt to injure the expanding foliage. It is a plant of easy propagation, for cuttings of the young shoots if selected from the small short-jointed ones, rather than those that are stout and succulent, will root without difficulty, and in addition to this suckers that may be detached with a few roots are often pushed up from the base of an established plant. In the case of these last they had better be potted and kept close and shaded for a few days till they recover from the check. The Akebia can also be propagated from root cuttings, but this method is seldom followed, as the young shoots strike so readily.—H. P.

MYRTLE-LEAVED LAURELS.

THE best thanks of the readers of THE GARDEN are due to your correspondent "W. G." for his interesting descriptions of choice trees and shrubs. Keen observers living in the neighbourhood of London or the great southern nurseries may, if they will, make themselves thoroughly acquainted with many, if not all, of these gems; but scores of young men far away in the country are less fortunate, and for this reason this part of your paper is especially valuable. Last week, at page 498, you gave an illustrated description of the Myrtle-leaved Portugal Laurel, a shrub, by the way, which hundreds of young gardeners have never seen nor noticed, and yet it is one of our most handsome and useful hardy shrubs for varied purposes. Here we have used it extensively for forming groups in lieu of Kalmias, which do not thrive on our limestone, and many clever men until close upon them have been led to believe we had a knack of growing these chaste plants to perfection. Being thoroughly hardy, compact, and dense, it is admirably adapted for screens, low shrubberies, and hedges, always provided the knife in lieu of the shears is used for pruning purposes. Having myself manufactured perfect cones 10 feet in height and 6 feet in diameter at the base, I can endorse all that has been said of it for this kind of work, also for standards. Indeed, of all the shrubs I have met with, I know of nothing to equal it—that is, as a thoroughly hardy shrub for formal purposes. Bays, as a matter of course, from a classical as well as a gardenesque point, stand very high, and figure high if we wish to buy them, but this Laurel is quite capable of taking care of itself in the most exposed places through the sharpest winters; it is most tractable, and may be grown to perfection by those who cannot winter Bays, as it does not require protection. When left alone and other shrubs are kept at a respectable distance, this Laurel assumes a half globular form, and makes a growth of about 9 inches annually, the bright purple of its young wood and its dark leaves giving it a most beautiful appearance. Pyramids and standards of course require annual pruning, not only to keep them in perfect form, but also to increase their density. The best time to do this I find is about the end of August or early in September, early or late according to the season. The buds then become prominent, but do not break until the following spring. This cold, late season with us they are just pushing. W. COLEMAN.

The Purple Barberry.—Among shrubs remarkable for the purple hue of their foliage, and that show this peculiarity in a marked manner directly the young leaves make their appearance, mention must be made of this variety of the common Barberry (*Berberis vulgaris*), for it is very attractive even in the spring, especially under such conditions as I saw it a few days ago, viz., in close proximity to a specimen of the yellow-leaved variety of *Spiraea opulifolia*, the branches of which were studded with the little golden rosettes of expanding foliage, and the peculiarity of each shrub was greatly heightened by its direct contrast with the

other. Like the typical form of the Barberry, the purple-leaved variety will grow almost anywhere, but the depth of colouring is much intensified when the plants are grown fully exposed to the sun.—T.

ORCHIDS.

W. H. GOWER.

BRASSIA ANTHEROTES.

THIS plant belongs to a section of Orchids which has been much neglected since the advent of the numerous *Odontoglossums*. There are, however, several kinds which are showy and deserve the attention of Orchid lovers, and the species here named is one of the best. *Brassias* are free-growing plants, producing somewhat flat pseudo-bulbs and persistent evergreen foliage, so that they are ornamental even when not in flower. They should be grown in an intermediate or Cattleya house. These plants should be potted or basketed in rough fibrous peat and Sphagnum Moss; they enjoy an abundant supply of water and free exposure to light during the growing season. The supply of water should be considerably reduced during winter, but care must be exercised at this time in order to prevent the plants from shrivelling, for should this occur it is very detrimental to them, sometimes ending fatally. *B. antherotes* attains a height of about 18 inches, and produces its spike of bloom from the base of the mature bulb in the month of May. The raceme is nearly a foot long, and the individual flowers large and conspicuous, the sepals and petals being lengthened into long tail-like points; these are yellow, blotched and spotted towards the base with dark purplish brown spots; lip large, caudate, clear yellow, spotted with brownish purple and bearing an orange-coloured crest.

ORCHID NOTES.

IN many collections of Orchids, *Dendrobiums* are to be found of a sickly appearance, wanting that deep green colour of the foliage that betokens constitutional vigour. I allude specially to that good old species *D. mobile*, also such handsome deciduous species as *D. Wardianum*, *D. crassinode*, *D. Bensoniae*, &c. They are mostly of easy culture if they receive the right treatment. Most of them have now passed out of bloom, and it will be observed that the young growths have made considerable progress. At a certain stage of the development of the young growths, roots are freely emitted from the base, and as soon as this takes place, or even before, the temperature of the house should be very high and moist; the plants themselves should by no means lack a plentiful supply of water at their roots. This treatment will cause a vigorous and healthy growth, which, as the season advances, must be matured by free exposure to light. I have had the plants close to the glass with the sun shining directly upon the house at four in the afternoon, the ventilators closed and the temperature 100°. We remove the plants from the Cattleya house, and place them with others requiring the same treatment. *Cattleyas*, of course, would not like it, but they also prefer a higher and rather moister atmosphere while making their growth. The weather has been very cold and still continues in that state; therefore we have not yet removed several species to the cool house that are usually placed there early in June. These are *Odontoglossums Phalenopsis* and *vexillarium* and some of the *Masdevallias*, such as *M. tovarensis* and the *Chimaraoid* section. In fact, unless a brisk fire is maintained, the temperature of the Cattleya house falls from 50° to 55° at night—a low minimum for May. We are potting various occupants of this house. If the operation is carefully performed the plants receive no check, as fresh roots are speedily formed and the new compost infuses renewed vigour into them. We repot most of the *Cattleyas* once in two years, and by that time the roots have grown so

much and cling so firmly to the inner surface of the pots, that it is necessary to break the pots to pieces in order to save the roots from injury. We now make a practice of potting most of the *Dendrobiums* at this time; it ought to be done just before the roots begin to push out from the base of the young growths. Small plants of these are potted annually, large ones once in two years, but those not potted are surface-dressed. Fumigating to destroy green fly and thrips may be practised in houses containing principally *Cattleyas*, *Laelias*, *Dendrobiums*, but *Odontoglossums* should be removed from the house. The temperature of the *Cattleya* house now should be 55° to 60° at night.

Repotting may also be continued in the warmest house. It is a good time to repot *Odontoglossum Roezli* as the plants go out of bloom. This beautiful Rose-scented species makes a mass of small fibrous roots, and speedily makes good any injury caused by transferring the plants from one pot to another; quite the largest proportion of the potting material for these should be clean Sphagnum Moss, the remainder the best fibrous peat with clean drainage and charcoal. Another of the occupants of this house, not always so well grown as it ought to be, is the beautiful *Oncidium ampliatum majus*; this species lasts so long in flower, and the colour is such a clear golden yellow, that no collection should be without a few plants of it. When in flower and for a few weeks afterwards, the plants are comparatively at rest, requiring but little water; but as soon as they start into active growth, a high stove temperature is necessary, and the plants may be placed close to the glass roof. I have felt the leaves when the house had been shut up, and the shading removed in the afternoon, and they have been quite hot. It is well adapted for pot culture, and soon grows into a handsome specimen plant. Another class of plants we are now repotting is the *Cypripedium*, such as *C. Stonci*, *C. Lowi*, &c. Those who have made up specimens from single plants in small pots, may have noticed that in two or three weeks the new roots have pushed freely, and even if they are again taken out and repotted, the plants grow on freely without any apparent injury. I remember some ten years ago visiting a large establishment where the making up of specimens for the Manchester exhibition was practised, and the gardener pointed out to me *Cypripediums*, *Masdevallias*, &c., growing with the greatest vigour. The plants had been turned out of their small pots, placed in large ones for the exhibition, and again they had been returned to the small pots. Year after year this practice was successfully carried out. I do not state this as approving of the system, but merely to show how quickly Orchids can recover from any injury to the roots at the height of the growing season. Of course, after repotting the temperature must be kept up and a corresponding moist atmosphere also. 65° to 70° at night is the lowest, rising to 85° or even to 90° in warm weather as a maximum. J. DOUGLAS.

SHORT NOTES.—ORCHIDS.

The Scorch'd Orchid (*Orchis ustulata*) has been sent to me in splendid form from the Pyrenees by Mr. Allen. It is larger and finer than any I have seen produced in this country.—A. D. WEBSTER.

Ceologyne Dayana and C. Masaegeana.—These are both in flower in Messrs. Veitch's nursery, in the King's Road; they are quite distinct from each other, and yet the pendulous spikes have a striking resemblance; in colour and form the sepals and petals of *C. Dayana* are much narrower and more weed-like. Both species should be in every good collection of Orchids, as they flower well and grow so freely.—J. D.

Orchis mascula.—From Cork we have just received a gathering of the above Orchid, which shows that the climate of the south of Ireland is well suited for the cultivation of this pretty, early-flowering kind. Some of the flower-stems were unusually strong and with fine, closely-set flowers of every shade from pale lilac to deep purple. They were kindly sent by Mr. Blair, a chemist in Cork, who seems to devote considerable attention to this pretty and interesting tribe of plants.—A. D. WEBSTER.

Destruction of crickets.—Can any of your readers inform me how to get rid of crickets? I have the charge of

greenhouses, a small range of which closest to the heating apparatus is principally used for propagating and is infested with swarms of this insect. They eat cuttings and the young leaves and shoots of a variety of plants to an extent scarcely credible. I have used Chase's paste (wafers), pans filled with oil, &c., to little or no advantage, while numbers are nightly killed in the pathways and on ledges of the brick-work, &c.—H. C.

MR. J. BRITTEN AND THE DICTIONARY OF ENGLISH NAMES OF PLANTS.

TO THE EDITOR OF THE GARDEN.

SIR,—As the compiler of this dictionary, I feel called upon to say something about a gross misstatement respecting it to which my attention has been directed in the introduction to the recently published "Dictionary of English Plant-Names" of Messrs. James Britten and Robert Holland, where, to the mention of my book in a descriptive list of works on plant-names, is appended the remark: "Most of the names are inventions; the local ones seem largely taken from parts I and 2 of the present work."

No part of this assertion is honest; the first clause of it is, in fact (I have to speak plainly), a downright and malignant falsehood. The names given in my dictionary are no inventions of mine, but are the result of many months' laborious research through the pages (as stated in my preface) of "our standard botanical works, British and colonial floras, the leading horticultural journals, and the catalogues of British, American, and Australian nurserymen"—of every publication, in short, that seemed likely to afford any help on the subject. As for the local names of British plants, which Mr. Jas. Britten now more cautiously says "*seem* largely taken from parts I and 2" of his work [he formulated this charge in more unqualified terms when he made the circumstance of my not having specially mentioned his work a pretext for attacking my book two years ago in his *Journal of Botany*], I have to say that the names of British plants form but a very small portion of the names in my book, and nearly all of them were taken by me from authorities which were quite as open to me or to anyone else as to Mr. Jas. Britten.

My book was most favourably reviewed by the Press with hardly any exception from the *Times* down, the *Gardeners' Chronicle* (no mean authority) pronouncing it "the most complete dictionary of the kind hitherto published." I believe the only unfriendly notice of it appeared in the *Journal of Botany*, edited by Mr. James Britten. I may here observe that, as Mr. Jas. Britten's dictionary contains but few plant-names except those of British plants, the obscure local appellations of which constitute its special subject and *raison d'être*, its title as "A Dictionary of English Plant-Names" is a most inappropriate and deceptive one, readily leading anyone unacquainted with the book to imagine that it deals with the full range of English plant-nomenclature, which, in its wider application to plants of all countries, my "Dictionary of English Names of Plants" attempts, however imperfectly, to embrace.

With criticism which fairly and honestly pointed out defects in my book I should be very far indeed from finding any fault. I must protest, however, against Mr. James Britten's last slanderous misrepresentation.

WILLIAM MILLER.

Rating of nurseries.—It is announced that a public meeting of nurserymen will be held at the Horticultural Club, Henrietta Street, Covent Garden, on Tuesday, June 28, to consider the excessive rating of nurseries, and to agree on a combined action in an endeavour to procure the reduction of the assessments. The chair will be taken at 4 p.m. by Mr. T. Wood Ingram, of the firm of Wood and

Ingram, Huntingdon. The meeting will be held under the auspices of the Nursery and Seed Trade Association, and the Horticultural Club have kindly lent their rooms for the occasion. The secretary is Mr. F. Goodchild, 25, Old Jewry, E.C.

SOCIETIES AND EXHIBITIONS.

MANCHESTER HORTICULTURAL.

LOVERS of the beautiful have a rich treat provided for them at Old Trafford. Several large marquees and a huge glass and wood structure are filled with plants and flowers of great beauty. All the leading local cultivators and many of the principal nurserymen in the country have sent some of their best specimens, and the show, as a whole, can only be characterised as beautiful in the extreme. No money prizes were awarded, only jubilee medals of gold and silver. A marvellous display has been made, and in all departments of the show, with perhaps the exception of stove and greenhouse plants, the exhibition was a fine one.

As there was no schedule, and consequently no grouping together of rows of plants of the same kinds, there was more scope for artistic arrangement. The formality of an ordinary exhibition was avoided, and a series of beautiful pictures was presented to the view. Orchids and herbaceous plants were most abundantly illustrated. Messrs. James Dickson and Son, of Chester, occupied a space of 300 square feet with herbaceous and alpine plants.

A beautiful and interesting group of Orchids was contributed by Messrs. F. Sander and Co., of St. Albans. Amongst these was a plant of *Maxillaria Sanderiana*, grand forms of *Lælia purpurata* and *Cattleya Mossiae*, *Oncidium hastatum* Roezli, *O. Schillerianum*, *Odontoglossum Pescatorei*, the ever welcome *Odontoglossum Alexandrae*, *Cypripediums*, *Dendrobium thyrsoiflorum*, &c. These were arranged with exquisite taste, while overhead were suspended baskets of *Odontoglossum citrosum*, &c. A very fine group of *Masdevallias* from the gardens of the Duke of Sutherland, Trentham, was staged by Mr. Blair. Opposite to it was a fine collection of *Begonias* from Messrs. J. Laing and Son, which were alike remarkable for size, brilliancy of colour, and variety.

An enormous collection of 300 plants of *Cattleya Mossiae* belonging to Mr. Wrigley, of Bury, contained many fine varieties. Messrs. Cutbush and Sons, of Highgate, also contributed a nice collection. These consisted of *Azaleas*, *Ericas*, *Aphelexis*, *Tetrathecas*, *Azalea mollis*, *Ferns*, *Oranges*, and the handsome, but much neglected *Leschenaultia biloba* major. The Liverpool Horticultural Company exhibited some fine Orchids, such as *Dendrobium nobile*, *Cattleya Mossiae*, *Lælia purpurata*, *Odontoglossum Alexandrae*, &c. The principal feature of the group from Messrs. R. Ker and Sons, of Liverpool, was the handsome, well-bloomed plants of *Azaleas*. A collection of *Pitcher* plants from Mr. Joseph Broome comprised *Nepenthes Mastersi*, *N. robusta*, *N. Dominiana*, *Sarracenia Fielderi*, *S. Flambeau*, *Swani*, *Maddisoni*, *Sesteriana*, and others. A miscellaneous collection exhibited by Mr. B. S. Williams, Holloway, consisted of Orchids and other stove and greenhouse plants, amongst which were fine plants of *Dendrobium nobile*, *Dendrobium thyrsoiflorum*, *Odontoglossum vexillarium*, *Masdevallia Veitchii*, *Amaryllis Empress of India*, a grand variety; *Anthurium Scherzerianum*, *Boronia elatior*, and other fine plants. A fine group of British and exotic hardy Ferns was exhibited by Messrs. Birkenhead, of Sale, and a grand collection of plants from the gardens of Mr. Joseph Broome, consisting of Orchids and other plants, conspicuous amongst which is a fine plant of *Vanda teres*, bearing upwards of 100 blooms, *Azaleas*, *Lælias*, &c.

Messrs. James Dickson and Son, of Chester, exhibited a fine collection of herbaceous plants; amongst them were *Lilium Harrisii*, *Doronicum plantagineum excelsum*, *Daffodil Sir Watkin*, *Anthurium Liliastrum*, *Tulipa cornuta*, *T. retroflexa*, *Thalictrum anemonoides*, *Primula obconica*, *Paeonia tenuifolia flore-pleno*, *Androsace sarmentosa*, *Cum-*

panula Warneri, *Phlox Nelsoni*, *P. stellaria*, *Gentiana verna*, *Anubria violacea*, *Sempervivum spinulosum*, *Omphalodes Luciliae*, *Ranunculus alpinus*, *Cistus florentinus*, *Cypripedium Calceolus*, *C. spectabile*, *C. pubescens*, *Phlox canadensis*, *Lychnis Lagascae*, *Celsia Arcturus*, *Sempervivum triste*, *Gladiolus Rosy Gem*, &c.

A group of *Pelargoniums*, show, fancy, and zonal, came from Messrs. Hylance and Son, which grouped together produced a nice effect. Mr. S. Schloss, of Bowdon, sent a collection of stove and greenhouse plants, amongst them being grand specimens of *Bougainvillea glabra*, *Anthurium Scherzerianum*, *A. crystallinum*, *Azalea Criterion*, *Latania borbonica*, *Alsophila capensis*, *Rhododendron Sesterianum*, *Clerodendron Balfourii*, *Enchisar grandiflora*, &c. The centre of the tent was devoted to circular groups of plants, amongst which the *Roses* of Messrs. Paul and Son were conspicuous. These consisted of standards, half standards, and dwarfs; the most notable were fine plants of *Sunset*, *Junno*, *Etoile de Lyon*, *Her Majesty*, *Grandeur of Cheshunt*, *Madame Clemence Joigneaux*, *Jean Ducher*, *Souvenir d'un Ami*, *Niphetos*, *Dr. Andry*, &c. Messrs. Francis and Arthur Dickson and Sons, of Chester, sent a group, the chief features of which were *Rhododendrons* and herbaceous plants; whilst the best group of *Rose* plants ever exhibited by an amateur in Manchester came from Mr. J. Brown, of Heaton Mersey. It was a Jubilee collection of fifty plants, the most notable being *Perle des Jardins*, *La France*, *Madame Gabriel Luizet*, *Madame Clemence Joigneaux*, *Madame Lambert*, *Merveille de Lyon*, *Beauty of Waltham*, *Marie Van Houtte*, *Sunset*, *Comtesse de Sereyue*, *Ulrich Brunner*, *General Jacqueminot*.

A very nice collection of herbaceous plants was contributed by an amateur, Mr. Mellor. Amongst these were fine plants of *Sempervivum Lageri*, *Saxifraga peltata*, *Primula Munroi*, *Lychnis alpina*, *Armeria lauscheriana*, &c. There were also good collections of show and fancy Pansies. There was a very beautiful collection of cut flowers, bouquets, wreaths, &c., from Mr. Mason, of Sale, and Messrs. Perkins, of Coventry. The former contained some very novel combinations. Conspicuous was a basket of *Maréchal Niel Rose* with *Lilacs*; in another the same *Rose* and white *Lilac*; a basket with *Lily of the Valley* at the back and dark *Roses* in front; also a basket with white *Lilacs* and dark *Roses*, all of which were lovely combinations. Messrs. Perkins had a magnificent wreath of white flowers, comprising *Richardia*, *Stephanotis*, the *Vale Lily*, *Lilium longiflorum*, and *Eucharis*, relieved with *Maiden-hair Fern* (*Adiantum cuneatum*). Bouquets were both numerous and beautiful, the introduction of a few blooms of *Masdevallia* amongst light flowers producing a very happy effect. Boxes of cut blooms of *Pelargoniums* were contributed by Messrs. Pearson and Son, of Chilwell. There was also in this tent a fine exhibit of hybrid *Aquilegias*, or *Columbines*.

Death of Mr. George Jackman.—We regret to announce the death, at the Woking Nurseries on the 29th ult., of Mr. George Jackman, at the age of fifty. He attended the last show of the Royal Botanic Society, where he caught a cold, which turned to inflammation of the lungs. Mr. Jackman succeeded some years ago to the business carried on by his father at Woking. His name is well known in connection with the *Clematis* raised by his father, and perpetuated in the variety known as *C. Jackmanni*. Mr. Jackman, along with the late Mr. Thomas Moore, was author of a work on the "*Clematis* as a Garden Flower" a very good book.

Names of plants.—*Mrs. Walsfield.*—*Viburnum Sieboldi.*—*Scotopodium*.—1, *Erica manipulatora*; 2, *Erica manipulatora* var. *alba*; 3, *Erinus hispanicus* var. *alpinus*.—*L. A. J.*—*Scilla campanulata maxima*.—*Z. P.*—1, *Geranium tricolor*; 2, *Darwinia Hookeri*; 3, *Rocella ciliata*.—*Columbia*.—1, *Restrepia elegans*; 2, *Odontoglossum Alexandrae*, poor variety; 3, *Maxillaria luteo-alba*; *Pleurothallis prolifera*.—*A. H. W.*—1, *Dendrobium sixantium*; 2, *D. fimbriatum oculatum*; 3, *D. primulinum*; 4, *D. anatum*.—*J. H. T.*—1, *Scaginnell Lobbi*; 2, *Woodia mollis*; 3, *Adiantum speciosum*.—*J. S. P.*—1, *Oncidium sessile*; 2, *O. divaricatum*; 3, *Dendrobium tortile*; 4, *Odontoglossum triumphans*, dark variety.—*G. J. W.*—1, *Trillium grandiflorum*; 2, *Collisia verna*; 3, *Primula Munroi*; 4, *Gentiana acualis*.—*H. H. B., L. obs.*—*Pol monium Richardsoni*.

WOODS & FORESTS.

"YORKSHIREMAN."

RIVEN J. SAWN OAK STAKES.

It is not generally known that riven stakes are stronger or tougher than sawn ones, although sawn stakes are cheaper, because they can be cut out for about half the cost of riving. Riven stakes always run with the grain. If the tree be naturally bent, so also will the stakes be. The saw, on the other hand, cuts straight through the bends and does not go with the grain in any case, unless the timber is perfectly straight, and when such stakes come to be driven into the ground they break off at these points. Those who have fences of this kind should remember this. Riven stakes, in my opinion, look just as well as sawn ones, or better when regularly set up and lashed together with small wire rope twisted between the stakes. Three-inch by 2-inch riven Oak stakes lashed together in this manner make a strong, enduring fence without any stays, except one at each end or at intervals. There are between 500 and 600 yards in 1 cwt. of galvanised iron rope, No. 6 and 7 gauge, and such rope is very cheap—cheaper than any other kind of top rail or bindings. There is an art in putting it on. The stakes are first driven into the ground as evenly as possible; then starting with two strands of rope at one end where it is securely attached, the man gives it several plaits between every two stakes, bringing one strand round one side of the stake and the other strand round the other side; then plaiting as many plaits again the reverse way, and so on. By this device, bringing each strand hand over hand for its whole length, a thing almost impracticable, is avoided, as the twist is done and undone between every three stakes. A man and boy can make and put up a great extent of such fencing, making the stakes and all, and as only unsaleable Oak is used for the purpose, a cheaper and better fence could not easily be contrived for all ordinary situations, such as in fields and round woods. Hereabouts the farmers capped the stakes with sawn Larch or Spruce rails, which soon rot and give way, but one or two examples of the wire-rope-stayed fence seems likely to lead to the abandonment of the old plan. Galvanised staples are used with the wire here and there.

FORESTRY NOTES.

NATURAL GAME COVERT.—This is, by most sportsmen, considered superior to that formed artificially, but as the woods in which it will become anything like serviceable must be well thinned out, more so, indeed, than is necessary for cultivated underwood, it is, perhaps, less seldom seen in a truly efficient state. Light and air are the great essentials to underwood generally, but that of spontaneous growth in particular, so that to have really first-class game preserves the plantations must be kept well thinned out, far thinner in most instances than is really necessary for the profitable cultivation of timber. Brambles and Bracken are about two of our best natural woodland plants for forming game coverts, they soon becoming, under favourable circumstances, dense, warm retreats for either the pheasant or the hare. Where the former is not so plentiful as is desired it may be readily enough increased either by seed-sowing or planting out two-year-old seedling plants, either of these methods being found well suited for the plant in question. Old plants may likewise be used, but the per-centage of deaths is usually great, even where a more than ordinary amount of care has been expended on lifting and planting. Bracken may be readily enough established in any open woodland by transferring squares of soil with the

roots therein to the places intended to form clumps, but a much better, cheaper, and far surer method is to raise seedlings, and when two years old to plant them out with the sods of earth intact. The Blackthorn is likewise well adapted for covert, and succeeds well in good light loam and an open situation; Gorse also does well in similar places, but all the better where rough stones are freely commingled amongst the ordinary soil. In dampish, peaty woods, Heather is a valuable covert plant, as is also the Bilberry and Crowberry. Rough Grasses, too, are not to be despised, more especially where other stronger growing plants, such as the Brier and Thorn, help to support these, and prevent their rotting by coming in contact with the ground. Grass in a withered state is a favourite resort of game generally.

FILLING UP HOLES IN TREE STEMS.—Far too frequently it happens that in old specimen hardwood trees the trunks are rendered unsightly by holes caused either by natural decay of the wood or an accident, and when such trees are growing in conspicuous positions and the wounds near the ground level, they become most unsightly, and steps should at once be taken to set matters right, whether by removing the trees or filling up such holes in the stems. Apart altogether from being unsightly, such holes exercise a powerful influence in causing rottenness throughout the whole stem in which they occur by forming as it were inlets for water. To fill up such holes is easy enough, and after repeated experiments we find the following method of doing so to answer better than any other previously tried. Scrape out and remove every particle of damp decaying matter from the hole, fill it with dry, broken brick-bats, cement the surface evenly over with the bark, and paint it as nearly the colour of the bark as possible. Several diseased holes so treated on old Oak trees in the park here could now hardly be noticed, and I have every reason to believe that from the number of years since the experiment was tried and the present healthy appearance of the trees, that the filling up of such holes has had a wonderful effect in staying and arresting disease and rot. The experiment is both cheap and simple, so let everyone who has an eyesore of an Oak with a holed stem set about filling these up at once with old brickbats and cementing the surface with concrete. Nailing a piece of zinc over the hole has been tried, but however carefully this may be done, dampness is sure to set in and ruin the stem. Clefts between upright-growing branches, that are but harbours for rain water, may be treated similar to the Oaks above described, and the surface of the concrete tarred over, this latter having likewise a wonderful effect in keeping out damp and preserving amputated limbs and smaller branches from contracting rot.

CULTIVATION OF THE MISTLETOE.—When we consider the amount of money spent annually in importing Mistletoe from the Continent, one is naturally led to ask the reasonable question, Why not cultivate it ourselves and be independent of foreign supplies? That this could, to a great extent, be done is no doubt true, for it is well known to everyone who has thought of the subject that the Mistletoe thrives luxuriantly in many parts of England. It is, moreover, readily enough cultivated by simply rubbing the glutinous berries on the smooth—not rough, as is usually recommended—surface of the bark of many trees, but particularly the Apple, and protecting these from birds until the plants get well established. I have never noticed any ill effects caused by the Mistletoe to the Apple trees on which it is grown, and on applying for information on this head to a friend who cultivates it lovingly and largely, he tells me that he has not noticed any either, although some of his finest trees have had several large plants growing on them at the same time. If this be true in all cases, then the suggestion for the extended culture of the plant in suitable districts is worthy of consideration. It is generally believed that the Mistletoe is not found either in Scotland or Ireland, but such is a mistake, for I have frequently seen it in the latter country growing on old Apple trees; while several stations in Scotland might be named for it. From a record I have

kept for several years, I learn that the Mistletoe is by no means confined to the Apple, nor Oak either, for my list, with stations, reveals the fact that this parasite has been found growing on many other trees.

THE EVERGREEN LABURNUM (*Piptanthus nepalensis*) is a fairly good shrub for planting in the open, but when used beneath the shade of large trees its appearance is anything but desirable. Having an overstock of this plant in our home nursery, we transplanted a number of strong, healthy, 5-feet high specimens to thin and open, though partially shady woods, but the results are not up to expectations; indeed, I am fully convinced that the common Scotch Laburnum is a superior plant for this purpose to the *Piptanthus*. Let no one, however, undervalue this shrub for planting in open, sheltered situations contiguous to drives and walks, and where its abundance of conspicuous yellow flowers that last so long through the summer months is always welcome, for in such situations it is certainly a pretty and desirable plant. Seeds are usually produced abundantly, and as these germinate very freely and grow away rapidly into large plants, a good stock wherewith to experiment upon as to the suitability of the plant for various parts of the country is thus speedily got up. It is too tender for many situations, but along the sea-coast and in warm inland places it does well, and here I cannot remember a single plant being killed or even cut back by the frost.

FAGOT-MAKING. This is a simple and profitable way of utilising waste forest produce, particularly the smaller branches, that cannot well be converted into or sold as firewood. Instead of burning up all prunings, therefore, it may be wise policy on the forester's part to first of all find out if a market for disposing of such when made into fagots for oven-heating and fire-lighting is not to be had. Here, where for home consumption the number of fagots used annually is very large, we keep a man constantly employed at the work, and find it to be a more profitable way of disposing of branches and small firewood than burning. Small fagots of about 7 inches in diameter and a foot long, and usually made of Larch branches, sell at 8s. per hundred, while those for oven-heating, and which are made of larger branches than the latter, and also of larger proportions, being about 18 inches long by 10 inches broad, sell at 10s. per hundred. Larch branches are found to be preferable to most others for making small fagots, as when dry they burn quickly and do not emit sparks, at least to any great extent. They should be carted home as made in the woods, stacked for a few weeks, and finally housed until wanted for use.

A. D. WEBSTER.

Transplanting in winter.—Although, as a rule, I am not in favour of transplanting Evergreens during the winter months, still, if the weather continues mild, Aucubas, Rhododendrons, Box, and plants of this kind that always lift with good balls of earth, may be moved with comparative safety; and there may be special reasons why such work should be done. When such is the case, those trees that have been so frequently removed as to have induced plenty of fibre may be operated upon with every prospect of success, provided the weather does not turn out too cold and cutting. April is of all others the safe month for transplanting Evergreens, and any choice specimens should be left till that time. Of all Evergreens, Rhododendrons are perhaps the most beautiful; but as it is generally supposed they will not succeed in any other than peat soil, many are deterred from attempting to grow them. The want of peat need be no obstacle to their cultivation, as they will grow in any sharp clean soil that has not been much under cultivation. The best, perhaps, for this purpose are the trimmings of banks and turf from the sides of roads and paths, which contain plenty of sharp grit. The trimmings from the roadside, or any soil that may be used, must not contain chalk, or it will be fatal to success. If choice plants are planted, and peat can be obtained at a moderate cost, it is worth while to give them a start in this material. To do this, a hole should be dug large

enough to hold a bushel or so, in which the plant will get a good hold, and be independent of the surrounding soil for a year or two. Failing this, leaf-soil about half decomposed may be used in the same way. In planting, make choice of moderately moist and partially shaded situations, as Rhododendrons will not bear excessive drought, and succeed best if not exposed to the full glare of the sun.—J. G.

THE BEECH.

(FAGUS SYLVATICA.)

THIS tree is justly admired for its stately crown and beautiful green foliage, which renders it a desirable ornament in parks and large pleasure grounds. It is found in most parts of Europe, and is one of the handsomest and most valuable of our forest trees. Its trunk is erect and massive, and its height is usually from 100 feet to 130 feet. The roots spread for 10 feet or 12 feet round the tree, but none of them go deeply under the surface, except the tap-root, which penetrates perpendicularly into the earth for 3 feet or 4 feet. The branches have a more or less upward tendency, and form a symmetrical and majestic crown.

Upon young trees the bark is of a greenish grey hue, but as the tree matures it assumes an Ash-grey colour. Both leaf and blossom buds are long, cone-shaped, sharp-pointed, and consist of eighteen or twenty brown, slightly fringed scales. The leaves, when young, are soft and delicate, and of a beautiful yellowish green colour, but as the season advances they become deep green.

In October they become yellow and dry, shrivel up, and fall to the ground. Upon young trees, however, the withered leaves often remain until they are forced off by the swelling of the fresh buds in spring. The male catkins, which are in general four to a bud, have long drooping peduncles, and consist of about twenty greenish yellow florets. The female blossoms, which appear in pairs upon the young shoots, consist of sharp-pointed catkins. The fruit, which is ripe in October, consists of rough spiny capsules, each of which contains two or three smooth triangular brown nuts.

The highest elevation at which it is found is 5000 feet above the level of the sea, but it does not seem to thrive well at a greater altitude than 2000 feet. In Thuringia and among the Harz Mountains noble Beeches, 100 feet in height, are found at an elevation of 1800 feet. The finest Beech forests in the world are situate in the island of Rügen, on the dunes of Denmark and Mecklenburg, and on the plains and low hills of Germany. It is in these regions, where Beech forests cover many thousand acres, that the tallest living Beeches are to be found. In the last century, Beeches 174 feet in height were cut down in North Germany, and at present many single trees exist there which are 135 feet high and 11 feet in circumference. Beeches thrive best in a surface-soil of poor, dry, sandy loam, with a subsoil of chalk mingled with gravel, sand, and small stones. Those trees which grow upon mountain slopes, or on low humus-covered hills, with a northern or eastern exposure, yield the best timber.

Beeches are generally propagated by means of seed, and the young trees suffer much from frosts and drought, and in damp marshy situations. Mice and mole-crickets are also very destructive to the roots of young trees.

The Beech attains its full height when about one hundred years old, and then lives in perfect vigour and health for two hundred or three hundred years. Trees of this age are generally from 10 feet to 15 feet in circumference, and contain from 10 to 12 cords of timber. A cubic foot of fresh-cut wood weighs 65 lb.; but this, by thorough seasoning, is reduced to 41 lb. or 39 lb. In damp poor soils, Beech trees frequently perish from internal rot between their seventieth and ninetieth years.

Of the common Beech some very ornamental varieties may be met with in cultivation—as, for example, different kinds of Weeping Beech, also the purple and copper-leaved varieties, and the Fern-leaved Beech, the leaves of which are cut into

narrow segments, resembling the fronds of a Fern. These are almost wholly used for purposes of ornament, for which the common Beech itself is well adapted. The products of the Beech are numerous and valuable.

The timber, which is heavy, hard, firm, and durable, is extensively employed in the manufacture of numerous implements, tools, and articles of furniture. On account of its brittleness and liability to the ravages of insects, it is seldom employed for building purposes.

Beech timber is especially adapted for sub-aqueous structures, or for positions in which it is not exposed to the action of the atmosphere. As fuel, the Beech is very valuable, and is surpassed in heat-giving qualities only by the Hornbeam and Maple. The charcoal of the Beech is highly esteemed on account of the equable heat which it emits. The bark is useful to tanners, and from the ashes of the wood excellent potash is obtained.

In Denmark, Sweden, and some parts of America the leaves of the Beech are carefully picked, dried, and used to stuff bed-ticks and pillows. The leaves and ashes form an excellent manure for Grass and Clover lands. The husks and nut-skins contain a very poisonous material known as fagin. The nuts themselves form a favourite food of some birds and quadrupeds, red deer being especially fond of them, and they are also, in some countries, boiled, dried in the open air, parched by artificial heat, and ground into meal, from which bread and soups are prepared. The nuts have a pleasant sweetish flavour, and are very oleaginous. Considerable quantities of oil, resembling Almond oil, are obtained from them by pressing. From 100 lb. of nuts 12 lb. of pure oil and 4 lb. of coarser oil are obtained. The former is of as good quality as the best Olive oil, and the latter makes a useful lamp oil. The refuse furnishes a good food for pigs. The best season for felling Beeches is the month of December. J. H. M.

GROUPING CONIFEROUS TREES FOR PROTECTION.

THE dotting style of planting is cold, as well as meagre; nevertheless it has its uses; it shows what individual plants can become under difficulties. It also brings individual specimens and species into the sharpest contrast, and thus exhibits their special characteristics in intensified and, one might almost add, exaggerated lights. It has also enabled cultivators to grow the largest number of species and varieties within a given area. Useful as a school in which something may be learned about trees, it is worse than useless as a means of improving landscape effects; nay, more, the dotting plan mars every landscape on which it is practised. What play of light, or shadow, or repose could be obtained by a series of dots, even though they consisted of trees faultless in form and symmetry? Trees so disposed might be enjoyed as specimens, but a pleasing landscape, consisting of solitary trees, is plainly an impossibility. Not only, however, is the dotting style inimical to landscape beauty, but it is also opposed to cultural perfection.

Trees and shrubs are gregarious by nature, and if we compel them to grow in solitary isolation, we must take the consequences; and we do so in the form of slow and stunted growth in summer, or of ruthless destruction by cold in winter. It is not good for trees to grow alone. Each wind that blows beats against them with full force; the sun and dry air drain each leaf and bough of its rich juices, and, worse than all, the extremes of heat and cold do their worst as regards the exposed roots. This exposure of the roots to direct solar and atmospheric influence is altogether unnatural, and consequently injurious. But there is no need to rest the case on such general statements. It is only necessary to trace the palpable effects of the frost throughout our pleasure grounds, after an exceptionally hard winter, to discover that the single trees are often cut down, while groups of the self-same sorts escape unhurt. The seeming exceptions but confirm the rule.

These exceptional groups killed or injured will

be found in a lower situation or a moister locality. In the former the air is colder, as cold air will shoot down valleys into plains with as much certainty as a stone will roll down hill; in the latter the plants are also more tender. Excessive moisture may help growth, but it hinders maturity, and it is maturity that enables plants to withstand cold. Hence it follows that groups may in such exceptional localities be cut down, while single trees at a higher level, if more thoroughly matured, may escape. But let the threefold conditions of soil, site, and maturity be alike, and the results will be wholly in favour of the groups. It is necessary, however, to bear in mind that there are "groups and groups." It is not only possible, but easy to render groups tender by overcrowding or over-feeding and when such is the case, groups may be swept away by a frost that will hardly brown the leaves of a solitary tree. It may be well to add that excessive stimulation, from whatever cause, results in weakness, that leaves the plants more liable to injury from cold than more hardy treatment.

My object, however, is to show that the conditions of growth being the same, Conifers planted in groups endure winters better than those dotted about singly. There is more than one reason for this; the tops are warmer and so are the roots. Planters can scarcely realise the amount of shelter that plants afford each other when planted in groups. I know that in a series of experiments made in Scotland, the absolute difference of temperature between the inside or outside of a wood was much less than might have been supposed. But the difference is one of air in motion or at rest, rather than of absolute superiority or inferiority of temperature. The air around and in a group is, as it were, at rest, compared with that against a single tree. Now air at rest is one of the best known non-conductors of heat; but air in motion steals it from every living or dead substance that it touches with avidity. No doubt this mere motion thwarts, to some extent, the loss of heat by radiation. But, possibly, there is sufficient gentle movement in the air of groups of trees to effect this purpose; while of the warmth and shelter the trees afford each other there can be no doubt whatever.

From many years' observation of the destructive effects of cold, I have arrived at the conclusion that most plants are crippled or killed from the roots upwards, and not from the tops downwards. This is what kills isolated trees. The best roots are often considerably beyond range of the tops. Of course, the feeding roots sweep out, and are, in ever-widening areas, in search of new and better food. Just then the frost comes down upon them with full power, and either paralyses or kills them. Old roots might be frost-proof, but young ones are not. The former deprived of the latter are as useless as detached gas or water pipes cut off from the mains. The collecting roots being crippled or killed, the main ones become useless, and the tree begins to languish and die. There is another powerful inducement to planting in groups.

The dead leaves may be left to protect the roots along with the overshadowing tops. The former, in many cases, would afford the better protection. It is astonishing how many leaves fall off Coniferae just before winter; whole barrowloads of withered leaves lie under large trees of *Pinus excelsa*, *P. Sabiniana*, *P. macrocarpa*, and others. Under single trees these are, in most cases, carefully swept or raked up, as so much unsightly litter, or are blown away by the wind. This is simply to lay the most sensitive part of the tree open to the cold. In a state of Nature these dead leaves accumulate to such an extent as to cover the ground under the trees ankle deep. They decompose very slowly, and their texture, form, and non-conducting powers are such that a very thin layer of them forms a frost-proof barrier. I have proved this, and no one who has not noted the power of the tops above and leaves below to resist cold could form a proper estimate of their potency. In group-planting there is no temptation to remove the dead leaves, and the wind is powerless to drive them out. Hence trees in groups cannot suffer at the roots, and, as a rule, they winter safely. F.

"This is an Art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—*Shakespeare.*

GALANTHUS ELWESI AND ENGLISH NAMES.

IN reply to Mr. Wilks' and the editor's comments on my letter about the form of this species, named by them *G. globosus*, I have to say that I should not have questioned the propriety of naming it for horticultural purposes if I had been able to recognise in the figure or description any characters by which it could be certainly defined; but I do question the propriety of publishing a figure with a scientific name, which would lead anyone who did not know the species thoroughly to suppose it was a distinct new Snowdrop; when the distinctions are not capable of being figured or described, so that the plant can be recognised with certainty. As a two-flowered variety of *G. Elwesi*, with flowers more globose than the average, but not more globose than many plants of *Elwesi* in my garden, I can and do recognise it, and therefore I submit with all deference to the editor that the name I suggested, viz. *G. Elwesi* var. *biflora* hort., though it may be dog Latin, and mouthed by a narrow pedant, is, both from a scientific and from a popular point of view, a more accurate, more descriptive, and more concise name than any English one that can be devised. Snowdrops not being florists' flowers, I should not for a moment suggest that a florists' flower's name, as supposed by Mr. Wilks, would be a fitting one, such names being used only for purely horticultural varieties of popular florists' flowers, produced by florists, and not by Nature. The editor does not clearly see why I have raised the question. My reason is this: he maintains that this Snowdrop, like other garden flowers, must have an English name, though he has figured and described it with a Latin one only. I maintain that in practice he cannot carry out this theory, and that many people quite ignorant of Latin and almost without education do contrive to learn and habitually use, as most convenient, Latin names for all plants which are not florists' flowers or commonly known by English names; and I think the pages of THE GARDEN will prove that, notwithstanding the very numerous English names which he has tried to introduce, a large majority of his correspondents and the whole of the horticultural trade agree with me in this matter.

The reason why is obvious, that few of them look upon a name as anything more than a means of expressing oneself so as to be understood, and there is no way of doing this so exactly, so shortly, or so easily as by using Latin names.

You cannot get over the difficulty, except by confining yourself to talking about plants which have *bona fide* English names that everyone uses, just as I do myself, or by using an English name which is not generally known, and then explaining what plant you are talking about. And I notice that the correspondents of THE GARDEN newspaper almost invariably use either the Latin name in addition to an English one, or the Latin one alone, in just the same cases as I do.

Let us look at THE GARDEN of May 14 (p. 431) to see. I find "Plants on the Editor's Table" as follows:—

- "Wood Forget-me-not." An English plant with an English name; very good.
- "Wood Tulip (*T. sylvestris*)." Another English plant. Why a Latin name added?
- "Horsfield's Narcissus." A Latin name Anglicised. Is it any easier in this form?
- "Snake's-head." A very good name for an English flower.
- "Spring Star Flower (*Triteleia*)" I use one word instead of four.
- "Cowlips." By all means; everyone uses the name.
- "The white creeping Forget-me-not (*Omphalodes verna alba*)." Here nine words are used, and inaccuracy involved, to say what I should say, by using the Latin name alone.
- "*Primula obconica*." No English name coined as yet; very good.

"The wild Pansy (*Viola lutea*)." Surely it was not necessary to add the Latin name for this well-known plant.

"The Orange Diplacus (*D. glutinosus*)." A half-and-half name.

"*Salvia violacea*." Very good; but when the correspondent speaks of the Apple-scented *Salvia*, I do not know what he is talking about. Will he explain?

"American Cowlips." I presume some species of *Dodecatheon* is meant; but which? None of mine are out yet. Kindly give name, as I should like to have an earlier variety.

"Double scarlet Crown Anemone, crimson velvety double Primroses." Neither of these are particularly short, easy, or exact names, and I am not quite sure what I should get if I ordered by those names at a nursery.

"Yellow Banksian Rose." A name I should use myself, but not so accurate as the Latin one, which shows that the flower was named after a lady.

"Siebold's Primrose." Why better than *Primula Sieboldi*?

"*Leucium trichophyllum* or *Acis trichophyllus*." Herbert named it *Acis trichophylla*. Why use the older generic name as well, and why not add the English name, Narrow-leaved Spring Snowflake? It is descriptive, correct, and not so long as many English names, which are neither one nor the other.

"White Wood Hyacinth." Messrs. Vetch call it *spicata*. Is it distinct or not? Is it the English or the Spanish form?

"The Hoop-petticoat Narcissus." Which of them? I grow five or six fairly distinct varieties.

"Hose-in-hose and Jack-in-the-Green Polyanthus." Even the florists in dealing with such monsters as these have not quite freed themselves from the jargon of pedants.

Now, I think the editor will admit how hard it is to carry out his plan; but on going through the remainder of the paper I find the following facts:—

W. H. Gower, writing of exotic Ferns, uses Latin names only. "S. G." writing of British Ferns, in all cases uses the Latin names as well as the English. W. Goldring, writing of American trees, gives the American name as well as the Latin in part. In one case he uses the full Latin name, which tells me what he means; in the other, the Nettle tree or Hackberry, I have to refer to Gray's "Flora" to see what species of *Celtis* he alludes to; so nothing is gained in this case by the addition of two English names.

All the rest of the writers, including such well-known names as those of the Rev. Wolley Dod and Mr. J. Douglas, use Latin names only; so that we must conclude that some who at any rate would not like to be called narrow pedants do agree with me that for all but common well-known plants, names in a foreign tongue are more necessary and reasonable, because more convenient than English ones. I hope he will now acquit me of any other wish than that, by freeing the language, methods, and practice of botanists of all which is difficult, useless, or incorrect, to make it more attractive to gardeners, who can no more get on without the help of botanists than botanists can get on without their help. By the union of these two sciences the highest rank in both can alone be reached. Why, then, should an author who has done so much to popularise and advance horticulture as the editor of THE GARDEN seek to degrade it by scoffing at correct nomenclature?—H. J. ELWES, *Preston, Cirencester.*

— I am happy to see Mr. Elwes is no hater of English names, after all. To find him content with one is delightful! And actually to object to giving the Latin name to the pretty wild north-of-England *Viola*, though there are many others, is most hopeful. He evidently feels it is inconvenient for horticulturists and botanists like himself and for the trade to be bothered by a new English name. Later on he will, no doubt, begin to feel for the men, women, and children for whom, as well as for the trade or the specialist, flowers were made. This is the most important point omitted by all who oppose English names for garden plants. A professor of chemistry teaches specialists whose business it is to understand terms not commonly used. But anyone teaching the knowledge of plants and flowers should make himself clear to all, even to children. If people were all trained gardeners and distinguished amateurs like Mr. Wolley Dod,

the question need not be raised at all. It is not a question of class or education. Without any disrespect to the gentlemen named by Mr. Elwes, there are many persons no less distinguished in other ways—persons of the highest influence and best education—who regret and deplore what they call the barbarous learning of the gardeners. Indeed, it is often a theme for laughter. As a rule, the more educated and refined the person, the more likely is he to use simple English words, where it is possible to do so, for flowers. It is a delightful privilege of gardeners that they deal with the fairest things in Nature: it is their own great loss if they mar the lesson with a strange and, to many, impossible nomenclature. This has had possession of our gardens so long, that it will take long to change it, but changed it must be! Inconvenience may be caused to many, but this must not stop our efforts. The evil effects of the system in use are enormous. It has tended to make a beautiful and simple art, meant for all, the possession of a class.

The view taken by intelligent owners of gardens is fairly shown by the following letter received during the past week. It is from a lady familiar with garden plants both by their Latin and English names:—

TO THE EDITOR OF THE GARDEN.

SIR,—Some reference to this subject in a late number leads one who strongly feels the want of English names to ask why it is only in the case of botanical scientists that the wish should exist to impose their technicalities on the flower-loving public. The living things, objects, or substances that are classified in other branches of natural science, or, at any rate, those of them that affect our every-day lives, have their common English names accepted and undisputed by the learned, who specially profess the various branches of knowledge; but the botanist alone takes some other view, and decrees that plants and flowers shall not be represented by any words in our language. Is not the plain fact of anything being commonly known and used reason enough for our having a common name to know it by? Why are flowers and flowers only to be denied popular names such as are in use for every well-known beast, bird, fish, reptile, insect, and their limbs and parts, and every well-known or generally used chemical or metallic substance, and every other sort of thing for which it is judged necessary to have a scientific formula, or a name in Latin or Greek, or a middle of both? It is in reality only for international reference that the scientific names exist at all. If there were only one language and one written literature, and that were English, a Pansy would be a Pansy all the world over, and no one would dream of calling it *Viola tricolor* var. hort. Indeed, it is much to be doubted if the botanist himself would do so, if he possessed a human heart not entirely desiccated in his herbarium and were walking round a friend's garden one of these days of May. So that some of us who have a garden (or should one say a "hort?") venture to think we may leave the Latin names to their own purposes, and without blame talk of Primroses and Cowlips, and even accept such a new name for a new comer as may be well fitting to the plant and to our British mouths.—X.

Mr. Ruskin's opinion has been published long ago in THE GARDEN. He laughs the

whole thing to scorn, and shows how the "lingo" of which these names are composed is as impure as it is ugly. He takes a page of the *Botanical Magazine* and shows absurdities in it tenfold greater than Mr. Elwes points out in our despised English naming. The Latin names we must, however, keep for international use. For garden and cultivated plants a good short English name is more essential than a correct Latin one.

NEW ENGLISH NAMES.

Mr. Elwes, while accepting, as now appears, old and common English names, objects wholly to new ones! Latin names may be coined every day, but English names are to stop growing. This surely is not scientific, as we are told that language grows and decays. Any cottager might call a plant "Lipsmart" a hundred years ago, but I, who speak of flowers to many thousand persons every week, must not do so. It might bother the botanist in his researches to find a new English name! And the trade too—how very unkind to compel them to find English names for the plants they grow!

Well, I did not consider the trade or the gardeners much when beginning, unaided, the attacks on bedding-out. Many things were said that would not look pretty in print. But many see now that "bedding-out" was the greatest enemy the trade and gardeners ever had. So the day will come, I trust, when people will wonder at our present use of words, when children will learn to know plants by names as pretty as their flowers. The subject may be commended to some of our young men who, having had "all the chances," may be seeking useful work. The successful one must be gardener, botanist, poet, and English scholar in one. The right man will take the new Anglo-Saxon and other dictionaries, Miller, Ruskin, and all available aids up to the date of his start, and, keeping the best of all (including the good and beautiful Latin names like *Iris*), aim to give us a really simple code of English nomenclature that the English-speaking world could follow and add to.

All the difficulties of English nomenclature must be faced, and they will be got over in due time. There are a great many more English names than is supposed. If anybody looks over Miller's Dictionary, he will be surprised to find the number of pretty names to plants that he never knew were blessed with such. Many old colonial, American, and forgotten names belong to plants that we every day in gardens speak of by their botanical names. Nurserymen will have to publish full catalogues with English names. In my *GARDEN and Gardening Illustrated* I request everybody to use English names in all cases where possible, adding Latin names as an aid. But we are so much the slaves of the old Latin nomenclature, that I find my people every day using Latin names in cases where there are very good English names. No doubt many plants have no good English names, but

that is no reason why good ones should not be invented for them. I believe I shall yet get Mr. Elwes' help in the English christening of pretty plants. I was once like him, and fancied I enjoyed names such as *Aponogeton distachyon*!

By the way, a lady sent me this week a suggestion that the pretty little hardy *Tiarella* should be called Foam Flower. It is a beautiful plant with what might be well called "fine foliage" and very pretty *Spiræa*-like blossoms, which come so thick and white and airy, that the word "foam" may well be applied to a rich border of it. Now, this little plant has been in botanic gardens for many years, usually crouching behind a label. I believe that under its new name the Foam Flower, which, with due deference to Mr. Elwes and all opponents of English names, I now adopt for it, it will some day be in almost every English flower garden. There is no better thing in our gardens, and it is the most delightful plant I know for carpeting a dark or moist, or rocky or shady corner. I shall figure it and publish it with this English name.

As soon as Miller's Dictionary in its present form is exhausted, it is hoped that it will be published at a very low price, so as to enable all interested to have ready reference to such English names as we already possess.

The Americans will take English names for plants up in time, and perhaps some bright man among them may do the great work before us. This, in spite of our excellent friend Meahan, of Philadelphia, who, however, is a born botanist and happier reading a paper on "*a weeping tendency of certain stems of a fungus observed on the fin of a Gasterosteus (=stickleback)*" than going about a fair garden smelling the Roses! The very name of THE GARDEN should prevent Mr. Elwes from supposing we have any aspirations, or any desire even, to be a scientific journal in the narrow sense in which the abused word science is often and wrongly used by ordinary folk, and also by the botanist and botanical persons. But philosophers, who rise higher in thought and learning, tell us that all human knowledge is the same in kind, and that the labours of a peasant on his land, if carried out in due order after just observation of the seasons, may be as truly scientific in their way as those of a good astronomer, however they may differ in degree. We are, as Mr. Wilks lately said, only humble gardeners, but our calling is not less dignified, not less useful than any other, and it may in many ways be real science. As to its beauty and innocent healthfulness, all men are agreed. English names of plants, such as we seek, need not be any less "scientific" than Latin ones; certainly it might easily be more so than the (according to good scholars) polluted tongue botanists have hitherto given us.

An idea occurs to me as I close—it is, that if a few would help me, we need not wait to provide work for that bright and well-taught poet-gardener, who may have his own notions of amusing himself. I think Mr. Burbidge,

if he tried, could find names for the cultivated *Orebrids*—Lindley's "*Oreontoglots*," &c., will never do. I might try the hardy plants. Mr. Elwes might relent and help us with the Indian plants, and we should have the sympathy of men like Mr. Ruskin and Professor Earle. Mr. Ruskin's name "*Rockfoil*" for the *Saxifraga* is excellent, and should encourage us. All this might lead to the issue of a "*Garden Flora*" with English names printed below a good illustration of each plant or genus. Indeed, I think I had better begin soon by publishing in THE GARDEN the plants in their Natural Order, illustrating the families and typical species, such as our native mossy *Rockfoil* (*Saxifraga hypnoides*). W. R.

FLOWERS IN THE HOUSE.

Under this head we propose, during the present season of flowers, to notice things, from whatever department, that are pretty and useful for the house.

TUFTED PANSY LITTLE HARRY.—The richest of all the violet-purple Pansies. From Mr. Poë.

*

ORIENTAL POPPIES.—Sent by Mr. W. B. Hartland. Flowers splendid for colour, but the smell deadly.

*

THE AMETHYST HYACINTH (*Hyacinthus amethystinus*).—A unique colour amongst spring and early summer bulbs; a lovely hardy bulb, and coming in late.

*

HABRANTHUS FULGENS.—The brightest bit of colour to be had out of doors in the garden—a really splendid hardy plant which Mr. Poë flowers well. It is very uncommon.

*

ST. BRUNO'S LILY.—One of the loveliest of earliest summer flowers and good for cutting. With *Globe* flowers it makes a very satisfactory alpine meadow bouquet.—J.

*

IRIS CIENGALTI.—A beautiful dwarf *Iris*, very good in colour; nearer blue than any other of the broad-leaved kinds. Arranges well in water with the large white Iceland Poppy and sprays of *Whortleberry*.—J.

*

MUNSTEAD WHITE COLUMBINE.—What a beautiful flower for specimen glasses, so remarkably graceful. Large masses with white *Rockets*, *Oriental Poppies*, and *Chinese Pæonies* are now grand.—W. B. H.

*

SCARLET THORNS.—Mr. Hartland, writing from Cork, says: "I never saw the double scarlet Thorn and *Laburnum* flower with such luxuriance. You could not see a green leaf on the *Laburnum*."

*

WHITE ICELAND POPPY.—This is a large form, raised by Miss Davidson, and known at Munstead by her name. It is delicately crimped, petals lemon, green centre. A very striking and graceful flower.—W.

*

TUFTED PANSIES.—Very large and beautiful, from Mr. Hartland, of Cork. We admire *Lady Polworth*; *Rennie Donaldson*, purple striped eye; and *Countess of Kintore*, very striking. Mr. Hartland says: "No manure, but rich maiden loam and sea sand for soil."

*

COLUMBINES.—I send you some seedling *Columbines*. They do not require much atten-

tion, and delight in a heavy, rich soil. I also send you a few varieties of flowers cut from the herbaceous borders. From these we can now gather a great variety of cut flowers.—W. A. COOK.

*

VERONICA HULKEANA.—A long and graceful panicle of delicately lavender coloured flowers from Mr. Greenwood Pim, Dublin. A very pretty and elegant plant, and we shall be glad if Mr. Pim will tell us how it grows in Ireland.

*

NARCISSUS GRACILIS.—The latest and one of the most graceful of the coloured Daffodils; in colour quite unlike any other—a soft, mysterious, transparent-looking yellow. Very pretty in a slender glass with branchlets of yellow-green-leaved Oak and Oak Apples.—J.

*

BLUE CORNFLOWERS.—Autumn-sown plants, or rather summer self-sown, give these fine strong flowers that no spring-sown plants can ever show. The advantage of autumn-sowing, in the case of many hardy annuals, cannot be too strongly insisted on.—G. J.

*

MOUNTAIN CLEMATIS.—Sent from Ireland by Mr. Greenwood Pim. It would, perhaps, be a good sign if these plants were as common in Irish villages as in some parts of Wiltshire. Its use on houses is everywhere recognised, but why not plant it in other ways, against dead stumps, or even on branches over a bank? It came into the world before walls.

*

DOUBLE LILACS.—M. Lemoine, of Nancy, sends us charming double Lilacs—Michel Buchner, President Grévy, and Alphonse Lavallée. They are far prettier than we expected them to be. Their value with us can only be tested when they are planted out, but they are very promising; far better, indeed, than the worthless double Wistaria introduced some years ago.

*

ICELAND POPPIES.—Mr. Hartland writes on June 6: "We have Munstead white, yellow, and scarlet Iceland Poppies planted on the surface of a bed of pallidus præcox Daffodil in light soil, the Daffodil foliage being now quite gone, and now we have these beauties in full glory. They are very continuous and floriferous. The bees are delighted with such food."

*

FLOWERS FROM NORTH DERBYSHIRE.—The few bright days have produced a marvellous change in this district. The sunny sides of the rocks are bright, the Golden Rock Rose growing amidst the Wild Thyme. The dark coloured Crane's-bill (*Geranium phæum*) is rather interesting, and grows in the woods here.—GEORGE BOLAS.

*

IXIAS FROM READING.—I send you some *Ixias* and a spray of the rock Forget-me-not (*Omphalodes Lucilæ*). The *Ixias* are grown in a border outside a greenhouse, and have a glass coping over them in winter. The bed gets some little help from the pipes inside the house, so that nothing but the surface, if that, ever freezes. I wish you could see the *Marica cærulea* and catch its glorious blue.—A. C. BARTHOLOMEW.

*

RHODODENDRON EDGWORTHII.—The accompanying truss is cut from a plant given to me three years ago, when quite small, by Sir Joseph Hooker, who wished me to try how the Worthing climate suited this and certain other Himalayan species. It has never had the slightest protection, save such as afforded by a high perpen-

dicular face of rockwork with a northern aspect, which shelters from wind while it screens from sun. It grows in a border of common peat. I am not aware that the plant has ever previously flowered out of doors in England.—JAMES BATEMAN, *Home House, Worthing*.

*

ROSES FROM SOMERSET.—Mr. J. C. Clarke, Taunton, sends very fine Tea Roses from the open air, grown on a south wall—among them our old friend Souvenir d'un Ami, Safrano, Marie Van Houtte, Homer, the beautiful Mdme. Lambard, and Belle Lyonnaise. They are not large as yet, but very welcome; they are no novelty now; Roses have come at last. We saw many in the Sussex gardens, and hope the time of Roses will be long and good.

*

DOUBLE BUTTERCUP.—I have enclosed a few blooms of a double variety of the common bulbous Buttercup, thinking it may be of interest to you. It was found growing wild in a field near Leatherhead, in Surrey, about ten years ago, by a relation of mine, and since then cultivated by me as an herbaceous plant; it has proved very interesting to many people both horticultural and botanical.—C. ORCHARD.

*** A pretty double Buttercup.—ED.

*

HYBRID BARRENWORTS (*Epimedium*)—I have put in the box two or three leaves of hybrid *Epimediums*. I wonder these plants are not more grown for foliage. *Epimedium* was the first plant I ever tried my hand on at hybridising, thirty years ago! Some one said in THE GARDEN a week or two ago that *E. colchicum* was white. He is wrong. *E. macranthum* is tinged white; *E. colchicum* is bright yellow.—A. RAWSON, *Widernere*.

*

BLUE TIPPED PANSIES.—What a superb Pansy is Archie Grant! It is at present doing finely with me, the blooms large, of fine form and substance, and of a deep indigo blue. I would send you flowers, but I know too well how blues suffer in the London light, and those of blue tints, which are so lovely out in the country, are often dull and wanting life in smoky London. Everybody who loves a telling blue Pansy for beds or borders should get Archie Grant.—D.

*

IBERIS CORIFOLIA.—Just let alone, with ample space in which to spread, what fine patches *Iberis corifolia* will make! I have a few plants which have grown to some 36 inches to 40 inches across, perfect masses of white flowers, and such neat little round trusses. What a capital plant for rockwork, especially where there are big bold patches to cover. There are kinds having larger trusses or heads of bloom, but none which bloom more freely or have such a neat dwarf close habit. It makes a fine companion plant to dark-bued *Aubrietias*.—A.

*

YELLOW AND WHITE BANKSIAN ROSES.—I send a small offering of May Roses. The little yellow Banksian Rose opened its first sweet cluster at the end of April, and is now a mass of bloom. The white Banksian was not quite so early, nor is it this year quite so floriferous as its sister, but its long garlands of blossoms are beyond reach and partly hidden by the foliage. For more than forty years, I am told, these lovely twins have flowered side by side, persistently contradicting the fallacy that yellow and white Banksian Roses never thrive as neighbours. They cover a large portion of the south front of the house, and have

to be severely thinned to keep them within bounds. This year the delicate and drooping wreaths of *Wistaria* blooms have got mixed with the tiny Roses, and the contrast of colour is lovely in the extreme. Climbing among the *Wistaria* is a Fortune's Yellow Rose full of buds, but as yet only two or three blossoms have fully opened. I enclose one, as also the constant pink China Rose, to complete my basket of May Roses.—SUFFOLKIAN.

*

AUSTRIAN COPPER BRIER.—The Briers, and this one especially, make up for their very short season of bloom by their charming qualities. This year the Austrian Copper Briers are more intense in colour than I have ever seen them; for two or three years past they have been so colourless, that I feared we had got a bad sort. The double Persian yellow (best of the doubles) is also finely in flower. They are beautiful together in a rather shallow bowl or deep dish.—J.

*

BEAUTIFUL SHRUBS FROM CORNWALL.—I am much interested in the articles which you have lately published on Sikkim *Rhododendrons*, and venture to send you a photograph of a plant of *Rhododendron Aucklandi*, which has this year produced upwards of 100 heads of flower. The flowers are now going off, but by post I send a small box containing a specimen also of *Edgeworthii* and *Gibsoni*, which have proved themselves equally hardy in the open air. *Embothrium coccineum* is also a very beautiful subject. It is a pity that it is not more cultivated. I also send a spray of the mauve variety of *Abutilon vitifolium*, as I observe that a correspondent has sent you the white form of this plant.—J. C. D.

*

A BEAUTIFUL RACE OF PANSIES.—I send for the "Editor's Table" a few Pansies of a rather novel strain. I hope they may reach you in good condition and please you. I am working them up to get size, but I find they do not cross at all well with the large fancy varieties.—A. RAWSON, *Widernere*.

*** These are a prettily margined strain and part of the series sold by the German Pansy grower at Lunenburg. They are so beautiful and distinct, that we hope Mr. Rawson will not succeed in intercrossing them with any coarser Pansy, such as the great overgrown French kinds.—ED.

*

THE CHINESE APPLE.—This is the most showy of all the *Pyruses*. We have at the present time plants 10 feet high, perfect pyramids of flower, and when they are seen with the sun shining upon them, they look lovely. *Pyrus floribunda* is a very showy variety, but it does best in a sheltered spot where the blossoms are protected from the cutting winds. *Pyrus coronaria* is also a very fine variety, coming into flower after the others are over and it is very sweet-scented.—T. B. F.

*** A beautiful wreath of the Chinese Apple (*Pyrus spectabilis*), which shows its usefulness in the shrubbery border at this season.—ED.

*

BRITISH ORCHIDS.—Mr. Webster says he has received *Orehis mascula*, very fine, from Ireland. I have never seen them finer than they have been this year in some of the Sussex woods and meadows. One spike which I particularly noticed had seventy-two flowers. Beautiful forms of various and distinct shades of colour with delicate and showy markings were in abundance, many of them good enough to merit a varietal distinction, but being only common British species they do not receive such attention from

the orchidist's hands. *Orchis purpurea* was very good in one spot, and embraced various shades of colour from a deep purple to a soft rose. Close by, *O. maculata* was profuse. The spikes were small and rather slender, with the flowers neatly disposed and of a whitish colour, the lip in many cases being very prettily marked. All of these kinds last well when cut. A selection of some of the best, arranged with the Grass among which they grew, is before me as I write, and though some people say they have an objectionable odour, it is not noticeable in the room.—A. H.

*

SCARLET MONKEY FLOWER.—What a brilliant flower this is, and how interesting to see how the rich colouring is produced, by a transparent glaze of red over a ground of strong yellow; if the flower's portrait were to be painted, the rich colour could only be got in the same way. The same contrivance gives the strong colouring of the Austrian Copper Brier. This little Monkey-flower likes to be cool and damp at the root, with sun and free air overhead.—G. J.

* * * This seems distinct from the Californian scarlet *Mimulus*, and is, we suppose, a dwarf and beautiful strain of *cupreus*.—Ed.

A WATER ROOF FOR PLANT HOUSES.

We saw lately in one of the Royal parks a novelty in the roofing of glass structures, which is more distinct and interesting than most things presented to us as patents and novelties. It is simply a flat, well-constructed roof, with an inch or two of water above it. It is capable of being tested easily in a variety of ways, and is, we think, worthy of trial. Cool houses, ferneries seem at first to be the most fitting structures for the system, but it may be useful in other ways. The following is a description of the invention by Mr. T. C. March, who has developed it:—

The essence of the invention is that all light and heat shall, before reaching plants, be made to pass through a shallow surface of water resting on glass. The interposition of even so slight a depth as 2 inches of water between the atmosphere and plants under glass controls temperature in a very remarkable manner, entirely protecting vegetable life from frost in winter and from excessive radiant heat in summer, results which are calculated to effect great saving in fuel and other cultural expenses. There is no mechanical difficulty in applying the water surface to the protection of plants. A shallow tray or cistern is made with a glass bottom, on which the water rests, and this transparent cistern, which may be called a water-light, fits closely over an under-frame containing the plants, moving backwards and forwards on a sill or rail in the manner of an ordinary garden light. The under-structure may be of wood like a garden frame, of brick like a pit, or of brick with glass sides like a greenhouse, but in either case the sides and ends must be of equal height, so as to give a flat roof and keep the water level. Glass and water are equally transparent, and by the above arrangement plants not only have the ordinary protection of glass, but the advantages due to the peculiar properties of water.

The immediate object I had in view in growing plants under cover of water was to obviate the necessity of artificial heat in the treatment of half-hardy plants. Water underlying ice in shallow vessels is always at 32° Fahr., or just above freezing point, and it appeared reasonable to conclude that a frame or house covered by water would not be colder than the water itself. Numerous experiments carried out at Kew Gardens and other representative establishments

through the whole of the late severe winter have proved this supposition to be correct. The result has, in fact, been more favourable than was anticipated, for the reason that the glass surface which holds the water adds to the protection by preventing the escape of heat, and it may be taken as proved that in all structures covered by water and otherwise properly protected, 35° Fahr. is the extreme amount of cold to which the plants will be exposed. This limit may possibly be further reduced, but, taking it at 35°, it is clear that many plants, such as Azaleas, Camellias, Cinerarias, Tea Roses, Cyclamens, Pelargoniums, and other bedding plants, may be grown on this system all the winter without artificial heat, thus avoiding the expense of heating apparatus and fuel, a result of some general importance, but more especially a gain to the numerous small cultivators near great towns who delight in keeping a few plants from year to year, but cannot afford either gardener or heated greenhouse.

In addition to the treatment of half-hardy plants in cold houses or frames as above described, the system of water-protection may be extended to heated houses with the object of saving and regulating the supply of fuel. In structures limited to 35° little heat is needed, and the amount can be given with certainty, which is of consequence on cold winter nights. The conditions provided by water-cover all tend to economy in fuel, for not only does the water limit the cold of the external air, but it allows great reduction to be made in the area to be warmed, and also prevents escape of heat by radiation from within.

The winter management of plants under water cover demands certain precautions. Pits, frames, or other houses, unless made in double brick, must be guarded at the sides, &c., from frost, and a damp-proof flooring should be provided for plants in pots to prevent the rising of earth damp. Ample means of ventilation must also be found for the reason that plants are at times somewhat closely confined, and therefore need air on all favourable occasions. A straw hurdle or other stiff covering should be placed on winter nights over the water-lights to limit the formation of ice and to prevent breakage of glass from overweight of snow. It may be taken as the result of numerous trials that about half an inch of ice will be formed in the cisterns on cold winter nights if entirely exposed to the weather, but only one-eighth of an inch if covered up. The covering therefore saves all trouble of removing ice and replacing it by water. It is, of course, only put on at night, advantage being taken of the transparency of ice and water to give light during the day.

To those who care to go beyond mere practical results, it may be interesting to know that the protection of plants from frost is chiefly due to the liberation in the act of freezing of the large amount of latent heat existent in water. This heat so retards the formation of ice that 2 inches of water suffice for all protecting purposes. Were it not for this latent heat all the water in the cistern would be quickly turned to solid ice, and the protection of the warmer liquid being withdrawn the plants would be destroyed by cold. A formula has been given to me on high scientific authority defining the amount of heat developed by freezing water as compared with the burning of fuel in a stove. I should be happy to supply it to any who may take interest in such scientific matters.

Carrying the experiments beyond the winter season, another important property of water, that of absorbing the heat rays of the sun, begins

to influence the conditions of growth. During spring the water surface not only repels the night frosts, but protects the plants from hot sunshine during the day, being thus doubly useful at a very trying season. As summer advances this absorption of radiant heat comes further into play. Plants protected by water can be placed in full sunshine without any shading, thus obtaining the strongest light without injury from heat. In this respect water differs widely from glass, which admits the passage of radiant heat freely through its substance, as anyone may tell on the sunny side of a closed railway carriage. This heat pouring through a glass garden light concentrates within the frame, and quickly destroys plant life, unless air be given and shading interposed. Water, on the contrary, so retains the heat that the plants are never scorched, and although the water surface by long exposure to the sun becomes warm and gradually communicates heat to the interior of the frame, the process is slow and the burning effect of radiation entirely neutralised. This control of radiant heat is remarked by those who have conducted the experiments to have very important consequences in the cultivation of plants, for not only is shading rendered unnecessary, but ventilation, and consequently watering, become less urgent, and labour is proportionately saved. It also enables us to reduce the height of garden structures, inasmuch as it is unnecessary to give that lofty head room to plants which must be provided in glass houses to dilute the hot air which penetrates the structure.

As regards the general health of plants under water cover, apart from the protection which they obtain from frost and direct heat, the conditions are so far favourable that they have good light at all seasons and are placed close to it. Without the stimulus of heat plants grow less rapidly, but the habit of growth is good, and Pelargoniums, which have been kept in a cold water-frame since last December, are now comparing favourably with greenhouse plants of the same description. Experienced gardeners who have given a good trial to the water system have come to the conclusion that the moist, even temperature obtained is most conducive to the germination of seeds and striking of cuttings, difficult kinds of which have been successfully treated in this manner.

No doubt water protection will suit some plants better than others. Cinerarias, for instance, are reported to do better under water than in heated pits or greenhouses. Others may do less well. The conditions being quite new, it can only be ascertained by experiment how far they favour the growth of particular plants, and it has yet to be seen whether strong light without corresponding heat will influence the colour of leaf or flower. To conclude, I can only hope that the facts above recorded and the inferences drawn may be strengthened by experience, and that the invention may prove to be of some use in the cultivation of plants under glass.

Notes from Suffolk.—Now blooming profusely is the lovely pink *Magnolia* (*Magnolia purpurea*); the *Magnolia Halliana stellata* is perfect in form and delicious in perfume. Is it really quite hardy? The blossoms look as delicate as those of the *Gardenia*. Hereabout the cold spring seems to have been less injurious than was anticipated. Lilacs, Laburnums, Ceanothus, and flowering shrubs in general are a mass of bloom, or promise of bloom. The *Rhododendrons* are coming out well, and the sweet, though little esteemed, *Barberries* are displaying their myriads of scented golden bells. In the fruit gardens and orchards the Apple trees are laden with bloom, and the Pears, Cherries, and Plums have been lovely in their snowy beauty; moreover, the fruit seems well set.—SUFFOLKIAN.

STOVE AND GREENHOUSE.

T. BAINES.

TERMINALIA ELEGANS.

MANY of the most beautiful plants that have been introduced are now so much neglected, that it is more than likely they will ere long be lost to cultivation. Amongst these is *Terminalia elegans*, which in small-growing, fine-leaved plants stands out conspicuously for its elegant habit of growth and the exquisite markings of its leaves. Speaking from memory, I should say it has been in the country about twenty years. When it first became known it was often met with in collections of warm stove plants. For, being a native of Madagascar, it requires warm treatment. It is an evergreen plant very like some of the *Aralias* in appearance; the leaves are deep green, the mid-rib bright red, with a network of the same colour running through the whole. Like many of the *Aralias*, it retains its foliage for a considerable time, and is altogether one of the most beautiful small-growing variegated subjects in existence.

It is easily grown, provided it gets sufficient heat and the leaves are kept free from insects, but if these are allowed to remain on the plant, they quickly destroy the colour and appearance of the leaves, causing the older ones to fall off and leave the base of the plant bare much sooner than would naturally be the case.

The ordinary method of propagation is by grafting; it will succeed on any of the small-growing *Aralias*, such as *A. Veitchi* and others of a like character. The grafts should consist of pieces of the stem—single eyes with enough wood below so as to admit of their being inserted in the stock wedge fashion. The grafting may be carried out at any time when there is warmth enough available to effect a union and excite the buds into growth. During this time it is necessary to have the newly-grafted plants in a confined atmosphere, such as a propagating frame kept moderately close. When the union is complete and top-growth has begun, the plants must be gradually inured to the full air of the house, after which they should be stood close to the glass where they will get plenty of light, for with this plant, as with all others that lose their appearance when the bottom leaves fall, it is requisite that the growth from the first should be made under conditions favourable to the foliage being hard and firm.

Propagation by grafting with this and other things of a similar description is not always convenient in private gardens, as the requisite stocks are frequently absent, in which case the plant in question can be increased by root-cuttings. These should consist of bits of moderately strong roots cut into pieces about an inch or so long, and inserted in pots filled with sand. The upper ends of the cuttings ought to be slightly above the surface of the sand. They should have a temperature of 75° or over, keeping them moderately close. So managed they will soon begin to grow and push shoots, when more air should be given. When a few leaves are formed, move them singly into small pots, drained and filled with fibrous peat and some sand. As already stated, the plant enjoys plenty of heat. Like most ornamental-leaved subjects, this *Terminalia* requires to be kept shaded in bright weather during the growing season, otherwise the foliage is liable to be injured.

Early in spring is the best time to propagate by root-cuttings, as then the young plants have the growing season before them in which to acquire strength; but the middle of summer is not too late to carry out the work, there being

still time enough to get the little plants sufficiently established to enable them to live through the winter, during which season the night temperature should not be lower than 60°. Early in spring move into larger pots, regulating the size according to that which the plants have attained. In the second summer they will grow fast, so that by autumn they will be very effective when placed on the side stages of the stove. Pots a size or two larger will be required when the spring again comes round, and it is during the ensuing summer that the plants will be at their best, as if all has gone well they will have attained a height of from 18 inches to 24 inches, and be fully clothed with leaves in perfect condition. After this the lower ones may be expected to gradually lose their colour and fall off, but in their later stages the markings usually come out more vividly than when the leaves are in full vigour. When the plants get bare at the bottom, it is best to head them down to within a few inches of the base, and when they have broken, the shoots may at once be

all the better if rested a little during the winter by keeping them slightly dryer at the roots. This drying practice, however, must not be overdone, otherwise it will do far more harm than good. Cuttings of these shrubs, taken when the plant is in a growing condition, strike root without difficulty, and I have also ripened seed and raised plants therefrom, but the progeny differed little, if any, from the parents.—H. P.

FREESIA REFRACTA ALBA.

THE bulbs from which the accompanying woodcut is engraved were grown in a pan. The pan contained 15 bulbs, which bore 318 blooms. I have also flowered this year seven pots, each 5½ inches in diameter, with five bulbs in each, averaging 112 blooms per pot, the best specimen carrying 128. The greatest number of blooms produced by one bulb was 35, and the greatest number on one scape 8; I have, however, one scape in the open ground that is carrying 10 buds. With me they do exceedingly well planted out under a south wall, and flower without the



Freesia refracta alba. Engraved for THE GARDEN from a photograph sent by Mr. W. Fitzherbert.

reduced to one, retaining the best, or, if stock is required, the whole may be allowed to grow until large enough to make cuttings. Those to spare should be taken off with a heel, and if treated like the cuttings of other plants that require a brisk heat, they will root and soon grow to an effective size. During the growing season the plants should be syringed freely once a day, which will have the double effect of keeping the leaves bright and clean and also of keeping them free from insects.

Franciscea confertiflora.—The *Francisceas* are now but little grown as stove flowering plants, yet they are highly ornamental, very distinct, and continuous blooming, as if in good health they will flower for some months. *F. confertiflora* is one of the best, the colour of its flowers being a sort of violet-purple, becoming paler with age. We have some little bushes of this which have been in flower for the last month, and with a little attention in the shape of stimulants, they will continue to bloom during the summer. These *Francisceas* will do well under conditions favourable to the general run of stove shrubs, and will flower

slightest protection, as do *Sparaxis*, *Ixias*, &c. I have now grown *Freesias* for five years and with unvarying success; in fact, I am more certain of a good result with them than with *Hyacinths*, *Tulips*, or any other bulbs. They have absolutely cold treatment from beginning to end, and are potted as early as the bulbs can be procured. Their delicious fragrance, graceful habit, and simplicity of culture should bring them into more general favour than they seem to enjoy at the present, judging from the infrequency of their appearance at shows or in private collections. *F. Leichtlini* is another variety that I have grown, but *F. refracta alba* is, to my thinking, preferable in all respects.

W. FITZHERBERT.

A beautiful stove climber is *Hexacentris mysorensis*, which for the past few weeks has made the roof of the great Palm house at Kew gay with its drooping clusters of curiously shaped open-mouthed flowers. The colour is a clear yellow, deepening to orange, and these tints blend with the rich venetian red tints of the corolla lobes. It is a plant of exceptional merit—one that has few equals

as a stove climber for early summer flowering. I once saw a roof of a small stove entirely festooned with it, and was a brilliant and most uncommon sight. It is a stock plant at all the big nurseries, and is easily grown. —W. G.

MAGNOLIA CAMPBELLI AND M. FUSCATA.

UNTIL seeing Mr. Burrell's communication (p. 442) respecting *M. fuscata*, I was not aware of Mr. Gumbleton's remarks (p. 304) on what I wrote respecting this species and *M. Campbelli*. Mr. Gumbleton says that I am not acquainted with these Magnolias. May I inform him that what I had to say about the plants in question, like any others that I happen to treat of, is invariably founded on what I have experienced in their cultivation. If I have anything to say about a plant that I only know through seeing it in the hands of others, I say so. Some years back a plant of *M. Campbelli* came into my hands, and was turned out in the border of a cool house and trained against the wall in the way I advised in my notice of this and *M. fuscata*, which species already occupied a place on the same wall. *M. Campbelli* grew well, but not too vigorously; in fact, knowing the character of the plant, I was careful, in preparing the material for it to grow in, not to give anything that would favour luxuriance. It flowered the third season after planting out and the two following years, when it came to an untimely end through a break-down in the heating apparatus.

The flowers were very large—from 9 inches to 10 inches in diameter. White was the prevailing colour; they were whiter than those of the common variety, *M. Soulangeana*; hence my describing them as white. If required to be quite accurate, I should say they were white, slightly shaded with pink. I named China as its native country for the reason that I have always understood that the first introduced plants came from there. How far this is correct I know not. Messrs. Backhouse, of York, have *M. Campbelli* trained on a wall in a rather low house, where it grows well, but, I believe, does not flower, which latter circumstance is attributed to the influence of a warm chimney that is in or against the wall immediately behind where the plant stands. Some years since Messrs. Backhouse had it in a cold pit, where it flowered. In this case the colour of the flowers, I understand, was like that of the old blush China Rose, much darker than they were with me. This difference accords with Dr. Hooker's description of the plant in Sikkim, where the colour is said to "vary from white to deep rose or almost crimson," which upsets Mr. Gumbleton's assertion when he confines them to deep rose.

I am generally careful not to give loose descriptions of any plant I write about, but in the hurry one sometimes may make a slip. In speaking conjointly of the merits of the two Magnolias in question, in place of saying they bear fine flowers, I intended to say that *M. Campbelli* had fine flowers, and that the flowers of *M. fuscata* were finely scented.

Mr. Gumbleton tells us that *M. Campbelli* is unfit for growing on a wall in a plant house, giving as his reason for coming to this conclusion that it grows naturally too large to admit of its being confined within a house. What of the scores of species of plants that are grown successfully and for an indefinite time in stoves and greenhouses of ordinary dimensions, and which in their native habitats reach two or three times the size that the houses they are located in would admit of their attaining? For the opposite reason of its being too small a grower, Mr. Gumbleton says that *M. fuscata* is unfit for growing against a wall. Such reasoning as this is a fair example of the mistakes those fall into who do not hesitate to speak with confidence respecting the cultivation of plants that, by their own showing, they know little about. In THE GARDEN (p. 463) Mr. Gumbleton now admits that his opinion about this plant rests on nothing more than what he has seen of it growing bush-fashion at Kew and what he has done with it in pots, the result of which seems to have been that it grew very little and very slowly with him.

With me it made shoots annually from 10 inches to 15 inches long, covering a space 10 feet wide by 14 feet high, and would have done more than this if required.

Plant growers who know how to manage the things they take in hand vary their treatment in accordance with the strong or the weak-growing nature of the plants they have to deal with. Mr. Burrell gives some advice as to how *M. fuscata* requires to be managed, as shown by the free growth that follows his heavy dressing with cow manure. I gave the plant soil as rich as I thought the roots would bear, and in addition the surface had 2 inches of rotten hot-bed manure put on every year, besides which it had manure water once a fortnight through the growing season. As a matter of course, with *M. Campbelli* the opposite course was taken, nothing in the way of stimulants being given. Had it been treated like *M. fuscata*, its branches would no doubt have been struggling to get through the roof in very little time. T. B.

DOUBLE PRIMULA SINENSIS.

THE fine double forms of the Chinese Primrose, introduced by Mr. R. Gilbert, are so valuable for warm greenhouse decoration when in bloom, that they will continue to be grown, and will, I think, hold their own against the new semi-double forms that can be raised from seed. One or two others have been added to the group, and the following are varieties that are procurable: *Rubra grandiflora*, pale rosy purple; *Miss Eva Fish*, pinkish lilac, deepening to rose; *Earl of Beaconsfield*, rosy salmon, deepening to carmine, fine, and distinct; *Balfour*, deep salmon-carmine; *Annie Hillier*, delicate pink; *Princess*, white, spotted and flaked with crimson; and *Marchioness of Exeter*, double white, tinted with blush. As Mr. Geo. Stevens succeeds so well in growing the old double white Primula in the soil in which his specimen Chrysanthemums were grown during the previous summer, I think it probable the varieties named above would do in such a compost. It is made up of good loam, some decomposed manure, rough sand, and pulverised bones, and when the Chrysanthemums are turned out of their pots the roots and soil are thrown together in a heap in the open air, and then in April and May following it is used for potting up the double Primroses, and it appears to suit them admirably. That they can be grown into plants of large size has been shown by Mr. W. Elphinstone, of Shipley Hall Gardens, Derby, who from spring-struck cuttings makes plants of large size and finely grown and flowered.

The difficulty of propagating these double Chinese Primroses is urged as an objection against growing them. Mr. Stevens freely propagates the double white variety by heaping up Cocoa fibre about the stems of the shoots, and they root into it, and then they are cut off and potted, and that too without giving them any severe check. Mr. W. Elphinstone cuts half way through the stem, then powders the cut with fine charcoal, and by pegging down upon the soil without, however, severing from the parent plants, roots are put forth, and so plants are formed. Then there is the practice of taking off cuttings and striking them in a gentle bottom-heat, which is also found to answer. It is sometimes said that the gardener of to-day fights shy of growing plants that are difficult to manage. Some, however, take in hand plants of this character and succeed with them, and it is they who merit our thanks if they do not attain to some higher award. R. D.

Leschenaultia biloba major.—At the last Regent's Park exhibition a number of plants of this *Leschenaultia* were shown, and the intense colouring of their beautiful blue flowers made one long for a return to popular favour of this and many other of the New Holland plants. For some years this beautiful plant has been well grown by Mr. Balchin, of Hassocks, near Brighton, the clear atmosphere of the South Downs just suiting it. A coloured plate of this was given in THE GARDEN two or three years since, at which time it certainly came as a great surprise to many that this plant was still grown

successfully in England. The *Leschenaultia* will succeed under much the same conditions as most of the greenhouse Heaths, its greatest enemy being mildew during the winter, to prevent which plenty of fresh air is necessary. This *Leschenaultia* is propagated by cuttings of the young shoots put in during April and May. They must be covered with a bell glass and in a gentle heat will soon strike root. —H. P.

Hydrangea stellata flore-pleno.—This is a very pretty and distinct variety of *Hydrangea*, but though known for many years it is but little cultivated, no doubt owing to the fact that it is much less vigorous in constitution than the commoner kinds, and when subjected to the same treatment it rarely does well. Bearing this in mind, it is easy to obtain thriving specimens, either in the shape of small plants with a single head of bloom, or as bushes with each shoot terminated by a flower cluster. In this variety the sterile flowers are double, and of a pleasing shade of pink. Like all the rest of the section, they last a long time in beauty if favourably situated. —H. P.

Acrophyllum.—A single plant comprises this genus, although it is nearly allied to *Weinmannia*, from which it may be distinguished by wanting the disc to the flowers. Individually the flowers possess little beauty, being small and white, but in the aggregate they are exquisite. For soil, use good fibrous sandy peat, broken up roughly; drain amply and water freely during the growing season. The shoots should be cut down below the flowers each season. *A. venosum*, sometimes to be found in collections under the name of *A. verticillatum*, is an erect, free-growing plant. Stem and branches terete; leaves in whorls of threes; these are sessile, coarsely toothed, smooth, coriaceous in texture; upper side coppery green, glaucous beneath. Flowers white, suffused with pink, produced in dense whorls round the upper part of the branches for about 6 inches, which is destitute of leaves, resembling somewhat the inflorescence of a *Spiraea*; whilst the apex is crowned with a whorl of leaves. It is a very ornamental plant, useful alike for exhibition purposes or home-decoration. It blooms during May and June. Native of Tasmania.—G.

Fragrant Chrysanthemums. If these flowers possessed a fragrance they would be much more highly prized. The varieties, all of which smell like Violets, are of a limited number. The scent of some varieties, more especially that named Mrs. Langtry, is sufficiently strong when several plants are growing together and flowering freely to pervade the whole house. When the sorts which I shall name are cultivated for their fragrance alone, they should be managed so that they flower freely, and in the case of Dr. Sharpe and Frogne, two reflexed kinds, the buds of these should not be selected too early, or the flowers will be much paler in colour and of irregular shape, particularly the former. It is wise to allow this variety (Dr. Sharpe) to perfect a number of blossoms, which it will do if the shoots are pinched when the plant is 4 inches high, and again when the subsequent branches are 5 inches long. After this one more stopping will suffice, allowing the shoots to grow away at will, thinning out the branches and flower buds according to requirements. Mrs. Langtry is a variety of a pink shade of colour, flowering as a bush plant profusely all the way up each stem, and should be allowed to perfect all its blossoms. Patience, another single-flowered variety with fringed flowers, is scented, but in a less degree. Dick Turpin, an Anemone-Pompon variety, bright magenta, with a yellow eye, of dwarf habit, flowers freely and possesses a powerful Violet fragrance. To have bushy plants, the shoots should be pinched about three times in all, allowing all the flower buds to develop. —E. M.

SHORT NOTES.—STOVE AND GREENHOUSE.

Double glazing.—It is a benefit in a climate where 40° below zero is not uncommon. It adds to the temperature of a house from 10° to 12°. There is trouble in permanent double glazing from dust getting between the glass. We have overcome that defect by the use of neat light sashes that are glazed without putty, and fitted in the inside. They can easily be taken off and cleaned, say about once in two years. Double glazing in a measure prevents drip. We grow here Orchids, Roses, Camellias, &c., in the different houses, all

more or less double glazed. I should say double glazing was entirely unnecessary where the temperature did not fall lower than 15° to 20° below zero.—AMERICAN FLOREST.

Diseased Crotons.—I send you a few Croton leaves which are affected with some disease. The plants have been in the same house for nearly nine years, and the disease first made its appearance about twelve months ago. They have had the same treatment during the whole time I have had charge of them. The small plants, as well as the specimens, are affected.—W. R.

Impossible to say what the disease can be unless we know the treatment. Have they been syringed lately with any insecticide containing paraffin?—Ed.

THE AMARYLLIS.

The remarks in THE GARDEN by "T. B." (p. 164) on seedling raising are very interesting, but the most vigorous species and varieties are not recommended, nor are the hybrids from Ackermann and Leopoldi likely to give the best results. In fact, I cannot get seeds from hybrids of either of those, and have tried year after year to obtain them. The best Ackermann cross known to me is a variety named Cheloni. I bought a bulb of it for two guineas some eight years ago, and have tried to get seeds from it ever since, but have failed. Again, the best Leopoldi cross is a variety named John Neal, and it is a fairly good grower, while Cheloni is not; but I cannot get a seed-pod to form on the former, nor have they been able to get it to seed in Messrs. Veitch's nursery. By using the pollen of John Neal on other varieties several years in succession I have obtained one single seed and raised a plant from it, but this was not obtained until many crosses were made and failed. Another serious fault with Leopoldi and Ackermann is that they produce but two flowers on a scape; whereas, the best varieties will produce six, and as many as three scapes from one bulb. Those who are desirous of raising seedlings ought to obtain the best varieties at present in cultivation, and, all points taken into account, there is none to equal the Empress of India type. This handsome variety was introduced by Messrs. Veitch, of Chelsea, and has been the parent of many of the best varieties, which in their turn produced seeds freely. Dr. Masters is an excellent variety either to use as a seed or pollen-bearer. I have successfully crossed this with Empress of India. There are seedlings from these two—improvements on both, but they are yet expensive. When Messrs. Veitch introduced that remarkable variety named The Giant, and exhibited it with sixteen immense flowers from one bulb, I thought we had found the progenitor of some remarkable varieties, but it seems to be very difficult to get it to produce seeds at all. The best light coloured variety for the production of seeds known to me is Enchantress; it produces four and five-flowered scapes, three from a bulb. I do not say that it produces such handsome flowers as the novelties of this and last year, but it is not expensive, and none excel it in vigour. Lady of the Lake, Her Majesty, Flowerdale, Hon. and Rev. J. F. Boscawen, and The Giantess are the best of the new light-coloured varieties; they are all superior to the older varieties, but one cannot tell until a trial has been made how they will come out as seed or pollen-bearers.

"T. B." also states that the plants should have plenty of light. Many growers might think from this remark that shading is unnecessary, or probably injurious. I may say that we shade from the sun all through the summer months. Even such a vigorous variety as Empress of India will not stand the direct rays of the sun; the leaves become rusty and die off prematurely. Probably it is the exposure to too much sunshine that causes red spider alluded to by "T. B." We are seldom troubled with this pest, nor do we syringe the plants daily. The vigorous kinds might not be injured by it, as they produce roots freely, but the weakly growing kinds that produce few roots would certainly suffer; the water runs down the leaves and is conducted to the bulbs, which become too wet; the roots are killed, and the bulbs decay. Thrips are more troublesome, and it takes a great deal of fumigating with tobacco smoke to kill them.

I may add that I recently gathered the first ripe pod of seeds; all of them will be gathered by the middle of June. They ought to be sown at once,

and if carefully treated will produce good plants by the end of the season. Both seedlings and old-established plants require a bothouse temperature all through the summer months. J. DOUGLAS.

SEASONABLE WORK IN PLANT HOUSES.

GREENHOUSE.—HEATHS.—Those who propagate and grow their own stock of winter-blooming Heaths experience little difficulty in getting the plants to move freely after they have bloomed, as compared with those who usually purchase what they require when in flower, or about to flower. The reason for this is that home-grown plants are not likely to have their future well-being endangered by being over fed; whereas it often happens that the plants which come from the hands of the great growers are so overdone with artificial manure, given during the season that immediately precedes their blooming, that many never recover, even when carefully treated after they have flowered. There is little difficulty attending the propagation of the autumn and winter-flowering section of Heaths, as most of them are soft-wooded and quick growers. Cuttings put in towards the end of summer, if fairly attended to, will be well rooted by spring, early in which they should be potted off. Young plants that have been raised in this way and are now in small pots should be kept in a cold pit or frame, with the pots stood well up to the glass on some moisture-holding material, for if they do not get plenty of light it is useless to expect them to do well. Give a little shade in bright weather; they must be well attended to with water. Stop the shoots so as to lay the foundation for well-furnished specimens. Plants that are a year older and now in larger pots require to be similarly treated, except that less shade will be needed, and they may have more air; plants of this size should also have their shoots pinched back moderately. Larger plants that are in the pots in which they are to flower may now be stood out of doors on a bed of fine ashes, or, still better, in a shallow pit, where the lights can be drawn off them and replaced if heavy rains occur. Give the requisite attention to assist the growth, so that the plants may gain sufficient size early in the season to admit of their being in a condition to bloom well. Manure water may be given once a fortnight or so, being careful not to apply it too strong. Plants that have flowered and been repotted after being cut in should be kept under glass until the roots have got some hold of the new soil, after which, the sooner they are put out-doors the better, treating them as recommended for the younger stock.

ERICA DEPRESSA.—This old species is a slow grower taking many years to attain full specimen size; but, as against this, it is much less liable to get out of order than any other Heath I have ever grown. In proof of this, when Heaths were more grown than at present, it was no uncommon thing to meet with specimens that were twenty or thirty years old. Its flowers are also very enduring, lasting two months in good condition. But to succeed with this kind it must be exceptionally treated by exposure to the open air; it cannot be depended on to flower unless the plants are turned out where they will be under the full influence of the sun early in June, allowing them to remain so long in autumn as there is no danger from frost.

ROCHEA PALCATA.—Young plants that have been grown on from cuttings and are expected to flower during the ensuing autumn should be kept where they will get all the light possible with full exposure to the sun. Fleshy-leaved succulents of this character do not require any shading, however bright the weather may be. The plant does not need much root-room; for such as consist of a single growth 5-inch pots will be large enough. Examples that bloomed last year, and were shortened back when done flowering, should now be furnished with three or four growths. These may not attain enough strength to bloom the coming autumn, but if not already potted they should be at once moved into pots about two sizes larger. When it has reached this size this Rochea is seen to advantage; its dense, brilliant-coloured heads of bloom, when several together, are very effective.

STOVE.—GARDENIAS.—When Gardenias are well managed they keep on producing successional flowers, more or less, as long as the plants make free growth. With plenty of heat in a good light house they soon attain a large size, but unless they have a proportionate amount of root-room, the growth comes thin and weak and the flowers small; this they will do if under-potted, even when manure water is given them. Therefore, unless there is room to accommodate large specimens, it is better to either discard such as are getting bigger than desirable, or shorten their branches well in, and after the plants have broken into growth turn them out of the pots and shake away a considerable portion of the old soil, putting them in others a size or two larger. So treated, there is yet time before the end of summer for them to make strong growth that will bloom. Young stock struck from cuttings early in spring should be pushed on so as to get all the strength possible into them before the end of the season, for though the naturally free disposition of the kinds usually cultivated is such that they will flower in a small state, yet the quantity and size of the flowers are fairly proportionate to the strength the plants have attained. Gardenias are free rooters, and as soon as the pots which the little plants are now in get full of roots they should be moved to others two or three sizes larger. Brisk heat, with plenty of light, a moderate amount of atmospheric moisture, no stint of water to the roots, and freedom from insects are necessary to grow Gardenias well. The small *G. citriodora* requires proportionately less pot room, but the more size the plants attain the greater quantity of flowers they may be expected to bear; consequently when the soil gets well filled with roots larger pots should be given. This species does not need much interference with its branches, little or no cutting in will be wanted, except removing the points from any shoots that take an undue lead of the others.

NEPENTHES.—At one time these singular and interesting plants were rarely met with in private gardens; here and there a plant of the old *N. distillatoria* or *N. phyllanphora* might be seen, but for many years after the large, beautifully-spotted kinds, such as *N. Rafflesiana*, were well known, few people undertook their cultivation, and of those who made the attempt, still fewer succeeded in doing much more than keep them alive. To meet with a plant well furnished with large-sized pitchers was rare. Now they are much more grown, and deservedly so, for it would be difficult to name any plant that attracts more attention than a well-managed example. Nepenthes are by no means difficult to manage, provided their requirements are understood and attended to. It is sometimes supposed that to grow them well they require a house to themselves, but this is quite unnecessary. The best examples I have ever seen were grown in a house along with a mixed collection of stove plants, consisting of kinds that require or would bear a high temperature. Plenty of heat all the year round is the first essential to success with Nepenthes, plenty of moisture both in the atmosphere and to their roots, and plenty of light, with shade in bright weather, are all necessary to the production of large, well-developed pitchers. Where any of the above conditions are wanting, the plants may grow fairly and keep healthy, but only a few of the leaves, consisting of such as are produced during the height of summer, will form pitchers. Nepenthes make comparatively few roots, and these of the most fragile nature, far more so than any other plants with which I am acquainted; consequently, if in repotting there is any attempt to shake away any of the old soil, the roots often get so much broken that it is more than likely the plants will not get over it. Yet the old material must be got away, for however full of fibre and calculated to last it may be when the plants are put in it, the saturated condition the roots require its being kept in causes it to get so close and pasty, that they will not continue healthy in it. The best way to get the old soil away is to place the ball in a vessel filled with tepid water, and with the fingers to gently get the roots clear of it; there must be no attempt at disentangling them, or many will get destroyed. All that is

necessary further is to replace the plants in the same pots if large enough, or to give others a size or two larger; the compost should consist of the best Orchid peat full of vegetable matter, mixed with chopped Sphagnum, crocks and sand, soaking the material well as soon as the potting is completed. They require water every day during the growing season, and should have it two or three times a week in winter. In summer they ought to be syringed overhead freely every afternoon. When suspended with their heads well up to the roof—the best position to grow them in—a large volume of air should not be admitted near where they are hung, and a piece of thin canvas should be placed over the opening to break its force. If too much top air is given, it dries the atmosphere too much. The best time to repot is about March, but, where the season is allowed to advance further before much additional heat is used, the potting may be deferred until the present time.

SARRACENIAS.—These plants will now have matured their season's crop of leaves, but they must be plentifully and regularly supplied with water at the roots; once a day all through the summer is not too often. The nearer the glass the plants are stood, provided they do not absolutely touch it, the higher their colour will be. I do not approve of syringing the tall growing species overhead, as it tends to make their leaves weak. They are subject to the attacks of thrips, and the stock must be carefully looked over often to see that these pests do not gain a footing. If insects remain undisturbed for even a short time, the foliage will be disfigured. Fumigating with Tobacco or washing with clean water is the best means of destroying the insects. T. B.

TOP-DRESSING AND ITS EFFECTS.

Is the value of a suitable top-dressing for various subjects, both in pots and planted out, so fully realised as it deserves to be? I think not. We pot and repot, plant and replant very frequently, much oftener than there is any need for if only we adopted the more simple and economical method of renewing or re-invigorating from the surface. Every time we repot many kinds of plants there is a danger of injuring them in some way. A plant may not take readily to the fresh soil, and unless very carefully watered sourness results, the plant soon assumes a sickly hue, and its removal from the bad soil and introduction into a smaller quantity of more suitable compost is the only way to save its life. As a rule, however, plants thus badly injured very frequently never recover satisfactorily, and are only fit for the rubbish heap. I do not wish to say that top-dressing is at all times better than giving plants a shift into larger pots, but what I am anxious to prove is that it is often wiser to top-dress rather than repot. I do not think it will be disputed that there are more plants annually lost from being over-potted than from any other cause, and if it is good for trade it is not always good for either the owners or those responsible for the losses.

Hard-wooded plants, including Ericas, Epacrises, Hedaras, Azaleas, Pimeleas, and Phenocomas, in the hands of comparatively inexperienced growers very rarely recover from the liberal shift frequently given them. Repotting is necessary when either the soil about the roots is sour, or when the pots are crowded with roots. In the former case much of the soil should be carefully picked away from the roots and the plant repotted in a smaller pot, while the root-bound plant may well receive a shift into a fresh pot only just large enough for the compost to be properly packed round the balls. When potted in a dry state, or the old soil is subsequently allowed to become very dry, the chances are that the plant will die. If, instead of repotting a plant not really suffering from being root-bound, top-dressing was resorted to, there would be much less risk, and the fresh compost would sustain the activity of the plant for at least one season. All the plants named delight in a peaty compost, and ought to be top-dressed with nothing but good sandy fibrous peat. It is advisable to first water each plant if at all dry, and carefully remove any sour surface-soil to the extent of well barring

the roots. This admits of more space being given to the fresh, well-rammed soil, and this coming into immediate contact with the roots is soon taken possession of by them. The one great drawback to this top-dressing is the difficulty experienced in discovering when the plants require more water. The top-dressing may be quite wet, and yet the bulk of the soil underneath in want of water, and *vice versa*. It will be found the safest course to either test them by lifting or prodding through to the old soil with a pointed stake. Such firmly-potted, fibrous-rooted plants ought always to be watered before they are quite dry at the roots, or otherwise it is almost impossible to re-moisten the soil other than by dipping in water.

Orchids, again, are being constantly repotted, more often than not to their great injury. The majority of them do not require much compost, and some of the best plants in the country are very rarely disturbed beyond what is unavoidable during the process of removing old compost and renewing with fresh. By all means turn out sickly plants from their pots, pans, or baskets, clearing them from old compost, washing the roots, and returning to smaller receptacles; but do not be in too great a hurry in repotting well-established plants. Such rough treatment destroys nearly all the roots clinging to the sides and a severe check is given. Well-rooted plants of most species rarely fail to flower, especially if not stewed up in a steaming hot-house. If just before the roots are active much of the loose old crocks, charcoal, and fibrous peat is carefully picked away, and fresh materials substituted, finishing off with a surfacing of fresh Sphagnum, is all that is needed in very many cases. We have a quantity of *Cypripedium insigne* that have been in the same pots for several years, and all they get is an annual top-dressing of turfy peat, our loam not being sufficiently fibrous for the purpose. *Cœlogyne cristata* requires much the same treatment, and will do well with or without the surfacing of Sphagnum. Several *Vandas*, *Acrides*, *Cattleyas*, *Cymbidiums*, *Dendrobies*, and the good old *Zygopetalum Mackayi* which we grow are rarely disturbed, and they all flower very satisfactorily.

Even the strong-growing *Stephanotis floribunda* will do well for years in the same pot or border, provided always the plant receives an annual top-dressing consisting, say, of equal parts turfy loam and peat and a liberal addition of old cow manure and sand. Nor do *Allamandas* require so much root-room as some imagine, but they must have occasional supplies of good fresh compost. The pots or pits being well filled with active roots, these should be further encouraged by a top-dressing such as recommended for the *Stephanotis*, or, if need be, of all cow manure. Bone-meal may with advantage be added to the top-dressing compost, and I should prefer that to the cow manure; but no artificial manure should be added, this sometimes injuring the tender roots, and it is a safer plan to sprinkle small quantities on the surface occasionally. The same remarks as to top-dressing apply equally well to *Bougainvilleas*, *Thunbergias*, and various conservatory climbers. *Dipladenias*, when well rooted, should also be top-dressed, but not with a heavy or rich compost. An Orchid-like mixture suits them far better, or only lumps of fibrous peat should be used.

What looks worse than a number of over-potted *Crotons*, *Dracenas*, *Ixoras*, *Cyanophyllums*, *Pandanuses*, and various other heat-loving plants? All may be grown to a great size in comparatively small pots, and will prove more serviceable and stand more knocking about than the over-potted plants. The latter certainly require much less water, but even if the root-bound plants suffer from a want of it they can be more quickly restored to good health than others that are sickly, owing to receiving too much. In addition to requiring more water, root-bound plants also need frequent supplies of some kind of liquid manure. It is owing to the neglect in this respect that numerous plants present a starved appearance, for which the only remedy would appear to be repotting. *Anthuriums* and *Alocasias* delight in a rough peaty compost, with charcoal and crocks added, and if treated to annual

top-dressings of this, with a surfacing of Sphagnum, will do well in the same pots for years. The *Eucharis* roots freely near the surface, the fibres soon taking possession of a top-dressing such as advised for the *Stephanotis*. Instead, therefore, of frequently disturbing them at the roots, it is a wiser plan to keep them in good health with the assistance of surface-dressings and plenty of soot water.

As a rule, the Grape Vine, as well as various other fruit trees, thrives most satisfactorily when the roots have easy access to a supply of fresh compost, and at this time of the year it is best applied to the surface of the borders. According to my experience, quite a limited amount of fresh compost does more good than a quantity of liquid or solid manure applied to an exhausted or inert border. In the latter the roots can rarely be induced to form abundance of fresh fibre, and not much of the added manure is assimilated by the old and perhaps half-dead roots. It is too late to open a trench in the borders at a safe distance from the stems, re-filling with fresh soil, but the surface may yet be freshened up. After the old soil has been carefully forked away till the roots are met with in quantity and the border well watered if at all dry, give a top-dressing of 3 inches or 4 inches of fibrous loam, to which has been freely added lime rubbish, ashes from the heap of burnt garden refuse, half-inch or smaller bones, and a little partially decayed farm-yard manure. Into this the roots ought soon to find their way, and will do better service than the much larger "goose quills" that take possession of top-dressings of rich manure, and which seem to disappear with the manure. In some instances it may be necessary to further mulch the borders in order to prevent a too rapid loss of moisture by evaporation, but I much prefer a surfacing of rough strawy manure to that in a more rotten state. In this, as in the case of pot plants, the state of the top-dressing must not decide whether the border underneath requires water or not.

Cucumbers are very generally top-dressed, but the operation would be much more effective if only fibrous loam was used. Solid manure of any kind mixed with the loam may suit the plants for a time, but it soon clogs and excludes the air from the roots, besides encouraging the spread of those minute worms which often so badly injure the roots. Not only do we exclude manure from both the original heaps of soil, but none is added to the heaps subsequently. Turfy loam is the best form of top-dressing, this being given in small quantities and often. The roots rapidly take possession of this, and if well supplied with water and clear liquid manure, the plants will prove very prolific and continuous bearing. Any kind of liquid manure that will clog or gradually cake over the surface ought not to be used. Tomatoes require very similar treatment, no plant better repaying for frequent top-dressings and plenty of liquid manure. Melons are very rarely top-dressed, but if it is given them when the roots are most active, they spread freely into it, this materially assisting the plants to swell off a heavy crop. We top-dress with turfy loam of a clayey nature, to which a sprinkling of slaked lime has been added, and we have every reason to be satisfied with the results.

All kinds of hardy trees are benefited by good surface-dressings of loam and manure, and something of the kind is really necessary in the case of numerous choice trees planted in poor soil. In the course of levelling and forming pleasure grounds, it frequently happens the surface soil is muddled away, and as the subsoil is altogether unsuitable for most trees, small holes are dug and filled with good compost. This encourages the trees to grow strongly for a time, but unless they receive further assistance, either by having trenches cut round them and filled with good soil, or a quantity of the surface soil removed and replaced with the best compost procurable, they soon come to a decided standstill. It is unwise, though not altogether useless, to place a quantity of loose soil and manure on the surface, the best plan being to bare the surface roots, and on these place the compost. W. I.

Coloured drawings of Bromeliads.—We learn that the trustees of the Bentham Fund for Promoting Bota-

nical Science have purchased the coloured drawings of Bromeliads made by the late Professor Morren, of Liège, and that they will be deposited in the Kew herbarium. Several of the living plants were, we understand, also obtained for Kew.

FLOWER GARDEN.

NARCISSUS CALATHINUS VAR. REFLEXUS.

THE *N. calathinus* of Redouté differs from *N. triandrus* of Linnaeus only in the size of the corona. The latter is, however, a smaller plant altogether.

N. calathinus—the chalice-flowered Narcissus—is a much better name, as it describes the flower exactly, whereas the commoner name, *triandrus*, is a misnomer, having arisen through a misconception of Linnaeus, who overlooked the three stamens of the lower row. All this is clearly set forth by Mr. Burbidge in his "*Narcissus*," pp. 69–71.

I think there should be but one group, to include all these chalice-flowered varieties, and that *calathinus* should be the name for it.

In colour all these flowers are of a creamy white. The illustration is taken from a photograph, adjusted so as to give the exact size of the flowers.

The bulbs from which these flowers were grown were collected in the spring of last year in the north of Portugal. A friend of mine, Miss Stanley, had gone to reside there for the benefit of her health, and although no botanist, she very willingly complied with my request to search for Narcissi. I furnished her with sketches of every sort she was likely to find, and amongst others she was fortunate in collecting a large number of bulbs of the *triandrus* varieties, which were sent home by the next post.

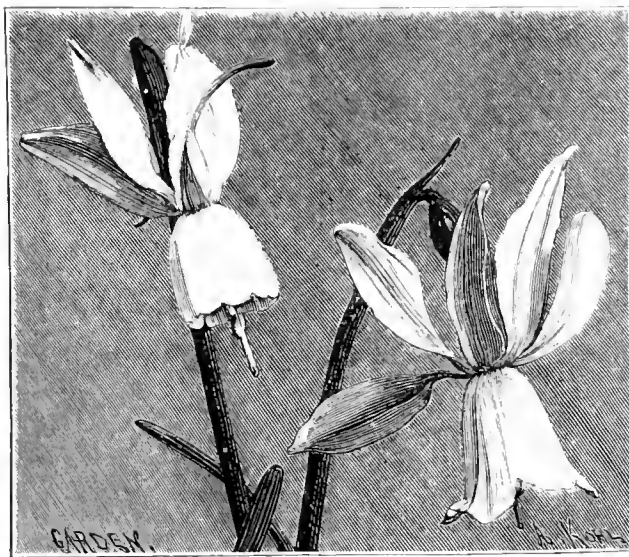
On receiving these bulbs the flowers were too far gone for identification. The bulbs were planted in sand and allowed to ripen off. Under this treatment a large percentage survived, and bloomed freely in a cold greenhouse here.

Miss Stanley tells me that the children and country people in Portugal call this beautiful

good and rare in Dutch and Flemish varieties. Amongst the last a good number are new and not yet in commerce. There is also an unrivalled collection of Flemish breeders, violet and rose, in the most striking and brilliant colours, which deserves interest not only as breeders, but also as bedding Tulips. If they will break, there is every probability that they will give rise to a large number of first-rate varieties; but, still, they will be very valuable for bedding. The colours vary from pale porcelain to the darkest violet; from soft rose to the most brilliant red, and much more striking than *T. Gesneriana* and similar sorts. There are also light and dark brown shades, and a few which approach as near to black as this colour can be found in the vegetable kingdom.—X.

LILIES OF THE VALLEY.

WHATEVER is done in this country towards solving the problem, as to the possibility of growing Lily of the Valley crowns suitable for ordinary winter forcing equal to the sample obtained from Germany, merits generous consideration. There is reason to fear that growers for this purpose have to contend with much trade prejudice in favour of the Continental roots, but it can hardly be imagined that perseverance, combined with the production of a first-class home-grown sample offered at a moderate price, would not soon create a home trade. There seems to be no doubt but that what is done in Germany can be done here, and if it is possible to produce at home as good as can be obtained elsewhere, common sense seems to point towards its being done. Something towards a solution of this problem has been done at Twickenham, where Messrs. Hawkins and Bennett have for many years been developing a huge stock of their grand variety, the Victoria Lily, not in pots, but in large beds comparatively outdoors, for these beds are protected only during the spring, when some two or three are lightly forced, and the rest are protected by the aid of lights or thin canvas rolled down over the plants at night. The growers believe that the worst enemy to the successful cultivation of high-class Lilies of the Valley is found in spring frosts. Still, it is obvious that they regard this protection more needful as a shelter for the bloom than for the foliage, which seems hardy enough. But at Twickenham, owing to the exceedingly limited area of ground at disposal, the plants have to be literally crammed in thickly, and in a locality so near the Thames, moisture and fog might be expected to promote harm from frosts. Still, none is evident on the stock beds, which have no protection; hence, it seems evident that the shelter afforded is chiefly to assist the production of pure, unstained flowers. As evidence of the density of the growth in the more advanced beds, it is affirmed that these give in good crowns no less than 500 to 600 per square yard—a marvellous production, and it is hardly to be wondered at that the firm, finding themselves rather overdone with stock, are at length about to offer some to the trade. The present beds range from 7 feet in width to 150 feet long. Generally they have protection in the form of movable wooden sides and ends, but the ends have on the tops very stout pieces of quartering, through which pass long screws, to the heads of which are attached stout wires. These at intervals of 12 inches apart are strained tightly the whole length of the beds, some stout sticks being laid across as rests for the wires at intervals. On the wires light canvas is rolled down at night and back again in the morning, and as the blooming period approaches lights are laid on over the wires to give the flowers the desired finish. As a few of these beds have the advantage of a couple of hot-water pipes running through them, whilst others without heat are somewhat under the shade of trees, the blooming season is greatly prolonged, and the quantity of flowers obtained is so enormous as to seem, when mentioned, almost like exaggeration. A bed lasts for about six years if heated, and eight years if left unheated. The whole of the roots are then lifted out and sorted. In the meantime the soil is partly excavated and renewed, the bottom is trenched, and



Narcissus calathinus var. *reflexus*. Engraved for THE GARDEN from a photograph sent by Mr. W. Brockbank.

The two varieties merge into each other by such slight gradations, that if you have a large number of blooms before you it is almost impossible to say where *triandrus* ends, and where *calathinus* begins, or to differentiate the one from the other.

In the cases represented by our illustration the corona is so large, that it becomes quite evident that the flowers belong to *N. calathinus*. This will be seen at once on comparing them with Redouté's illustration, which is reproduced in a woodcut by Burbidge at p. 34 of his work.

The bell-shaped flower in our plate is, I believe, a new form of *calathinus*, requiring a new name. It differs from every illustration I have been able to find of *N. calathinus* in its corona, which is here campanulate in form, and of much greater size than is found in this class. The corona is of exquisite shape, the curves being beautifully delicate, and the trumpet mouth instead of being plain is well expanded and deeply crenated. There are other examples of *N. calathinus* having this campanulate form in my collection, and I think a class *Campanulæ flora* will have to be instituted to embrace them.

campanulate variety the Ave Maria. It was found in an Oak wood near the sea coast.

Since the above note was written Mr. Baker has identified this variety as the *N. reflexus* of Brotero. WM. BROCKBANK.

Brockhurst, Didsbury.

Tulips at Haarlem.—The Tulip beds in the nursery of E. H. Krelage and Son, Haarlem, at the Kleinen Houtweg, are now in full bloom. There are four beds of Tulips under two spacious tents, which cover an area of more than 7000 square feet. Two beds, each containing 700 bulbs, are planted with the greatest possible variety of Dutch sorts in violet, rose, and bizarres. There are two other beds under a smaller tent containing each 870 different sorts of byblomems and roses, all Flemish varieties of the most brilliant colours, and equalling those which in olden times were the models of the best Dutch painters. This Tulip show, which is now again opened for the third time, is later than usual this season, and will last till the middle of June, if the weather is favourable. It is the most splendid show of Tulips ever held in Holland, and probably has never been equalled. Besides these the collection of late Tulips of every description planted in the nursery is very large, and contains everything

ample manure added, as also is fresh soil, and the bed is replanted. Skilled labour seems needful for such work, as there is much patience and care needed in placing the crowns in the beds in lines and with perfect evenness. The first year, because the crowns are still plump, very good flowers are produced; the second year, because the roots are mostly engaged in establishing themselves, the flower production is less, but the third year finds strong crowns producing robust foliage and fine flowers. The process is simple enough, and with so many beds it is needful to renovate some every autumn, for November seems to be about the best season for performing this useful work. Annually, after the beds are established, a top-dressing of short manure is given to the beds. It serves the useful purpose of protecting the crowns from frost and fertilising the soil. Clay's fertiliser, applied in the spring, is also found a valuable stimulant, promoting glossiness in the leafage and finely developed spikes of bloom. The Victoria variety is one of the finest grown, and a glance over the Twickenham beds, luxuriant in foliage and crowded with bloom, shows that it has no tendency to blindness. What is so well done by Messrs. Hawkins and Bennett in their restricted area and in soil of only moderate quality, may also be done very largely in specially favoured localities which have natural deep soil, where the area is extensive and fruit trees give some useful shelter from spring frosts. A. D.

Cistuses.—There can be no doubt that the past winter has played sad havoc amongst these plants, either owing to the cold, the damp, or the heavy falls of snow. To the two latter most, if not all, the damage I think may be traced, for, however cold it may be, if dry and the air clear, they may pass through it unscathed. During the past season they have been much less damaged in exposed than in low-lying positions, though even there the woolly-leaved ones are almost past recovery. The plants known in gardens as *C. florentinus*, *C. lusitanicus*, and *C. cordifolius* have not been touched at all; *C. monspeliensis*, *C. Clusi*, very little; while *C. villosus* and its varieties *C. vaginatus*, *C. salviaefolius*, have been damaged almost past recovery. *Helianthemum formosum*, *H. lasianthum* and *H. ocyroides* (often and perhaps better known under the name of *Cistus*) have been all killed outright. *H. rosmarinifolium* has been badly damaged, more so than it has been with us in the neighbourhood of London during the last dozen years. *C. laurifolius* is perfectly hardy; and in the same position, in low-lying ground and sheltered, *C. populifolius* has been killed.—L.

Violas.—The most charming of the Violets, excepting, of course, *V. pedata* var. *bicolor*, for flowering at this time of year is the handsome Falkland Island species, *V. maculata*, named, I believe, on account of the black dots at the base of the leaf serratures. The flowers are deep, almost orange-yellow, larger than *V. odorata*, and borne above the foliage at least 2 inches or 2½ inches; the throat is veined purplish, radiating from the base almost to the margin. It is perfectly hardy, and does well on a sunny slope in light rich gritty soil. It is in flower now at Kew. *V. biflora* is well suited for planting in crevices on a shady wall; it grows freely without the slightest attention, and soon covers the allotted space. *V. cornuta* and *V. c. alba* are also very useful on the rockery, the latter especially, as it is extremely free and continues in flower for such a long time. *V. pyrenaica* is a good species for overhanging ledges, &c.; as also is *V. Munbyana*, which is a very free-flowering and pretty plant when grown in good rich soil. *V. pinata* is well worth having as a late flowering variety as well as *V. pyrenaica*, *V. gracilis*, and others.—K.

Hollyhocks planted out in autumn.—One of the healthiest pieces of Hollyhocks I have ever seen consists of strong seedlings that were planted out last October. No mulching of any kind was put about them, as it is considered beneficial that all the sunshine possible during the autumn and winter should play about the plants. In spring, when a quickened growth sets in, the young suckers are cut away from the main stem, because what is required

is that the plants should send up a strong stem that will produce as much seed as possible, and if the weather is dry, a good root-watering is given, and then a mulching of short manure is laid round each plant, but a few inches away from the stem all round, so that water can be given without difficulty. Very fine, clean, healthy plants are produced in this way, and very little trouble is caused by the disease. The moral of this treatment is, Give the plants a good start, and they can scarcely fail to come out well at the end.—R. D.

THE PROPHET FLOWER.

(*ARNEBIA ECHINOIDES*.)

IN reply to "R. D." in THE GARDEN of May 28, 1887 (p. 486), who asks, "Why is this called the Prophet Flower?" the legend is, that on one occasion when travelling in some desert waste the Prophet Mahomet suddenly came on this little flower, and so rejoiced was he that he laid his hands in blessing on its golden petals, leaving the print of his fingers in the five black marks; hence its name. I believe I was the means of its introduction into England, as I sent the seed from India to the late J. Anderson-Henry, who raised and forwarded it to Kew. Hindoo gardeners are most inimical to the plant as one dear to those of an opposing creed, and the friend who gave it to me said, "You will never be able to keep it; your gardener is sure to root it out;" and so indeed it proved. On my return from the hills to Rawul Pindi not a trace of it could I find. It grows wild, however, somewhere in that district. Kew also owes to me the re-introduction of the blue Poppy, which has flowered so prettily there in the rock garden the last two summers.—LOUISA C. JOHNSTONE, *Grange-wood, Border Crescent, Sydenham, S.E.*

—The fine specimen of this beautiful yellow-flowered perennial Borage, recently exhibited by Messrs. Paul and Son, Cheshunt, should lead to its more extended cultivation. "R. D." in THE GARDEN (p. 186) asks why it has received its English name. This has been derived from the legend which says that when the Prophet Mahomet first saw the bloom he was so impressed with its beauty, that he laid his hands upon it to bless it, and left the marks of his fingers upon the petals. The impression supposed to have been made vanishes as if washed away after the flowers have been open a few days. It is much to be regretted that although this plant has been introduced to this country some forty years, it is so seldom seen in our gardens. Seeds of this plant were sent from the St. Petersburg Botanic Gardens to Kew, where it flowered for the first time in this country in the summer of 1848. It is quite hardy, and is readily increased by cuttings taken in the autumn, and inserted round the sides of the pots in light sandy loam. In this state they may be placed in a cool house or frame through the winter; when spring arrives they will be found to have made roots. The young plants are best grown in pots until they are sufficiently hardy to bear planting out. Pieces of the stoutest roots also grow readily when placed in pots and subjected to a slight bottom-heat. The plant also produces seeds in favourable seasons, and therefore no reason exists for its rarity. A coloured figure of this plant was given in Vol. XVIII. of THE GARDEN (p. 201). *A. Griffithi* is another species introduced to Kew about twenty-five years ago from Northwestern India. It is not perennial, but only of annual duration; this fact, however, does not detract from its beauty, although it increases the trouble in its cultivation. It differs from *A. echioides*, moreover, in its smaller flowers and narrower leaves, but the colour is a much deeper shade of yellow and the spots are of a darker hue.—G.

—*Arnebia echioides* is called the "Prophet Flower" because the vanishing black spots were produced, according to a Mussulman's belief, by the touch of the Prophet's fingers. MAX LEICHTLIN.

Sparrows and flowers.—During the past spring sparrows have been unusually destructive in many places to the bloom not only of Primroses,

but also that of fruit and other trees, but the note from "A. D." in THE GARDEN (page 486) confirms what many others have suggested, that the damage is to a great extent owing to the protracted drought, for we have had an unusually dry, as well as cold, spring. I also believe the sparrows pick off the bloom for the tiny drop of nectar or moisture they contain, and are, therefore, far more destructive in dry seasons than when showers prevail. In this locality we have no ditches, except dry ones, for a long distance, and many owners of gardens have, during the last few weeks, taken the precaution to place saucers full of water about their gardens for the birds to drink from. Whether it may prove an effectual remedy I cannot say; but many who love their gardens are also equally fond of birds, and would like to see any remedy adopted rather than be driven to the necessity of destroying their feathered friends, as even the common sparrow is welcome when birds of other kinds are so scarce.—J. G. H.

PHLOXES.

THE genus *Phlox* is one of several which have been encumbered and have had their natural species confused by the bad habit of giving Latin botanical names to garden varieties. We might collect from the illustrations of Curtis, and Sweet, and Edwards, and other popular books on horticulture more than twice as many Latin names of *Phloxes* as there are species in the whole genus, though about half the species of the genus are not, and probably never have been, in cultivation at all.

The authors of "Genera Plantarum" agree with Asa Gray in fixing the number of species of *Phlox* at twenty-seven, all of which are indigenous to North America. Two of these are annual, one being the well-known *P. Drummondii*.

Thirteen others are dwarf suffrutescens mountain species, which it has been hardly possible to cultivate, some of them not being worth cultivation. One of them is figured in *Botanical Register*, 1351, and, pretty as it is, it was lost almost as soon as it was introduced. Another, of less merit, was recently sent to me by Mr. Paul, of Broxbourne, under the name of *P. Douglasii*.

Of the twelve remaining species, eleven belong to section No. 2 of Asa Gray's arrangement, being defined as "Perennial Herbs of the Atlantic States," and ten of the twelve are common in cultivation, the twelfth being a section by itself, and being the well-known *P. subulata*.

Three species of the first section seem to have formed the stock of the florists' *Phloxes*, viz., *P. paniculata*, *P. maculata*, and *P. glaberrima*. *P. floridana* and *P. bifida*, if in cultivation at all, are rare, and I have never met with them. *P. pilosa* flowers in summer, and is difficult to keep in wet soils. Six species remain to be enumerated, which are amongst the brightest ornaments of our spring gardens. They are:—

P. OVATA.—Not flowering till late in spring, but of very good habit; about a foot high. It should be frequently renewed from small pieces, and does well in any soil. Syn., *P. carolina*. Figured in Sweet's "Flower Garden" as *P. triflora*.

P. ARGENTEA.—By far the best of its class. Grows about 6 inches high, and produces a thick mass of bright pink flowers from the middle of April to the middle of May. It requires to be pulled to pieces and re-planted every year, as it spreads rapidly and seems to exhaust the soil. It likes light, rich soil, and a situation sheltered from cold blasts and sharp frosts, which spoil it. Still, it may be grown well in any garden in selected spots, and is unusually good this year.

P. DIVARICATA.—Habit similar to the last, but rather taller; colour of the flowers slate blue; flowering season April and May; less impatient of cold than *P. argentea*, but so liable to be devoured by slugs, that where they abound it requires guards of perforated zinc round it. It should be propagated frequently and kept in a compact mass. Syn., *P. canadensis*.

P. REPENS.—Early, bright and pretty; resembles *P. argentea*, but the leaves are larger and rounder.

and the growth more sparse and straggling. In my garden it is not nearly so free flowering as *P. amœna*, but I have seen it very good in some southern gardens. Syns., *P. stolonifera* and *P. verna*. I have a variety with smaller flowers than the type and of a dull purple colour—by no means desirable.

P. STELLARIA.—Said to be so called from its general resemblance to *Stellaria holostea* (the great Stitch-wort), which it recalls both in habit and in flower. Its early flowering gives it some merit, but it is not one of the best, and in wet soils withers in winter, or the stiff, persistent branches get broken off by wind.

P. SUBULATA.—The most useful and favourite species of all the dwarf Phloxes, and consequently the most liable to abuse by having so many other names, figuring as *P. setacea*, *P. nivalis*, *P. atropurpurea*, *P. frondosa*, &c., in the same catalogues in which other varieties of it are properly entered with florists' names. Though it varies a good deal as a wild plant, these Latin names are now excluded by botanists to avoid confusion.

There is a very old, but delicate Phlox with pale purple flowers called *P. procumbens*, said by Asa Gray to be a hybrid between *P. subulata* and *P. amœna*. I believe that there are several hybrids of this class in cultivation, and I am trying to collect them, but I can find only one figured, viz. in Sweet's "Flower Garden," series 2, tab. 7.

Edge Hall, Malpas. C. WOLLEY DOD.

The Crown Anemone ("St. Bridget's" strain).—I must differ with "J. C. C." when he says (p. 467), "When this Anemone is treated as an annual there must be no further delay in sowing the seed if intended to flower during the winter months." This Anemone is grown as a specialty in all the gardens around here chiefly as an annual. The method adopted is to use the seed from the best "marked" plants only. The plan is to mark the intended seed-pods with crimson, blue, red, &c., Berlin wool, according to colour, and remove all the pods and stems, with the exception of one or two, so as to utilise the whole force of the sap in perfecting the seeds. This is too often lost sight of, and the result is a worthless strain. This seed cannot be ripe for a few weeks yet, and consequently cannot be sown. Your correspondent may mean seed selected last year, but I do not think this so desirable. Of all the strains of Crown Anemones none can compare with the above. I have always found the best results by blooming the plants in the seedling beds—not transplanted. The plants get a check in transplanting in summer that they never fully recover from. W. J. MURPHY, *Clonmel*.

SHORT NOTES.—FLOWER.

Many-flowered Snowflake (*Leucojum trichophyllum*).—I bloomed this plant some years ago. The bulbs came from near Seville.—A. RAWSON, *Windsor, W.*

Spiræa Aruncus astilboides.—We have lately had this grand *Spiræa* in bloom, and it is one of the best. It is a free and robust grower, and blooms most profusely, the spikes being large and pure white. It merits universal culture.—J. MUIR, *Maggoo*.

Bluebells.—During the feast of Bluebells that we have been enjoying, I notice several fine pure white forms. Has anyone noticed them in quantity? I fancy a good mixture of the white and blue would be even more effective than the blue by itself.—A. H.

Primula Parryi.—This rare Rocky Mountain Primrose is now flowering in the York Nurseries. The blossoms are large, magenta-purple in colour, and are borne in clusters on stems 6 inches to 12 inches high. The plants are growing in a deep peat bed shaded by brushwood. Finer or more healthy plants we do not remember ever to have seen.—R. P.

The early Orchis (*O. mascula*).—I see Mr. Webster says "that the climate of the south of Ireland is well suited for the cultivation of this pretty, early-flowering kind."

As the plants in the greatest vigour and abundance in many districts near London, it is curious that Mr. Webster should write of this commonest and hardiest of early native Orchids as if it were a rare or semi-tropical plant wanting the climate of Cork.—E. H.

Camassias at Edinburgh.—The *Camassias*, &c., which I sent yesterday came from the botanic gardens. As grown there in large groups, the various forms of *O. esculenta* are very effective. *O. C.* Ledeburii was sent to the gardens on its first introduction by Dr. K. Brown, who collected it when on the Oregon expedition. The hybrid *Aqui-*

legia Stuarti (*glabulosa* × *Wittmannii*) is very beautiful, but I fear the flowers may have faded before they reach you.—C. M. OWEN.

INDIAN PRIMULAS.

IN the Journal of the Linnean Society for 1882 (vol. xx., No. 123) will be found a very interesting memoir on some of the undescribed and imperfectly known species of Indian *Primula* and *Androsace*, by Mr. Geo. Watts, M.B., F.L.S., of the Bengal Educational Service, Calcutta. This memoir is profusely illustrated. In the spring of last year many lots of Primrose-seeds were received from India, in connection with the work of the *Primula* Conference, and about these we have as yet heard very little. There are many Indian *Primulas* of great beauty awaiting introduction to our gardens. These already acclimatized, such as *P. cashmeriana*, *rosea*, *denticulata*, *sikkimensis*, and *capitata* are so beautiful and so hardy, that we naturally long for more.

Dr. G. King, F.L.S., of the Royal Botanic Gardens, Seebore, near Calcutta, very kindly sent me a few packets of seeds in December, 1885, "collected at high levels of the Sikkim. Some of these species," he said, "have never before been introduced into Europe." I have given much care and attention to the growing of these, and with a fair amount of success. Amongst the seeds was a packet, marked "*P. capitata* (Hooker) and *P. bellidifolia* (King) mixed." Collected above Lachong at 13,000 feet, in sunny situations. These seeds have grown well, and produced many beautiful blooms of *capitata*. There are certainly two varieties of flowers, one a much darker and richer violet colour than the other, but I am as yet unable, without an exact description, to select the new variety *bellidifolia* (Daisy-leaved) from the ordinary form of *capitata*. The plants have proved perfectly hardy, having passed through the severe winter in the open garden, and bloomed beautifully in March and April several are still in flower. I have not seen a description of this new variety, as it is not noticed in Dr. Watts' memoir.

Another package contained seeds of *P. reticulata* (Wallich) collected near Cheombi 11,000 feet, between rocks in exposed wet places. Of these we have an abundant crop. At first I took it to be the well known *P. sikkimensis*, but on applying to the Kew authorities for further information, as this variety was not described by Watts, Mr. Dewar wrote me as follows: "I quite agree with you in saying that *P. reticulata* is nearly allied to *P. sikkimensis*. The chief distinction is a larger flower-scape, fewer flowers, mouth not annulate, of a dull yellow, the leaves with very much longer petioles, and the margins double and sharply crenated." This description agrees exactly with our plants, only I should describe the leaves as doubly serrated at the edges instead of crenated, and that the reticulations were much more strongly marked, as one would expect from the name by which Wallich distinguished it. It is a finer plant than *sikkimensis*, having flowers of a richer colour, larger, and more beautiful in form. The scape is about 20 inches high, and it carries from twelve to twenty flowers, well expanded and drooping. The stalks and leaves are powdered, and the petioles red and longer than in *sikkimensis*. The calyx is more inflated, and its segments keeled, as in our English Cowslips and Oxlips, which these Indian Primroses somewhat resemble in form and habit. I consider *P. reticulata* to be the finest Indian *Primula* which has come under my notice, and that it will be a grand addition to our gardens. It is perfectly hardy, having been grown from seed and flowering without heat and in the open garden.

Brockhurst, Eidsbury. WM. BROCKLEANK.

Flowers at Shirehampton.—*Pæonies* (Montan) grown in the open are now (June 1) in their glory. A crimson single gold-edged variety, received here through Mr. Gordon direct from Japan, marked No. 15, is magnificent. I flowered about twenty single and double varieties in pots six weeks ago; one measured 23 inches round and $1\frac{1}{2}$ inches across. When these grafted *Pæonies* throw up shoots from the stock, ought the shoots to be cut off? The Montan varieties

are grafted on their own roots; these also throw up shoots. I hardly like to cut them off. *Sparaxis*, *Ranunculus*, *Ixias*, *Babianas* grown in sand and peat Moss manure have done very well in a cold frame. The early *Gladioli* (*byzantinus* and *G. albus*), with *Ixias*, *Watsonias*, and several Cape bulbs, grown in the same compost against a south wall, with a light over them through January and spring months, are looking very forward—the *Gladioli* nearly in bloom. I have some sixty plants of *Remneya Coulteri*, about 2 inches high, planted out in boxes from seed sown six weeks back, in a greenhouse. Should I leave them in the boxes or pot off? I agree with the correspondent who asks that everyone should state where they write from. I should add that it would be a great convenience if all communications were dated. The fasciation of Lilies is a great trouble here; is it caused by too close planting? I have a bed of seedling Lilies—*Martagon* and *colchicum*; the latter have become badly fasciated.—C. O. MILES, *Shirehampton, Bristol*.

Laced Auriculas. In reply to J. Douglas, in THE GARDEN (p. 185), I make no claim as to the original introduction of these laced Auriculas, but I claim to have been the first to draw attention to them by publicly exhibiting them, and still farther to attempt their improvement. When originally shown, they were not at all warmly welcomed by the rule-of-thumb Auricula men, who instituted at the Auricula shows a class for nondescript Auriculas yeleft "fancies," and permitted laced alpines to be shown in this class. The result invariably was that the nondescripts were placed before beautiful laced flowers, and the generous offer proved worthless. Now we learn that they may be exhibited in certain classes for alpines; but of course they have no chance with ordinary Auricula fanciers when put into competition with decent show, shaded, or self-alpines. It is very obvious that if the Auricula committee were less anxious to promote the cultivation of certain classes of Auriculas, and cared more to encourage all good forms, even if novel, they should do so. It is difficult to discern how beautiful a strain may yet be got from the laced section. I still am of opinion that the broad colouring of an alpine Auricula is toward the ground, and not the edging. Still, I am not infallible.—A. D.

Notes from Aix-les-Bains.—This place is now a garden of flowers—wild and garden, tree and plant—and is well worth a visit for other than curative reasons. The park is ornamented with many flowering trees and shrubs, the most noticeable being scarlet and white, single and double Chestnuts, *Paulownia imperialis*, *Magnolia conspicua* (just going out of bloom), and *M. laurifolia* (showing its buds), *Spiræas* of various kinds, *Tamarisk*, and Hawthorns well covered with bloom. In the market, wild flowers may be bought every morning; Lily of the Valley in quantities, *Gentians* (*G. verna* and *acaulis*), *Globe flower* (*Trollius europæus*), and *Orchis* in many varieties. The woods and roadsides are brightened with the Star of Bethlehem (*Ornithogalum*), and *Iris germanica* seems to flourish everywhere. I have not yet come upon it as plentiful as in Switzerland, where, in the valley leading to St. Luc and Zinal, it grows all over the hillsides; but, on the whole, this interesting and picturesque neighbourhood is quite as much a garden as is the more spoken of home of Swiss flowers. *Narcissus poeticus* I must not forget to mention finding in the market, but I have not seen it growing. I have enjoyed acres of its beauty and sweetness in the district surrounding Montreux, where it can be seen from the lake to whiten the hillsides as if with a shower of freshly-fallen snow.—J. H. P.

Sowing Stocks and Asters in the open ground.—Most of those who grow Stocks and Asters sow their seeds in a gentle heat, or on a prepared bed in a cold frame, and then prick them out in the open ground. If dry weather sets in just when the transplanting should be done, valuable time is lost, because the plants are some time in getting a start. It is this among other considerations that has induced Messrs. Sutton & Sons to sow all their Stocks and Asters for trial in the open ground. It

is true that the soil of their Portland Nursery in the London Road is of a light, sandy, and friable nature, and the position open and sunny, conditions favourable to a good growth of seed in the open air. The ground was duly prepared, and where the drills are to be drawn the ground is first of all flattened down by placing a piece of stout board along it and the men stand upon the board so as to make the soil flat and hard. Then a shallow drill is drawn, and the seeds sown thinly and covered lightly with some finely sifted old potting soil. When the plants are large enough they are thinned out to a foot apart, and those taken from the ground are planted out in borders, &c. It is found by experience that the plants that have not been disturbed from the time of sowing, root themselves deeper into the soil than transplanted ones; they grow finer and give flowers of a better and more lasting character, and they bloom earlier. Sowing is done about the 12th of April, but it must not be supposed that sowing in the open air can be safely done in all localities and all soils. It is only under such favourable conditions as exist at Reading that outdoor sowings are so successful. Of the many hundreds of samples, not one appears to have failed. If wireworm attacks the plants, the best cure is found to be a sprinkling of wood ashes strewn lightly over the plants.—R. D.

CHRYSANTHEMUMS.

E. MOLYNEUX.

CUTTING DOWN THE PLANTS.

FOR ordinary conservatory decoration, where large blooms are not wished for, the method of growing the plants for producing large flowers is not the one best suited for obtaining plants fit for grouping in the majority of conservatories. Plants for conservatory use must be strong in the growth, dwarf in habit, possess ample leafage, and be capable of bearing handsome blooms which can be seen without the use of the step-ladder. Flowers produced on such plants as these are generally admired while growing upon the plants; whereas the large flowers grown on the ordinary exhibition method are generally seen when cut and placed upon the boards either ready for or at the exhibitions. In such a case as this, tallness of the plants is only a secondary consideration as regards appearance, it being a generally recognised fact that to produce the finest quality of flowers the plants must grow high, and assume somewhat of the natural habit of growth of each distinct kind. As varieties differ so much in character of growth, there is, of course, a wide range to choose from. Some kinds naturally do not grow above 3 feet high, while in some seasons other sorts will attain the enormous height of 12 feet. Of course this occurs where a limited number of flowers is allowed upon each plant, and where the object is solely the exhibition table; such quality cannot be produced upon plants which are rendered dwarf by special treatment. These dwarf plants will produce flowers large in diameter, but they invariably lack that depth which is so essential in the finest blossoms. For the production of dwarf plants suitable for conservatory decoration a special course of treatment must be adopted. The plants being mainly used for grouping, they are generally stood close together when in bloom; therefore the pots used for the final shift should not be more than 9 inches across. It is better that all should be of one uniform size, as arranging the plants in a satisfactory manner is more easily accomplished.

The cuttings will have been struck at the usual time and the plants grown on as for other purposes, with one single stem, up to the present date. If plants have not been specially set apart for this object, any surplus ones over the number required to produce exhibition blooms

will answer the purpose. Should these be the naturally late-flowering kinds, such as Boule d'Or, Meg Merrilies, Yellow Dragon, Grandiflorum, Princess Teck, Hero of Stoke Newington, and Cherub, cutting down should commence at once. Varieties which flower in an ordinary way about mid-season without any special treatment, as, for instance, the Queen family, Princess of Wales, Jeanne d'Arc, John Salter, Jardines Plantes, and Baron Beust; and among the Japanese, such varieties as Madame Audiguier, Fair Maid of Guernsey, Baron de Prailly, Mdle. Lacroix, Peter the Great and M. Astorg should be cut down about the 1st of June. Those two richly coloured varieties, Cullingfordi and King of Crimson, the best of the reflexed section, almost indispensable in a group owing to their brilliant colour, come under the last-named list. Early-flowering sorts, to wit, Elaine, Prince Alfred, Lord Wolseley, and the Rundle family, should not be cut down before the middle of June. None should be cut down later than the middle of June if they are required to be in bloom from the early part to the middle of November. It is well to take into consideration the purpose for which the plants are required, whether for large or small groups, in determining the height at which they are to be cut. Always select for the front of the group those kinds which are naturally dwarf; as a rule, they possess the best foliage, being short-jointed; thus the leaves overlap each other, which is a decided gain in the end, as the front part of a group in particular is much influenced in its appearance by the general foliage of the plants. Where groups of this class are placed in competition with others, the condition of the foliage has considerable weight; therefore, every means should be taken to gain this end.

Dwarf-growing varieties best suited for front rows of groups may be cut down to within about 4 inches of the soil; the others to 6 inches, 8 inches, and 12 inches, as they do not break so freely from the old wood as from the young plants. Small-flowered varieties, which are intended to have more branches, should not be cut so low as varieties with larger flowers. After being cut down the plants do not require much water at the roots for some time. If they could have the protection of a cold frame for a time, so much the better. Syringe the plants once a day, to assist the shoots starting into growth, from the eyes below where the top of the plant was severed. As soon as the shoots are long enough to determine if they are perfect and the leading points not deformed, disbud to the number required; three branches suffice for most large-flowered kinds, but the small-flowering sorts may have six each. When the new growths are well started, transfer the plants to their flowering pots, those they now occupy being 5½ inches across. When the roots have run freely into the new soil, remove the plants to their summer quarters, allowing them ample space, as crowding the plants together quickly spoils their appearance, drawing them up weakly and ruining the foliage. At this stage of growth the shoots are easily snapped at their base by winds and other circumstances, such as birds alighting upon them. Tie each branch securely to separate stakes, and as soon as the pots are filled with roots, stimulants may be applied. The first buds produced on the shoots after cutting down should in nearly all cases be selected as best suited for producing large blooms. They will appear from the middle to the end of August, and it will be soon enough if some sorts, such as the Queen family, show their buds the first week in September. Sometimes a bud of the latter varieties, for instance, will show itself during the first week in August, in which case

rub it out and wait until the next one appears, which will be about the middle of September. When this occurs, the plants will be a little taller than they would otherwise when the flower-buds show at the proper time. Such plants being taller are better suited for the back parts of the groups. When the flower-buds are selected, take out all growth-shoots around the bud, as the formation of the bud induces a number of shoots to form. The growths from the sides of the plants will all have been removed as fast as they have appeared, to throw all the strength into the leading stems.

Commence to house the plants if the weather is dull or cold about the last week in September, commencing with late-flowering varieties, such as Boule d'Or, Meg Merrilies, and Hero of Stoke Newington, for instance. These varieties require a longer period to develop their blooms than the majority of the sorts; therefore more time should be allowed them, as they come out quicker under glass than outside. Local circumstances must be taken into consideration, as early frosts are more prevalent in some localities than others. The plants should be under cover before these take place, or the flower-buds may receive a check. Early flowering kinds may remain out of doors until the middle of October, which retards the opening of the flowers somewhat. Place the plants as near the glass as possible, giving sufficient space to each to prevent loss of foliage. Fire heat will be needed occasionally in dull weather to prevent the blooms damping and mildew from spreading. A close watch should be kept upon this fungus the moment any signs of the pest appears, and as a remedy dust the affected parts with sulphur.

GARDEN FLORA.

PLATE 600.

HUNNEMANNIA FUMARIEFOLIA.*

THIS most beautiful and graceful foliaged member of the family of the Papaveraceæ which is closely allied to the *Mecomopsis* section is a native of Mexico, whence it was first introduced to European gardens by means of seed about sixty years ago by Mr. Robert Barclay, from whose garden at Bury Hill flowering specimens were sent in the year 1829 to Mr. Sweet, who figures it on plate 276 of the third volume of his "British Flower Garden." It is also figured on plate 3061 of the 58th volume of the *Botanical Magazine*. This pretty plant, though flowering best in the open sunny border, must be treated as a half-hardy biennial, and be continually renewed by seed, which it happily sets and ripens freely even in cold and sunless summers, such as ours was last year. I sowed the seed as soon as it was ripe, and it lay dormant for nearly six months, beginning to come up about the first week in March in a cold house where the seedlings are still appearing. The charming glaucous hue of the deeply-cut foliage forms a beautiful contrast to the clear and brilliant shade of yellow of the flowers. Both are most accurately portrayed on the accompanying plate. W. E. GUMBLETON.

Notes from Baden-Baden.—*Eremurus robustus* var. *nobilis* is a splendid variety, and far superior to the best typical form; the flowers are larger, deeper in colour, and the spike much bigger; it is a month earlier than all other forms. Among Irises, *I. coreana* is a very showy plant, the deep bright ultramarine flowers being produced in the

* Drawn by Miss Travers in Mr. Gumbleton's garden, at Belgrove, Queenstown, August, 1886, and printed by G. Severeys.



HUMMELINA PINNATIFOLIA

greatest profusion. *I. Troyana* of the germanica section, with sky-blue standards and brilliant violet falls, is a lovely, sweet-scented flower. *I. asiatica*, a variety with rich violet flowers, is the largest flowered Iris I know of. *I. Kochi* is a most profuse flowering one, colour deepest violet; contrasting well with this is *I. albicans* from Cyprus, a pure white sweet-scented sort. A very interesting Allium is *A. Rosenbachianum*, with very large heads of purplish flowers, though it is not so showy as *A. giganteum* and *nobile*.—MAX LEICHTLIN.

ORCHIDS.

W. H. GOWER.

SACCOLABIUM GUTTATUM.

THIS plant is considered by Professor Reichenbach to be a variety only of *S. retusum*; it is, however, sufficiently distinct to be readily distinguished from that plant when in flower, whilst even by its growth alone it can be recognised from it by those well acquainted with the genus. The section of *Saccolabium* to which *guttatum* belongs all produce long cylindrical racemes of bloom, the flowers, although small, being exceedingly beautiful. In this plant they



Saccolabium guttatum.

are thick and fleshy in texture; sepals and petals waxy white, freckled and dotted with rosy purple, the colour being more or less intense in different plants; lip small, wholly deep purple. In habit of growth the *Saccolabium* are characterised by their thick, fleshy, leathery leaves, which are præmorse at the ends, and arranged in a two-ranked manner. With age *Saccolabium guttatum* produces lateral growths, and when it attains to the dimensions represented in the accompanying engraving, its beauty cannot be adequately described.

SACCOLABIUM GUTTATUM is a plant slow in growth, and therefore care must be exercised in its cultivation, so that every leaf may be preserved. To this end it will be found more advantageous to lower the temperature during the winter months, withholding the water supply to a great extent, than to subject the plants to the high temperature and the dry atmosphere to which they are subjected naturally during the resting season.

S. GUTTATUM HOLFORDIANUM is a plant of a more robust habit of growth than the typical plant; its wreath-like, cylindrical racemes of bloom are also much stronger and longer, whilst

the colours are richer, the lip being bright crimson. Both forms are natives of India and some of the Indian Islands.

During the growing season this plant enjoys the strong heat and moist atmosphere of an East India house and an abundance of light, but it requires to be shaded from the fierce rays of the midday sun. Small plants of this species thrive well enough fastened to a block of wood with a little *Sphagnum Moss* to retain moisture about it, but as they increase in size they become massive and weighty, which renders it necessary to place them in baskets, which should be suspended near the glass. *Saccolabium guttatum* is sometimes grown in pots with *Sphagnum Moss*, but the thick, fleshy roots enjoy being free, in which manner they can absorb the moisture of the atmosphere, and therefore basket culture is preferable.

Dendrochilum (Platyelinis) latifolium, in flower at Messrs. Veitch's, is quite a handsome species with spikes of flowers, 9 inches in length. They have the sweet perfume of *D. glumaceum*, but with much larger flowers; it is a very desirable species, and flowering, as it does, before *D. filiforme*, it is of greater value. The *Dendrochilum* are not

very plentiful in collections, but they are very lovely, and the sweet perfume of some of them adds immensely to their value. *D. filiforme*, when it has grown to a large size, is an excellent exhibition plant, and forms a distinct and attractive specimen amongst other more formal-looking subjects. I have found it do well both in the *Cattleya* and East India houses.—J. D.

Dendrobium speciosum.—Many growers fail to flower the above Orchid satisfactorily, and at one time my treatment of the plant was a mistake and resulted similarly. I discovered a more successful method quite by chance. Some years ago some alterations in the forcing houses were commenced in September, and I had to store a lot of my plants away in pits that were only heated sufficiently to keep out frost, and amongst them were two large plants of this *Dendrobium*. They remained there until the following March, during which time the plants had very little water, sometimes going without for a month at a time. They stood upon pots at the back of the pit and had plenty of light and sun, also plenty of air when it was convenient to open the lights. When the houses were finished, these plants, with others, were taken into an early vinery, and after being top-dressed with good peat and *Sphagnum*, were well watered and placed on the stage over the pipes. This sudden change of

treatment appeared to be the right thing, for in due time the buds at the top of the pseudo-bulbs began to move as if for flowering, which proved to be true, for one plant produced eleven spikes and the other one nine. This unlooked-for success proved that I had hitherto been treating the plants too liberally by always keeping them growing, and for a great part of the time in too high a temperature, and never giving them a sufficient rest to ripen or mature the buds. I have ever since submitted this Orchid to those conditions of treatment, and have not failed to flower it regularly.—THOMAS RECORD, *Falkington Manor*.

FLOWERING ORCHIDS AT HAMMERSMITH.

WHEREVER hardy plants will grow, we strenuously advocate their culture before any other class, but where gardens or grounds are so situated that the surroundings are not congenial to the well-being of herbaceous or alpine plants, it is quite useless to make the attempt. Grounds of this character exist in the immediate suburbs of London, and Mr. Tautz at Hammersmith, recognising this fact, has wisely covered the greater portion of his garden with glass and made the culture of Orchids his special study. These houses all the year round are gay with bloom, and at the present time are more than usually so. All the plants are in rude health, and the houses are cool and pleasant. Amongst the most notable plants in flower just now is *Odontoglossum vexillarium*, some 500 or 600 blooms being fully expanded, whilst the numerous buds opening and others still developing give reasonable promise of as many more, which will continue the show for several weeks. Mr. Cowley says, "I never syringe the *vexillariums*, and I grow them cooler than many do; they are kept in a temperature somewhat midway between that of the *Odontoglossum* house and an ordinary *Cattleya* house;" and certainly the plants appear to thrive in a marvellous manner under these conditions. Besides these, between 100 and 200 varieties of Orchids are now displaying their beauties, amongst which may be seen some richly coloured forms of *C. Mossia*, the variety named *purpurata* being very conspicuous. The flowers of this are deep lilac in the sepals and petals, whilst the large lip is wholly deep purplish crimson, with a full orange throat, the edge being white and prettily crisp. Numerous forms of *C. Mendeli* are also now coming in; one in particular is notable, and deserves a varietal name. It has the appearance of being crossed with *Laelia elegans*; the sepals and petals are pure white, whilst the lip in shape somewhat resembles the variety of *L. elegans* known as *Wolstenholmie*. It is white, stained in front with purplish lilac. Amongst other *Cattleyas* specially good are well-flowered specimens of the rare *C. Skinneri oculata*, *C. Schrederi alba*, which yields a delightful perfume resembling sweet vernal Grass (*Anthoxanthum odoratum*); *C. Lawrenceæ*, *C. Aclandiæ*, *Laelia grandis*, *L. purpurata* in quantity, &c. These plants are never syringed, and are kept cooler than *Cattleyas* usually are. *Lady's Slipper Orchids (Cypripediums)* are largely grown here, a recent addition being *C. Laforcade*, a hybrid raised by Messrs. Veitch. It is distinct and very beautiful; the dorsal sepal is large, flaked with fiery reddish purple and bordered with white; petals plain dull purple; lip small and pointed, resembling *C. niveum* in shape. Here also are blooming fine examples of *C. Peteri*, *ciliolare*, *Swaniamum*, *callosum*, *Lowi*, *Lawrenceanum*, *caudatum*, the rare white form of *Sedeni* called *candidulum*, a deep yellow form of *Druryi*, the bright-flowered and perpetual blooming *C. Warneri*, a highly coloured form of *C. Hookeri*, *C. Boxalli*, *C. Harrisianum*, &c. The collection of these *Cypripediums* is very extensive and the specimens remarkably healthy, growing in the temperature of an intermediate house. The coolest house devoted to *Odontoglossums* and the mountain *Oncidium* is bristling with innumerable spikes, which promise a continuation of bloom for months to come. Amongst the most notable were good plants of the white and the rose-coloured *O. citrosimum*, and a very pretty form called *punctatissimum*, in which the sepals and petals are profusely dotted with rose. *O. ramosissimum* is a species

rarely seen; it has a densely-flowered branching spike of bloom, which in shape somewhat resembles *O. nevium*; sepals and petals creamy white dotted with lilac, and a lilac lip. *O. Reichenheimi*, bearing a large, much-branched spike; *O. Schillerianum*, distinct from any other species; dark and light forms of *O. triumphans*; white and spotted forms of *Alexandre*, and *Pescatorei*, *nebulosum*, *candidulum*, and many others. Associated with these delicate flowers are numerous richly coloured forms of *Masdevallia Harryana* and *Epidendrum vitellinum majus*, *Oncidium concolor* and *O. cucullatum*. *Phalenopsis*s, when in flower, are moved from the growing house into that occupied by the *Cypripedium*s; those now blooming are *P. amabilis*, amongst which are some excellent forms; *P. rosea* and *P. Sanderiana*, one variety in particular being of a rich deep rosy pink. The *Sobralias* are also well done here, a notable form of *macrantha* being now in flower; it is dwarf in habit, and from the top of its slender reed-like stem it produces immense flowers of rare substance of a rich rosy purple, the large lip being pure white in the basal part, whilst the sepals and petals are of the same deep colour as the lip with a light edge. *Epidendrum Parkinsonianum* is another fine plant too rarely seen; it has flat, fleshy, pendulous leaves, and large, peculiar-shaped, ivory-white flowers; two forms are now flowering here. *Dendrobium Veitchianum*, although not showy, is a very singular North Australian Orchid, the flowers being yellowish green, the lip streaked with radiating lines of dull purple. In the intermediate house are blooming good examples of *Oncidium ampliatum majus*, *O. Marshallianum*, and *O. stelligerum*, grand specimens of *Cymbidium Lowianum*, *Calanthe veratrifolia* and *masuca*, *Cologyne Massangeana*, *Colax jugosus*, and many other sorts. *Phalenopsis*s when growing are suspended from the roof of a stove in which a general collection of stove plants is cultivated, and the way in which they are rooting and the fine leaves they are making fully prove how congenial the atmosphere is to them. The plants with which the *Phalenopsis*s are associated is a varied collection of *Marantas*, *Nepenthes* with pitchers in profusion, *Anthurium*s, flowering *Clerodendrons*, the beautiful *Impatiens Hawkeri* in flower, and numerous other kinds. The Surinam *Oncidium Lanceanum* is also grown in this stove, suspended from the roof in a quiet corner, and appears to thrive admirably, as also does *Dendrobium superbiens* and various other *Dendrobies*.

Mr. Tautz is also experimenting with Orchids in the open air; these are suspended from the lower limbs of the small trees upon the lawn; amongst these we noted *Oncidium Marshallianum*, *Forbesi*, and *dasytle*, *Odontoglossum Cervantesi*, and *Cattleya citrina*, whilst *Lælia majalis*, *autumnalis*, and other Mexican kinds are more fully exposed to the sun. These plants are growing and sending out new roots, but they have not been subjected to this treatment sufficiently long to enable an opinion to be passed upon the system, or the probabilities of its success. G.

SHORT NOTES.—ORCHIDS.

***Phalenopsis sumatrana*.**—This is in bloom at Kew; the flowers are abt 2½ inches across, and richly blotched with chestnut on a yellowish ground. It is one of the most distinct of the genus, and as yet a rarity. —E.

***Odontoglossum citrosum*.**—A well-grown specimen of this lovely Orchid is in bloom at Kew. It bears two of its pendulous racemes; the flowers are 2 inches across, of neat appearance, and in colour white, faintly tinged with violet. —E.

Orchid flowers.—With this I send you a spike of *Lælia purpurata*, which we think is very fine; *Cologyne Massangeana* with twenty-four flowers on spike; *Cologyne speciosa* Lobbi, now flowering freely with us; *Cypripedium Domini*, cut from plant with eight spikes; *Odontoglossum tripudians oculata*, and a *Cattleya Trianae* just opened.—H. SIMPKINS, *The Gardens, Cambridge Lodge, Floddon Road, Camberwell.*

*. The spike of flowers of *Lælia purpurata* is very handsome, the colouring of the lip being intensely dark, but we think the sepals and petals

rather narrow; *Cologyne Massangeana* is very fine; so also is *C. speciosa* Lobbi, larger and richer in colour than the typical plant. *Dominy's* *Lady's Slipper* is good, and the variety of *Odontoglossum tripudians* is excellent. The flower of *Cattleya Trianae* represents a very handsome variety, but it is a peculiar season for this species to bloom.—E.

New hybrid *Phalenopsis*.—There is at the present time in flower in Messrs. Veitch's nursery, King's Road, Chelsea, a quite distinct form of the Moth Orchid. It has been raised from seeds in the nursery by crossing *P. grandiflora* with pollen from *P. violacea*, and it combines in a singular manner the characteristics of both parents. The plant has four leaves, 4½ inches by 2½ inches, in form like those of *P. grandiflora*. The flowers are about 8 inches in circumference, the sepals and petals cream-coloured, flushed and spotted with violet-purple at the base. The base of the labellum is a deep violet-purple with a reddish orange crest. A pair of wings rise from the sides of the labellum of a purplish colour. Those wings are not present in *P. violacea*, but are very prominent in *P. grandiflora*, only they are white and yellow in that species. In many respects the flowers take after the pollen parent. It has not yet been named. J. D.

White-flowered form of the early purple Orchid (*Orchis mascula*).—By far the finest specimens—there are four or five of this extremely rare and beautiful Orchid—that I have yet seen were pointed out to me by Miss Hughes in her richly-planted and well-wooded grounds at Bryn-y-Menai. Some of the spikes were fully 6 inches in length and composed of about thirty flowers, these being of an almost pure white, or slightly tinged with green. They had a most distinct and imposing appearance, and afforded quite a rich contrast to the deep purple of the typical plant. But not only in the cultivation of this species has Miss Hughes been wonderfully successful, for in an old scrub Oak wood hard by where the latter grows we saw the common Butterfly Orchid (*Habenaria bifolia*) quite established and throwing up fine stout spikes of flowers. Both have been growing there for some years, and seen from their robust, healthy appearance, to be quite as much at home in their new habitat as we have ever seen them on their native hillsides. I have no doubt but that our native Orchids may be more successfully grown in a grassy, open wood than in a prepared bed.—A. D. WEBSTER.

FRUIT GARDEN.

W. COLEMAN.

FRUIT STORES.

ONCE more we have an encouraging promise of heavy crops of hardy fruits, trees of all kinds having been literally covered with fine bold blossoms, much retarded, it is true, but certainly not injured by late frosts. Stone and bush fruits, no doubt, will be abundant, but these go into direct consumption as soon as ripe or gathered. Not so our Apples and Pears, which not only may be kept, but improve in quality and value by being kept for a considerable time after they are detached from the trees. This simple operation of picking and storing Apples in October surely should not be a difficult matter; neither is it, where suitable storage accommodation has been provided. In gardens belonging to the owners of the domain a fruit-room of some kind, good, bad, or indifferent, capable of holding a few bushels of Apples, is invariably met with; and the private grower in many of these is often obliged to resort to all sorts of methods for keeping out frost and snow in winter, and heat and drought in the spring. In some few gardens, excellent stores, built upon scientific principles, are met with, but amongst the rich even they are the exception, certainly not the rule. Amongst the tenantry—the masses who are now turning away

from the cultivation of grain or wasting their time in seeking protection, the men we are urging to compete with colonists living thousands of miles away—what do we find? Why, in some few farmsteads a decent Apple room has been provided; in more the look-a-head grower has fitted one up for himself; in the majority a few bushels are carried up into a garret for the use of the family. In the orchards, from October nearly up to Christmas, matters are not more encouraging. Apples by cartloads, by tons, ruthlessly shaken from the trees, are lying in heaps, covered, perhaps, with a little straw. Many of these, it is only fair to admit, are vintage sorts; but in this county alone hundreds of tons fit for human food are allowed to mangle with them, and often rot into the earth, because the growers have neither the energy nor the convenience for storing until such time as the demand will make it worth their while to send them to market. Fruiterers' shops at the present time are filled with American Apples; but why is this? Why are our own sorts conspicuous by their absence? Fruit plantations cover many thousands of acres. Fruit growing is more promising than farming; our climate, barring spring frosts, is right; we have excellent varieties, and numerous intelligent cultivators are constantly, almost daily, proving that Apples can be kept for months after the period of use formerly allocated to them. Only a few weeks ago fine collections of well-kept Apples were shown at Chester. Quite recently Messrs. Cheal and Sons sent a valuable assortment to a metropolitan exhibition, and many growers, no doubt, at the same time held small samples in sound condition. So far good; no one can deny the fact that Apples of the best quality can be grown and kept in marketable condition until the month of May. No one can gainsay the assertion that planting is now being pushed on with unprecedented vigour, as several of our largest nurserymen had sold out their best stocks months ago. A stir at the right end has induced owners and occupiers to plant, to graft, to drain, and to renovate, and all these movements mean increased production; but what benefit will the fruit farmer reap if fruit from the new plantations is to be wasted, converted into demoralising cider, or forced into glutted markets for want of store room. Early sorts which will not keep fill the London markets, and sound sorts, of which we want hundreds of thousands of bushels, if we are to make a mark, must be forthcoming. What the few can do the majority can accomplish, but no time must be lost: life is short, and in a few months hence our orchard produce will be fit for storing. Storing, forsooth! but where is it to be stored? In this county we have 27,000 acres of orcharding, and I much question if we have the convenience for storing ten bushels of Apples to an acre. How, then, are we to compete with the colonists? Whose business is it to set this matter right? Why, unquestionably, the erection of plain, substantial permanent buildings should be performed by the landlord, even if the tenant pays interest on the outlay. The wealthy may build and fit up ornate fruit rooms, but in these Apples will not keep better than in dry, thatched cellars, from which heat and cold alike are excluded and vicissitudes of temperature can be prevented. In many places large roomy stores might be made by excavating from the level at one end into dry, naturally drained banks; in others, plain brick or stone buildings with hollow walls or match-board linings would be necessary, thatch in preference to slates or tiles, as a matter of course, being employed for roofing purposes. The ways and means and modes of structure, however, it is hardly neces-

sary for me to discuss, as the thousands of practical gardeners now living in every part of the United Kingdom, ever ready to impart information, would willingly throw in their assistance. If we visit so-called international shows we see exhibited horticultural buildings and appliances of every kind and shape, practical and impractical, but fruit rooms hitherto have been neglected. If we visit the Bath and West of England and other agricultural shows, we find dairy work upon scientific principles in full swing. The best method of storing and preserving Apples I maintain is of equal importance, not only to the grower, but to the consumer, and for this reason every bushel of fruit that will keep until after the turn of the year should be hand-picked and put away to swell the bulk when colonial competition sets in.

We still have the summer before us; Nature is performing her part; we must not neglect ours; and the sooner we set about converting and constructing, the better will be our prospects for another year.

W. C.

LATE-KEEPING APPLES.

MESSRS. CHEAL AND SON, in their interesting account of their Apple store and remarks upon the late keeping of Apples, have fairly answered "R.'s" criticisms. If Apples, even of early kinds, can be kept literally restful in an even, cool temperature all the winter, they should be found hardly less excellent when eaten than at Christmas. If appearances are so deceitful, how about the gaudy coloured American samples found in our shops in the spring? But no one desires to see the very earliest ripening Apples kept through a long winter. There are plenty of kinds which do not mature till the end of October, and if fully matured, carefully selected, and stored, as shown by the Messrs. Cheal, should be little less crisp or juicy in April than at Christmas. The collections to which special reference was made recently were less remarkable for the colour of their skins than for their firmness and unquestionable freshness, and no one who saw them, so far as I could ascertain, ventured to doubt the excellent quality or the undoubted merit of the method of preservation. There seems such certainty of our having this year a very heavy crop of Apples, that it would be well if many likely to have an abundance of fruits would select good late samples and test diverse methods of keeping them, not merely with a view to preserve their freshness, but also quality and flavour. Many gardeners could perhaps spare for that purpose a peck or so of fruits of a dozen kinds. Would that someone would offer a few good prizes for the best kept six dishes of Apples, the competition to take place at the end of April next. Very likely it would encourage numerous attempts at late keeping.—A. D.

At page 491, "R." seems to ridicule the idea of keeping early and mid-season Apples until spring, saying that if they have lost their brisk flavour they are valueless. Surely he does not mean to say that if these can be exhibited in good condition, even to the eye, in spring, that it will need any great precautions to keep really late sorts as long as it is of any use keeping them. We can grow the best Apples in the world, but we rush them into market—early, mid-season, and late keepers all go together, and one frequently sees Apples, that if stored until spring would be worth 10s. per bushel, being hawked about on costermongers' carts and barrows in the autumn at about one quarter their proper value. As Messrs. Cheal remark, it is not necessary to have expensive structures for storing Apples in bulk; all that is needed is to keep them dry and cool, and free from the sudden fluctuations of temperature. It would be folly to try to keep even the latest until summer, for after Rhubarb gets plentiful, the demand for culinary Apples slackens, and when green Gooseberries get cheap it is time the old crop of Apples was sold out. But to let our late-keeping Apples be sold out by Christmas is surely not one of the things to help English

fruit growers out of their difficulties. If we can grow good Apples, we surely ought to be able to store them safely.—J. G. H.

* * * We have frequently tested the standard autumn and winter English Apples when kept late and as frequently been disappointed with their quality. Improve modes of keeping as much as possible, but there is a greater want still, and that is, first-rate late-keeping kinds. If such exist, they should be more largely planted. Do they exist? Will any Apple grower tell us what Apples of first quality yield their full, brisk, natural flavour in April? It is easy to keep Apples in good external condition without preserving their true flavour. Claygate Pearmain eaten in season and in April are two quite different things. We want first-rate late-keeping Apples. We have too many early winter kinds, and raisers go on adding to them. If people who write about late Apples do not attach any importance to flavour, good cooks are apt to put it to the test, and so are those who are asked to eat the Apples raw.—Ed.

FORCING STRAWBERRIES.

YEARS ago when I was a beginner, and even at the present time, no less size than a 6-inch pot, and in some instances 8-inch pots were used for growing Strawberries. I have for years given up the large pots and now use none larger than 5-inch, and find that I am a gainer thereby. The advice so often given that runners should be taken early still holds good, for they can scarcely be taken too early, and that the pots should be full of roots and the crowns well matured before the resting period is also sound advice. As these are the two principal elements of success in after treatment, I maintain that as the plants have but a short time in which to do their work, these conditions can be with much more certainty ensured in small pots than in large ones. I have found that the crop is no better if so good, and the fruit no finer in large pots than in small ones, and, moreover, the percentage of blanks or non-bloomers is much greater in large than in small pots. And again, large pots induce the plants to produce double or triple crowns, a thing I do not like to see, because that is generally going on when the plants should be ripening their crowns; consequently they are imperfectly matured, and when in the forcing house a superabundance of foliage and runners is the result, and very little bloom in comparison, besides taking up so much room unprofitably. I am willing to admit that plants in large pots are an advantage, as they do not need water so often as those in small ones, but as the plants require looking to once if not twice a day, the advantage secured in time is not so great after all. Some growers assert that plants in small pots are more liable to the attacks of red spider than those in large pots, and suffer more and sooner in consequence, which is to some extent true, but this is an enemy which must be fought against. By copious syringing before the plants come into bloom and plenty of moisture in the house afterwards, this is by most growers kept at bay. Now as to the difference of room taken up by the two sizes, it will be found that for every score of 6-inch pots twenty-five 5-inch pots can be comfortably put into the same space, and if the quantity of fruit on each plant is the same in both cases, the advantage clearly points to the use of small pots, and where large quantities are forced the advantage is still more apparent.

Folkington Manor.

THOMAS RECORD.

SHORT NOTES.—FRUIT.

Curl in the leaves of Peach and Nectarine trees.—Will any reader of THE GARDEN kindly say what causes the above, and also recommend a plan for treating trees so affected?—C. B.

Grape Golden Queen.—This has proved itself a wonderfully hardy Grape, bearing the roughest treatment when other varieties have given way, at the same time producing yearly a good crop of fine fruit, large in berry, well colored, and devoid of that dullness one often sees, at the same time keeping from July to November, as they did last year.—G. BOLDS, *H. p. in Garden.*

Prizes for preserved fruits.—I notice that in the schedule of prizes of the Harpenden Horticultural Society, the annual exhibition of which takes place on August 24, there is one class for six bottles of preserved fruit. This is a novel and praiseworthy idea, but I notice that nothing is

stated as to whether the fruits so preserved are of the current year or of 1886. I think the test would be a much better one if it was stipulated that the fruit must be of 1886 growth.—R. D.

Tomatoes.—In answer to the inquiry by "G. A. S." in THE GARDEN (p. 492) as to what may be considered the average weight of crop per plant from the large red variety of Tomato, I have already gathered on an average 3 lbs. of fruit from a long row of pot plants, and there is yet another pound of unripe fruit on each plant. These plants, growing either singly in 10-inch pots or in pairs in 12-inch pots, were stopped beyond the third cluster of fruit, and have received liberal treatment from the first. This weight, viz., 1 lbs. per plant, I consider a good average, especially so early in the season, but if they were planted out and allowed more head room heavier crops should be taken. The bulk of our fruit was marketed, and in a provincial town realised 1s. 6d. per lb. None will be sold for less than 1s. per lb.—I. M.

Strawberries in beds.—There is a good deal to be said in favour of growing Strawberries in beds, as alluded to by "Hortus" in THE GARDEN (p. 492), for in these days, when the calls on a gardener are so numerous, it is wholly impossible in places that are deficient in labour to get everything done at the right time. It is far better to make sure of a full crop of medium-sized fruits than to go in for those of exhibition size, and fail to carry out all the details. I have been often surprised not only at the quantity, but the quality and size of fruit of Strawberries grown on this system, or, what I suppose some would call, want of system, and have a vivid recollection of one of the old school of gardeners in Kent, who always had such an abundance of fruit on his Strawberry beds that there was really no space for weeds to grow, so thick were the plants, and as to mulching, they did not require it, for the fruit could not get splashed by loose soil, as none was visible. A good dressing in winter was all they got. Anyone having heavy demands to meet for culinary and preserving fruit, even in places where the finest dessert fruits are required, cannot do better than supplement their stock of single crowns by a few beds of thickly grown plants, as these one-year-old crowns never fail to flower freely. I have on many occasions been struck with the produce of a small plot of runners dibbled in thickly in autumn when clearing the beds. No matter how late or small, they always pushed up vigorous flower-spikes and carried good crops.—J. G. H.

SEASONABLE WORK AMONG FRUITS.

PINES.

As many of the early-started Queens will now be ripening, arrangements should be made for their removal to a warm, but somewhat drier structure in which they will finish off and keep for some time after they are ripe. A light, early viney, from which the crop is now being gathered, is an excellent place for this purpose, as the air and warmth will improve the flavour, whilst the indirect sunlight will perfect the colour of the fruit. If stock is scarce and the suckers are likely to suffer, they may be detached and potted as soon as the plants are taken out, and at once plunged in a sharp, moist heat, where possibly they will be well rooted by the time their parents are relieved of their fruit. In the general fruiting house, from which the finest Pines will be obtained, the temperature may now range from 70° by night to 80° or 85° by day and 90° to 95° after closing, with sun heat and plenty of atmospheric moisture. If the bottom heat, as sometimes happens after the firing is slackened, shows signs of declining below 80°, an effort must be made to restore it without disturbing the plants. This may be accomplished by giving the plunging bed a moderate supply of hot water and packing the material firmly about the pots, or, this being insufficient, a good layer of fresh fermenting tan or leaves placed on the surface will most likely produce the desired effect without jeopardising the crotch roots. As days increase in length and the sun gains power the watering of the plants will be

more frequent, and warm, clarified liquid, weak guano, or soot water, whilst the fruit is swelling, may be used at every watering. The latter also may be used for damping the surface of the bed and feeding the stem-roots formed in the axils of the lower leaves. The watering of Pines, it must be borne in mind, is a matter requiring great care and judgment; therefore the young beginner should always ascertain that each plant actually requires water before he supplies it. Then the watering should be thorough, but on no account should dribblers be given to keep water away. Assuming, then, that the barrel is taken round, say once a week, every plant must have a full supply or none, as it is much easier to make these slow-perspiring subjects too wet than to restore them to a healthy growing condition.

Succession plants.—The weather, hitherto so ungenial, has prevented cautious cultivators from proceeding with the transfer of young plants into their fruiting pots; but, provided all necessary preliminaries have been gone through and the compost is dry and warm, advantage should be taken of the first change to mild, gleamy days for carrying out this important operation. If, owing to the delay, the pots are extra full of roots, the plants must be carefully watered to ensure a moist-growing condition by the time they are transferred to others of larger size, otherwise premature fruiting may speedily follow. Free varieties that have filled 6-inch and 8-inch pots with roots may be shifted into 10-inch and 12-inch pots, whilst others that are not ready must be turned back, as premature potting cannot be too strongly deprecated. First-rate Pine soil cannot always be met with, but where it does abound the best fruit is generally grown without much trouble, whilst soils which require all sorts of correctives rarely turn out highly satisfactory. The main staple is turf of a sustaining nature that will hold its fibre for a twelvemonth, but where this is not forthcoming the roughest part of burnt earth, charcoal, lime rubble, chopped straw, and peat are often added. Whatever is used, the compost in a dry state should be firmly rammed to ensure the passage of water through the old balls, and not an hour should be lost in getting the plants replanted in their new quarters. If the heat in the recently prepared bed is on the decline, 85° to 90° at the base of the pots will favour safe and rapid recovery from the check without the aid of water, but the syringe must be used for dewing the foliage and thoroughly moistening the walls on fine mornings, and again when the house is closed for the day. Light bright roofs may require a little shade for a few hours on fine sunny days, but this must not be carried to an extreme, neither must fire-heat be so strong as to necessitate the inlet of an abundance of fresh air. When the plants have taken to the soil, the first supply of tepid water may be given to the roots, and ordinary treatment, as a matter of course, will be resumed.

Suckers from late winter and early spring fruiterers should be potted up as they are detached and plunged in a brisk bottom-heat near the glass. Snug span-roofed pits heated with hot water and well filled with fermenting leaves answer best, but excellent plants in days gone by have been expeditiously made without the aid of fire-heat. The main factors in this mode of starting suckers are a steady bottom-heat ranging about 90°, good linings, and dry external covering through the night. A frame, in fact, that will produce good Cucumbers is an excellent nursery for summer suckers.

VINES.

Work in this, as in all other departments just now, is very pressing, but on no account must the most trifling details be neglected. Early houses in which the Grapes are ripe will require more air and less moisture, but the inlet of the first and the discontinuance of the second must be gradual. Indeed, early Vines, with three or four of the hottest months before them, must have a liberal supply of atmospheric moisture, and the Grapes will be none the worse for it, always provided there is a free circulation of air, and fire-heat is just sufficient to prevent condensation. A moist, growing condition of the internal borders is also essential to the keeping

of the Grapes, the production of laterals, and last, but not least, the prevention of the ravages of red spider, this year more plentiful than welcome. Outside borders, as a matter of course, still remain covered, and, be the material what it may, great caution must be brought to bear upon its disturbance. A few bright days in June may induce some to reduce, but this early move before we have true summer weather is dangerous practice, and then even sufficient to form a heavy mulch should be left until the time arrives for top-dressing in the autumn.

Mid-season houses.—Next to the daily routine of airing, syringing, and watering, the most important work will be stopping, tying, and the prevention of the spread of insects. Spider is the most troublesome—some say bug, but of the two give me the latter, as patience and methylated spirits will keep it out of the bunches, and the tar dressing in winter, without hurting the Vines, will annihilate it. If thinning and shouldering have not been brought to a close, advantage should be taken of cool mornings and evenings for taking out all stoneless berries and giving further relief where necessary. Grape-thinning is a tedious, but withal a pleasant occupation, requiring great care and skill, also a thorough acquaintance with the capabilities of the Vines, as some varieties, especially Hamburgs, vary so much in size of berry when ripe. Here we have a variety which produces large bunches and hammered berries often $4\frac{1}{2}$ inches round, and another whose bunches are large, but loose, with thin-skinned, luscious, oval berries, not nearly so large. The first requires as much thinning as a Gros Colmar; the second carries one-third more berries to the pound, and being loose-shouldered, these two require quite distinct treatment; otherwise the first will bind, and the second will fall literally to pieces when cut and placed upon the dish. When properly thinned, every bunch should retain its shape when cut and laid on its side, and yet all the berries should be fully developed. Ordinary Grapes do not require much shouldering; indeed, many good growers never shoulder at all, but gently raise the shoulders, to prevent the berries from binding. I am in favour of shouldering, and the majority of exhibitors who succeed in colouring large clusters adopt this method of increasing their size.

Late Muscats and Lady Downe's.—Having renovated my external border in the one and the internal border in the other house, in the latter, when the buds were swelling, the Vines have been allowed to break slowly, and although later than usual, the rods and foliage already prove that the roots are working in the new compost; which, by the way, fermented and stood for a long time at a temperature of 60°. Many growers are afraid of going vigorously into late borders when the buds are swelling; but this is their only course, and I can strongly recommend it. The cool system of starting throws away a little time in the spring, but early closing soon pulls it up, and renovated Vines always set and colour their berries well. Renovated Vines require heavy mulchings to draw the roots upwards, an abundance of atmospheric moisture, and, the better to stimulate fresh root-action, weak laterals should have full play, strong ones only being stopped until the trellis is covered with foliage. Beyond this no one attempts to go, but bearing in mind that the leaves are the lungs, an effort to get every square foot beneath the roof covered should stand first and foremost.

Thinning.—Lady Downe's and Alicantes cannot be thinned too early after they are set; in fact, the first operation is what I term cleaning—no bad practice for young fellows who require training into the handling of the scissors. Experienced hands, when stoneless berries lag behind, then follow, and this time over, completes the operation. Muscats, on the other hand, require a few days' grace to enable the perfectly fertilised berries to declare themselves. This stage reached, the thinning of a house of Muscats is a brief and, being the last, a very pleasant operation. Young beginners should bear in mind that early morning, when the body is cool and the muscles firm, is the best time to thin Grapes; further, they should never touch the berries

with the flesh or hair—a very common cause of rust, which can easily be avoided by the use of a small forked peg or hook; and on no account must the stalks or berries be injured by the scissors.

Pot Vines intended for next year's fruiting having been stopped at the proper height will now thicken amazingly. Good top-dressing and liberal supplies of diluted liquid may still be given to the roots, which, by the way, must not be allowed to run away into the plunging material. When a pot Vine takes its first hold of this, it puts on great force and looks extra promising, but the day of reckoning comes; therefore it is best to rest satisfied with firm short-jointed canes with plump buds which will ripen early. When the young rods begin to change to a bright cinnamon-brown, plenty of heat, but more air must be given, and the better to ensure prominent buds, all laterals, from the base to the pruning-point, must be closely pinched, those above being left for the present to act as safety valves. Cleanliness being important, the syringe must be freely plied to keep the foliage fresh and free from spider, as a fine show cannot be expected from buds whose main feeders are injured or destroyed.

FIGS.

By this time many early houses will have been cleared of the first crop of fruit, and although the second may be well advanced, there will be ample time for carrying out the extermination of insect pests which dry heat may have established. These, in sharply forced Fig houses, unfortunately are numerous, but there are few which can stand against incessant syringing, either with pure water or safe and well-tried insecticides. Red spider, mealy bug, and brown scale form a formidable trio, which can only be checked during the time the fruit is ripening; not so when the crop is off, as pure water, applied with some force, will break up the web of the first; repeated syringing with paraffin and water, a wineglassful of the first to three gallons of water, will melt bug; and water uncomfortably warm to the hand will check, if it does not completely destroy the scale. A single application may not suffice, but constant attention for two or three weeks will produce the desired effect. In order to have the second crop fruit fine, fresh mulching and copious watering with weak stimulants must not be neglected, neither must the thinning of the wood and fruit be overlooked. Ventilation, now the weather is getting warmer, must be on a more liberal scale, for without fresh air and plenty of light neither colour nor flavour can be secured, and, it is needless to say, a pale vapid Fig is useless and uneatable. Heat, as a matter of course, is imperative, as good fruit cannot be obtained without it; therefore, until the nights become much warmer, the pipes must be regularly warmed to ensure a minimum temperature of 65° to 70° and a maximum of 80°.

Succession houses.—If started at the right time, ripe fruit from these should be ready for taking up the supply. When the flowering stage is complete and the fruit changes from a dense green to a paler colour, the syringe must be confined to the stems and walls, as direct syringing is one of the common causes of cracking. The floor of the house, too, may be liberally damped on fine days, when danger of condensation and spotting will be reduced to a minimum by a free circulation of air. If the fruit is wanted for home use it may hang until quite ripe, and then, provided the house has not been kept too close and moist, sound Figs will keep for a few days in a dry airy Grape room. Connoisseurs do not object to a fine fruit that has cracked or is slightly on the change, but for market purposes it must be sound and perfect, and, as a matter of course, not over-ripe.

Late houses from which not only one, but a successional, crop is expected best answer this purpose when the trees are trained on the extension principle and stopping or pinching is omitted. As these are supposed to ripen their fruit and wood without the aid of much, if any, fire heat, the young shoots should be laid in thinly, and moderate growers, like Brown Turkey, White Marsilles, and Negro Largo, which produce as many fruit as

leaves, give the best result. The better to secure this fertility the roots should be checked annually, the root run limited, and the compost not over rich. Plenty of water through good mulching when the fruit is swelling, of course, is imperative, but the first may be considerably reduced and the second partially removed, also half-swelled Figs rubbed off when the time arrives for ripening up the wood.

Pot trees intended for next year's early forcing should now be shifted for the last time and plunged in a light pit with just sufficient head room, and not too close together. When they have taken to the compost, consisting of friable, turfy loam, old lime rubble, and crushed bones, weak liquid may be freely used to favour the rapid formation of roots, a pot-bound condition being one of the essentials to thoroughly ripened trees fit for forcing. The syringe here, as in fruiting houses, will play a very important part, and early closing, with strong sun heat and vapour, will hasten recovery from the slight check which generally follows repotting. If pinching becomes necessary to the formation or shape of the trees, it should be discontinued after the end of this month, otherwise newly-formed points will not have time to ripen. W. C.

Asphalte walks.—It is a mistake to attempt to make tar-paved walks with ashes or any other substance which will not withstand wear. Further, unless the materials used with the tar are previously burnt like ballast, or roasted and mixed whilst hot, the work will be unsatisfactory. The tar should also be in a boiling state; the mixture of pitch I consider of no value. First choose stone of a flinty nature, make a fire of wood and cover with coke, breeze, or small coal; put on a layer of stone; throw more of the above fuel over the stone, then another layer of stone, and repeat the operation until sufficient for the purpose has been burnt; it matters not if some of the stones are large, the heat will act on them, as water does upon lime. Whilst as hot as it is possible to work, sift into two sizes—the rough for foundation of the walk, the finer for the surface. Mix thoroughly with boiling coal tar upon a platform of planks and put in heaps for use, care being taken that the material for the top layer consists of pure stone and tar, all dirt and dust being sifted out before using. Should it be any considerable time before it is used, it may be necessary to sprinkle some boiling tar over the material to make it work. I may mention that any handy labourer who has burnt ballast would be able to burn the stone. Having the material ready as above, the next consideration is the foundation of the walks. This should be perfectly solid and in no way liable to sink. The rough material should then be laid on about 2 inches in thickness and firmly rolled; then lay on the finer coating of the paving to a depth of about 1 inch, and again roll firmly. Too much stress cannot be laid on the importance of rolling, as the heavier the roller the better. One of stone is the best for the purpose. Edgings of wood, tiles, brick, or other suitable material are necessary to prevent the sides crumbling away. The surface should then be sprinkled over with coarse grit, crushed shells, or spar, and again well rolled. As regards maintenance, the only work necessary is to brush hot tar over the surface periodically and throw over, as in the first instance, crushed shells or fine sharp sand. The above method will give a sound walk alike in all weathers, cheap to maintain, upon which weeds will not grow, and from which no perceptible odour of tar will emanate if properly done. The mixing process is that which requires most experience, as it is always most satisfactory when performed at the right heat.—E. D.

Grubs in soil.—Would you kindly tell us the name and nature of the grubs sent herewith, and whether they are in any way injurious to plants? We find them in clusters round the roots of plants in the open ground.—COLLINS BROS. AND GABRIEL.

* * * In reply to Messrs. Collins Bros., the grubs are the chrysalides of a fly; in their present inanimate condition they are quite harmless. From their position near the roots of the plants I imagine the grubs had fed on the roots until they were full grown, when they turned into chrysalides. Turn up

the soil when practicable and give the birds a chance of getting at the grubs, or give a good dressing of lime or soot to the surface, which may prevent the flies when they emerge from the chrysalides leaving the soil.—G. S. S.

FERNS.

W. H. GOWER.

ONYCHIIUM AURATUM.

THIS is a member of a small genus nearly allied to *Pteris*. It is a native of Assam and Nepal, where it is found on the mountains up to between 4000 and 5000 feet elevation. It also



Onychium auratum. Engraved for THE GARDEN from Nature.

occurs in Burmah, New Guinea, and several of the Malay Islands. The illustration here given was taken from a side pinnule of a frond sent from Upper Assam, a glance at which will convey a better idea of its beauty than volumes of words. The fronds grow from 1 foot to 2 feet in height, supported upon a pale yellowish brown stem; the texture is coriaceous, and the colour rich deep green. When fertile, as our engraving shows it, the broad membranous involucre and sori are bright golden yellow, which produces a fine contrast with the vivid green of

the infertile fronds. In this latter state the segments are more finely divided than when fertile. It requires stove temperature, and should be grown in soil composed of about three parts turfy loam and one part each of peat and sand. The spores do not appear to grow readily; therefore increase must be effected by division, which is best done just before new growth commences early in spring.

OUR NATIVE FERNS.

THE HARD FERN AND ITS MOST DISTINCT VARIETIES. Although a thoroughly British plant, the Hard Fern (*Lomaria Spicant*) is one of the most cosmopolitan species known, as, besides its being found in a wild state in almost all parts of Western Europe, it is equally common in Denmark, Sweden, and Norway, also in North-west America. It is even found in the Canary Islands and at the Cape of Good Hope. In England it has been found in St. Faith's, Newton Woods, near Norwich; at Brousgrove Lickey, in Worcestershire; in the Vale of Dodecombe, near Painswick; at Hainsford, in Norfolk; in Anglesea, in various parts of Hertfordshire, and of the northern counties. It is also spread all over Ireland, but principally in the counties of Wicklow and Clare. It is found in Cumberland and in Forfarshire at an elevation of 700 feet to 800 feet above sea level; but in Aberdeenshire it occurs on the Cairngorm Mountains at much higher altitudes, varying probably from 1000 feet to 1200 feet. Gerard, in his "Herbal," says: "It groweth in most parts of England, but especially on a heath by London, called Hampstead Heath, where it groweth in great abundance." However abundant it may have been in that locality in Gerard's time, it is now pretty well extinct there.

The Hard Fern is one of the commonest of our evergreen species, and its striking habit, as well as the rich deep green colour of its barren fronds and its evergreen nature, render it one of the most useful plants for the decoration of the outdoor rockery, where, in a moist shady nook, it forms a very beautiful and most conspicuous object. Its habit is very compact, forming a dense mass of fronds which are of two entirely distinct characters. The barren ones, which are very numerous and vary in length from 8 inches to 12 inches, are evergreen and become prostrate. The fertile fronds, on the contrary, are always erect, and vary from 12 inches to 20 inches in height; they are also less numerous and of a more scanty appearance, as their leaflets are much narrower through their edges being recurved; they are besides more pointed and more distant from each other than those of the barren fronds. The Hard Fern is one of the least fastidious of all our British species, for although it prefers moist situations with a northern aspect, it also succeeds in a stiff, clayey soil and when exposed to the more or less direct action of the sun's rays. If it has its preferences, the Hard Fern, according to the authority of some practical men of great importance, has also one very decided antipathy—it dislikes lime in any form. Messrs. A. Stansfield and Son, of Todmorden, Lancashire, who for many years have made a speciality of the culture of hardy Ferns, and whose name in connection with that interesting class of plants is generally associated with those of eminent men like Moore, Woollaston, R. Sim, Ivory, &c., referring in their catalogue to the antipathy of this Fern towards limestone, give it as their opinion that "lime appears to be as injurious to the *Lomaria Spicant* among Ferns as it is to the common *Ling* among flowering plants. Lime in all its forms, therefore, should be avoided; even water containing lime should not be used." A fact of primary importance, and one which may be taken as a safe guide in its cultivation, is that in its wild state it is found in perhaps a greater variety of soils and situations than any other of our native Ferns.

Although the genus comprises only one solitary species, this latter has produced naturally, and also through cultivation, numerous interesting varieties, the most distinct and most attractive of which will deserve special attention on the part of all Fern growers, the more so that, in hardness or in decorative qualities, they are equal to the species from which they are raised.

Several crested forms of the Hard Fern are in commerce; among these we note *Lomaria Spicant cristatum*, whose fronds of normal shape seldom exceed 9 inches in height, and differ from those of the species in having their apices furcate or crested. This form has been gathered in a wild state in several places, notably in the neighbourhood of Tunbridge Wells. In *L. s. Aitkinianum* we have a remarkable crested form found some fifteen years ago in the west of Ireland; it is essentially distinct from all other crested varieties on account of its having its fertile as well as its barren fronds terminating in large crested and ramose heads; but that extraordinary development does not show itself until the plant has attained full dimensions. The best, however, of the crested forms is *L. s. ramosum*, which is a variety with short, prostrate, barren fronds, each of which are divided at their extremity into two branches, each again repeatedly branched. The ultimate branchlets are very crispy, and form a nearly circular crest, fully 3 inches across. The fertile fronds, which have their divisions contracted like those of the species, are similarly taller, erect, and produced from the centre of the crown; they are equally furnished at their extremity with a crest, which, however, is of smaller dimensions than those found on the barren fronds. The splendid variety called *L. s. multifurcatum*, without having its fronds properly crested, is exceedingly ornamental; for the barren fronds, which are nearly prostrate and comparatively very large, measuring, in some cases, 2 inches in width, all end in a termination of five or six forked-branched points of a particularly flat nature, and measuring 3 inches or 4 inches across. It is an extremely rare Cornish variety, whose fertile fronds, nearly erect, possess an equally many-forked termination. Of the other forms, that cultivated under the name of *L. s. projectum* is probably the most extraordinary sport known. Its fronds, of dimensions similar to those of the species, possess a very curious appearance, as they are narrow, and in some parts almost entirely deprived of lateral lobes on each side of the stalks. In some fronds the lobes are extremely short, but at intervals come out to the usual size. It is very curious and distinct. Equally pretty are the varieties *concinnum*, *anomulum*, *heterophyllum*, and *variabile*; while an entirely different appearance is possessed by *L. s. caudatum*, with its short and narrow barren fronds tapering towards the point into an undivided tail-like end. The same may also be said of *L. s. imbricatum* and its sub-varieties *crispum*, *erectum*, in which the fronds, about 8 inches long, are nearly ovate, often symmetrically arranged, with their lobes so markedly overlapping as to make the frond appear almost double. In most of these imbricate forms it is remarkable that the fertile fronds are very little longer than the barren ones, and that in the sub-variety *erectum* their lobes are turned back so as to form almost a cylinder.

The compost in which the Hard Fern and its varieties grow most luxuriantly is one made of loam, peat, leaf-mould and sand in equal parts. In planting, it will be found most beneficial to the plants to intermix, if possible, some small fragments of broken sandstone through the compost, which will thus be rendered more permeable, although retaining at the same time its permanently moist nature. It is in great request for the hard fernery, but, like many other British Ferns, it may with great advantage be equally used for the decoration of the greenhouse and conservatory, as some very handsome specimens of it in 5-inch pots, annually produced by some of our market growers, abundantly testify. This, however, is not by any means a new notion, as more than twenty-five years ago a writer says:—

Having grown it to a great extent, I can say, confidently, that it will grow, and that, too, most luxuriantly, in a

greenhouse. I have had plants of it in 8½-inch pots throw out eight-and-thirty fronds, fourteen of which were fertile; and it was that, and a fine plant of *Scolopendrium undulatum*, that attracted the notice of most visitors, for they were really noble plants.

The most common, as also the most reliable, method of propagation employed for the increase of the varieties of the Hard Fern is by division of the crowns, as very little dependence can be placed on their reproducing identically the varieties in any other way; but the species, although sometimes also propagated by division, is much more readily reproduced by means of seed, the spores being ripe about the beginning of September.

S. G.

ROSE GARDEN.

T. W. GIRDLESTONE.

ROSE NOTES.

WHIT SUNDAY come and gone, and the only Roses in bloom the extremes of prickly and prickless—the alpine Rose without a thorn, and the thorniest of Roses, *R. spinosissima*. No *Maréchal Niel* or other Teas on the walls out of doors in May this year, nor any great prospect of their presence until after the middle of June. In fact, the plants on walls do not seem a bit forwarder than the plants in the open, though if the sun were to shine a little, they would probably not be later in bloom than last year. Some of the single Roses are doing their best to try and give colour to the seemingly incredible assertion of the almanac that it is summer time, for in addition to *R. alpina* and *R. spinosissima* above mentioned, *R. kantschatica* and some of the garden varieties of *R. rugosa*, such as *Comte d'Éprémesnil*, are showing their petals, and a gleam of sunshine would bring out *R. myriacantha* and all the *spinosissima* progeny of the tribe of double Scotch Roses. The Austrian Briers, too, promise wonderful bloom at an early date, and *R. polyantha* seems masked with a more solid sheet of buds than ever. All these Roses and the plants of *R. macrantha* about whose situation "*Hortus*" inquires are growing here, *Summingdale*, Berks, in front of an 8-foot split Larch fence facing south-east, in a part of the garden sheltered from high winds, but which from the proximity of buildings and trees, does not get either the early morning or the late afternoon sun.

Unfortunately, several instances of Orange fungus have already been observed upon some of the Scotch Briers, as well as upon one or two sucker-like shoots from the base of some dwarf Hybrid Perpetuals. It is generally on those shoots that come from below or very near the ground that this pest is first seen, and as the resting spores of the Orange fungus lie on the ground through winter, ready to attack any Rose growth with which they may be brought into contact in the spring, perhaps the exclusive cultivation of standards on a piece of ground where the fungus was troublesome might secure its extermination. It has been suggested that as Hollyhock disease was probably brought into gardens by the common Mallow, so the increased use of the Brier (which is liable even in the wild state to the attacks of Orange fungus) as a dwarf stock may partly account for the recent prevalence of the disease in gardens. This, however, is hardly probable, for, in the first place, hardly any other stock than Brier was formerly used for garden Roses, and in the second place, dwarf plants on *Manetti* have of late years been overwhelmed with red rust, while dwarf plants on Brier close by have almost entirely escaped. A parallel is found in the case of mildew, which hardly ever attacks the *Manetti* itself, while Briers, especially in the

seedling form, are frequently smothered with it; and yet time after time plants worked on *Manetti* have been seen white with mildew when plants on Brier in the same garden have been green as Leeks. Mildew, however, is not so unmanageable a plague as Orange fungus, for the avoidance of a visitation of which no amount of pains devoted to the hunting for and destruction of every bit as it appears can be considered as misapplied.

Orange fungus.—This pest has made its appearance to-day (Whit Monday) on a plant of *Madame Montet* and on a plant of *Duke of Edinburgh* in quite another part of the garden. The two or three affected leaves have been burned, and a careful search has failed to discover any further symptoms of the disease. The plants above mentioned are on beds quite 100 yards apart, and no reason is apparent why they should be touched and other plants escape. It is to be feared, however, that there will be no difficulty in finding other cases in a few days. Last season the first appearance of the fungus was noted on the 7th June.—NORTH HERTS.

Rose Lady Mary Fitzwilliam.—This grand Rose well merits all the praise that Mr. Girdlestone bestows upon it (p. 457), and it has this additional recommendation that it forces well, and with little trouble makes a first-class pot Rose. I first saw it at the National Rose Society's Show at South Kensington in 1883, and I forthwith obtained plants from Mr. Bennett, the raiser. These were turned into the open border, but they made little growth, and a few buds were secured with difficulty. Two years later the same plants were repotted and grew away, and this spring they were pruned early in February and placed in heat. Notwithstanding the cold, sunless spring, they grew well, making new shoots 18 inches in length, and bloomed magnificently—form, size, and substance being all that could be desired. In working stocks, too, the buds of this Rose seem to take better than those of almost any other variety; but it is well to select them as far as possible from the base of shoots, the habit being so floriferous that, if taken from near the flower-bud, they often grow for an inch or less and then attempt to flower on their own account. Having said so much for this Rose, it must be admitted that in the open it strongly objects to rain, or even dew, yet seems to find considerable difficulty in keeping its outer petals clean, and shows here a decided preference for the standard over the seedling Brier as a stock.—NORTH HERTS.

SHORT NOTES.—ROSES.

Rosa berberifolia.—Some time ago I received some further information about the habits of this Rose. It is found on rocky slopes, sometimes in patches and sometimes in single specimens growing in small fissures, where the roots are cool and somewhat moist, and the top exposed to the aridity of an Afghan summer, or to the sharp cold of a Central Asiatic winter. If we could imitate these conditions approximately, there would be no difficulty in the cultivation of it in plant.—MAX LEICHTLIN.

Maréchal Niel Rose in the open air.—Now and then a good specimen of *Maréchal Niel* is seen in the open air, but as a rule it fails to grow and bloom satisfactorily out of doors. The growths in the open do not generally develop freely, and the blooms rarely appear in any quantity or in first rate condition, and although finely coloured blooms may sometimes be gathered from a plant on a sunny wall, disappointment will be the rule. Let those who have a greenhouse plant it there.—J. MITCHELL.

Tussocky Grass parks.—The complaint of Mr. F. Manson the week before last is a common one. Grass lands laid down permanently around mansions do get tussocky unless cut, burned, or limed and chain-harrowed severely. The rough patches get as thick as a mat, and cattle will not eat them down. In some parks the whole bottom gets too thick, and when in that state it is a long time before the Grass gets green in spring—not until the young Grass has grown through, and the crop is never so good. In the old deer parks here it would require a heavy steam harrow to tear up the matted bottom. Liming and burning are both resorted to, but the fire just singes the tops of

the Grass, and liming is an expensive matter over many hundreds of acres. I have seen a good dose of gas-lime, put on early, burn every particle of herbage off to the roots, and a fine, even short pasture result afterwards. A small park like that of Mr. F. Manson's might soon be cut bare enough with the scythe. A man should go over the rough patches and shave them off close to the soil. Afterwards the tops should be burned along with any other combustible rubbish, and the ashes scattered over the ground. If the patches consist of coarse Twitch and other uneatable Grasses, the patches should be pared and burned, and it would pay to do so, because a well-grassed park grazes the most cattle or sheep. Plenty of cattle should be turned in at this season; they will tread and eat it down wonderfully, and can afterwards be reduced in number. S. W.

KITCHEN GARDEN.

W. WILDSMITH.

ASPARAGUS NOTES.

It is a singular thing that, although Asparagus grows wild not far from here, its culture is still looked on as a mystery only to be known to the few, while to the majority it is still a forbidden luxury owing to its prohibitive price, and the foolish nostrums that are said to be necessary for its culture. Anyone who can grow good Potatoes or Cabbages can grow Asparagus, and why it has been so long banished from small gardens is a problem few could solve. In the neighbourhood of Southampton I have seen it growing wild close to the water's edge, where the salt spray dashes over it in times of storm and flood. Where the soil is sandy and well drained it appears to thrive amazingly and to be long lived. A plant that will spring up and grow freely in a gravel walk can hardly be said to need much coddling. The one thing that I find Asparagus does not like is a cold stiff soil, for, although it will grow in any soils, the roots perish in winter in those that are cold and undrained; if, however, it is porous, Asparagus will thrive, and the poorest soils may be made into prolific Asparagus beds by the addition of manure, sea-weed, or town refuse. It is one of the crops that ought to be largely grown on some of the south coast farms that are going begging for tenants, who cannot make cereals pay, and do not appear to know of any other crop. It must be a very poor crop of this vegetable that will not return more profit to the grower than the best crop of corn that can be grown. Certainly bundles of Asparagus, although they may be kept longer than many vegetables with the stalks in water, are never so good as when fresh cut, and I feel sure that anyone growing it very largely near the coast, where the soil is especially favourable, would find it a good venture. The first thing to do in growing Asparagus for profit is to provide the plants at the cheapest rate, and for this purpose there is little difficulty in the matter, as no plant is more readily increased from seed.

SOWING THE SEED should be done in March or April at the latest, and enough plants for an acre may be raised on a small plot. Conover's Colossal, Battersea, or Grayson's Giant are good selections, and if sown thinly in drills 1 foot apart, and allowed to stand one year, nice plants fit for planting in April or May, according to locality, will be found the following season. I like to plant just as the young growth is pushing through the soil, and if one has the plants close at hand, they can be removed from the seed-beds to permanent quarters without injury to roots or tops after growth has started. If procured from a distance, it is best to get them when quite dormant, for the reason that the roots are much less liable to injury from becoming dry, and the crowns are all closely folded up, and therefore safe. In preparing the soil for new beds, it is advisable to trench or loosen the soil two spits deep, but if of poor quality, too much of the lower spit should not be brought to the surface, as in this locality a great deal of the soil is too shallow to admit of trenching in the manner in which it is done in deep alluvial soils, yet it grows

Asparagus to perfection after it has been well loosened and the top spit well enriched. Manure should be mixed with the top spit, but it is a mistake to bury it deeply in gravelly soils, as the nutriment gets washed away into the sub-soil before it can be taken up by the roots, and a little spread on the surface after planting will do more good. If this work is done in winter and the surface left rough for the frost to act on it, there will be little needed at planting time beyond marking out the beds and drawing the drills. Beds about 1½ feet wide are the most convenient, and three rows of plants are sufficient. Stretch the line down the centre and draw a deep drill, and in this spread out the roots of the young plants, then give them a coating of sand (sea-sand answers well), and return the soil; draw the two outer lines at equal distances from the centre and edge of the bed, and treat like the first row, and then add a little soil from the alley, and the work is complete. The attention during the first year after planting will be simply to keep the surface free from weeds, and in winter, as soon as the tops die down, cut them off, and give a good coat of manure on the surface, leaving it rough throughout the winter; and in spring, before growth commences, rake it down fine, and cover with soil from the alleys. Never dig between the beds low enough to disturb the roots, as the best feeding ground is in the alleys, and if growers value their Asparagus, they will not crop the alleys after the beds begin to bear.

During the second year after planting the growths made by the tops should reach 5 feet high, and, to prevent injury from wind, some good stout Pea sticks should be inserted along the sides of the beds, as on the perfect maturation of the top growth will depend the strength of the growths the next year. Beyond keeping free from weeds, little other work is required until winter, when the tops must be cleared off and the beds dressed with manure as before. A good sprinkling of salt in spring not only assists growth, but helps to keep weeds in check. The third season after planting very fine shoots should be produced, but it is not advisable to cut young beds too hard or too late in the season, as with careful treatment Asparagus beds should remain prolific for at least twenty years.

If one has not got space for beds, very fine produce may be grown by putting in a single crown in any vacant space, such as between bush fruits or similar spots. I have a very fine root that never fails to send up a quantity of the finest shoots from a self-sown plant that sprang up close to the stem of an Apple tree, where we let it remain, and without any special preparation it is very prolific. In fact, a dozen good clumps or single crowns would yield a nice dish a good many times in the season, and the only attention these single clumps require is to support the growths with good stout stakes when the season for cutting is over, and when cut off in winter a dressing of good rich manure or compost should be given. Anyone giving this system a trial will be astonished at the results.

Hints.

J. G.

KITCHEN GARDEN NOTES.

PLANTING.—The prevalence of dull, showery weather has so favoured the planting out of sundry crops, that we have been induced to do more of that kind of work than otherwise we should have done, at least, in such quick succession. Celery planting is all but completed; another small batch of Autumn Giant Cauliflower has been planted, also a few Savoys and Autumn Protecting Broccoli, and having an extra good lot of Lettuce plants—the thinnings from a recent sowing on a west border—we have planted out the best on a north border, on which aspect they will probably do as well as if they were sown where they were to mature, the latter way being our usual practice during the summer time.

THINNING OUT SEEDLINGS.—Here, again, the weather has helped us greatly, and we are now nearing the end of thinning out Parsnips, main crops of Carrots, Beet, Onions, Leeks, Salsify, Scorzonera, and Dandelion. As soon as the thin-

ning out is finished and the ground a little drier, the hoe will be run through them all. From some of the best kinds of Potatoes the weakest part of haulm has been pulled up, as by these means more even sized tubers are obtained, but the practice has no other merit, and except for certain purposes, such as for exhibition or for trial as to the merits of a variety, it is not worth while to put the plan in practice. Cauliflowers wintered in handlights have not done well; the winter has been too long and too severe; many are very poor, and none will be first-class nor even equal to the Late Queen Broccoli that we have still in good condition.

SEED SOWN.—Another sowing has been made of Lettuce and Endive in drills a foot apart, Turnip-rooted Radish between the rows of Peas, Canadian Wonder French Beans on ground recently cleared of Broccoli, and which we deeply dug and manured. A long row each of Ne Plus Ultra, British Queen, and Latest of All Peas in trenches the same as for Celery has been sown. Before another sowing can be made, the ground now occupied with Purple and White Sprouting Broccoli must be cleared, heavily manured, and deeply dug or else trenched. I am a strong believer in what Mr. Gilbert calls "everlasting digging," and if he had such a hungry, sandy soil to deal with he would soon change his opinion, for if he did not trench at least every alternate year supplies would run short.

STAKING AND TYING.—Tomatoes do almost equally well with us on warm borders as they do on the walls, and to those thus planted stout Alder rods 4 feet long have been placed and the plants tied thereto. The plants are only allowed to have one principal stem, suckers from the bottom being persistently pinched back, but the laterals from the main stem are allowed to extend considerably, and when they get so long that support is needed to keep the fruit from breaking off the shoots, they are looped up to the main stem and tied to the stake. The plants are all a yard apart, and the whole of the ground is thickly mulched with strawy litter; hence they are cleanly to work amongst, and artificial watering is only required in seasons of exceptional drought. Staked runner Beans; a double line of sticks the same as for Peas is our plan of doing this; the tops are pinched out, which conduces to lateral growth, and of course of shorter height, and, what is still better, a longer succession of Beans. The main sowing recently made consists of two rows 6 feet apart; these we shall stake in the form of an arch by bending the sticks from one row to the other and roughly tie the tops together at a height of 6 feet, which will allow of head room for gathering the produce. We endeavour to stake all Peas as soon as they are well above ground, then no injury is caused by disturbance of roots, and, what is of some account, the work is off hand, and we are thus saved the unpleasant feelings that are begotten of procrastination. New growths on young plantations of Asparagus that are too long and slender to support themselves will soon require to be staked; this we do with small Hazel sticks and tie with netting. Onions for seeding we do in the same way, and for the strongest growing dwarf French Beans we use the twigs obtained by cutting up worn-out Birch brooms.

GENERAL WORK.—Hoing all crops that cannot be mulched, and where the latter is done hand-weeding is the only means to keep these down. Train out and soil up Ridge Cucumbers; plant others, also Vegetable Marrows and Capsicums; thin out, and in some instances prick out, Broccoli plants; make other sowings of Beet and Parsley; clip Box edgings, surface the walks with fresh gravel, and well roll the same after a heavy rain.

W. W.

SHORT NOTE.—KITCHEN.

Pea Laxton's Unique.—This is a very dwarf early variety, and is well adapted for sowing at the foot of a Peach wall, and also in frames for an early supply. It is a first early and very dwarf, a free bearer, and produces capital pods for its size. I saw it at Wyconhoe Abbey Gardens the other day at the foot of a Peach wall, and already in bloom, and not more than a foot above the ground. Gardeners should note it as a very desirable variety for early work.—R. D.

TREES AND SHRUBS.

W. GOLDRING.

THE HYBRID SERVICE TREE.

(PYRUS PINNATIFIDA.)

AFTER the Pears, Apples, and Cherries are out of bloom and before the Thorus flower, the hybrid Service Tree is conspicuous in plantations and gardens on account of the profusion of its white bloom and peculiar form of growth, which is distinct from all the innumerable members of the Rose family. Though a native tree, it is not commonly seen except in gardens and parks where tree planting has received due consideration, yet it is a most valuable tree, possessing an individuality which it never loses, for even in winter it may be singled out from all others by its growth. The growth is very dense, always forming an elongated, globular head, and is never very tall, the largest trees being only from 20 feet to 30 feet in height. It is supposed to be a hybrid between the Mountain Ash and the White Beam tree (*Pyrus Aria*), or at least a variety of the latter named *intermedia*. The deeply lobed leaves, the dense clusters of flowers, and scarlet fruits are all characters that render the tree intermediate between the Mountain Ash and the White

The pinnatifid white beam tree (*Pyrus pinnatifida*).

Beam, but if it is really a cross between these trees it must be a wild hybrid, as it is indigenous to various other parts of Europe besides Britain. But its origin and name are of secondary consideration, our only motive for writing about it being to draw attention to what seems to us a neglected tree, one that properly employed would add interest to ornamental plantations throughout the year. It is very hardy, thrives in any soil; prefers shade, but does not refuse to flourish on an exposed hillside.

The American Wych Alder (*Fothergilla albifolia*).—This North American plant is very rarely found in British gardens, yet it is when in flower very pretty, and also quite distinct from any other shrub. It is deciduous in character and reaches a height of 3 feet to 4 feet, while the leaves, which are rather late in expanding, are preceded by the flowers. The principal feature about the bloom is the cluster of stamens, and as several flowers are borne in a bunch quite a roundish mass of them is formed, and being white they stand out very conspicuously from the dark-tinted bark of the leafless branches. The blooms are also agreeably scented. This Alder does not succeed in a hot, dry spot, but is seen at its best under conditions that are favourable to Azaleas and such like

plants. To the lover of uncommon and, at the same time, pretty shrubs this can be recommended. According to London, it was introduced into this country in 1765. There are two or three varieties, but none of them are superior to the type for ornamental purposes.—T.

Double-blossomed Furze.—In a selection of flowering shrubs for dry, sandy spots this must not be passed over, for it is now one of the most showy of all in bloom, and, as an additional merit, retains its beauty a considerable time. When growing on some distant knoll it stands forth in the sunshine like huge masses of gold, and its drought-resisting qualities enable it to be planted in such spots. Cuttings of it put in a sheltered border in early autumn will strike root, and if put in soon after midsummer and protected by a frame they will then strike before the winter. The double-flowered Furze, like its common relative, will grow well in all kinds of soil, and flower profusely provided it is in a sunny spot.—H. P.

The large-leaved Storax (*Styrax grandifolia*).—I send you a specimen of *Styrax grandifolia*, one of our most beautiful native shrubs. It is of free growth and a profuse flowerer. There are bushes in my nursery, from 8 feet to 10 feet in height, literally covered with flowers. This shrub would prove perfectly hardy in England if provided with a dry, warm position to mature its growth, and very few shrubs can approach it in beauty when in flower. A native of the mountain range through the Carolinas and Georgia, from whence comes

some of the finest shrubs and trees in cultivation. It is a common practice in England to grow this class of plants in peat, which is by no means necessary, as all will grow freely in a well-drained loam. — JOHN SAUL, Washington, D.C.

Cratægus pinnatifolia.—It is rather surprising that this Thorn is not more common, as it is a distinct and beautiful species, but one whose most prominent feature is not its blossoms, but, in early spring, the beautiful tender green of the expanding foliage. The matured leaves, too, are very handsome, for they are as much as 6 inches long and deeply pinnate. Besides this, the leaf-stalks are very long, and so weak that the foliage is partially pendulous. Its beauty is much enhanced by the fact that it is in full leaf while all of its allies (except the Glastonbury Thorn) are still in their winter garb. Though the young foliage appears so delicate, it is proof against spring frosts. This Thorn is a native of Eastern Asia, and is a great acquisition among hardy trees and shrubs.—H. P.

Early Rhododendrons.—There are no doubt good reasons why early-flowering Rhododendrons are not more commonly planted, the chief being that in some years they bloom so early, that their flowers as soon as opened are damaged by frost. But this evil does not occur every season, and certainly it has not this year, for the early sorts are now the glory of many a garden, in many instances

affording the only brilliant colours, for Lilacs, Laburnums, and Thorus are long after their usual date of blooming. In ordinary seasons, Rhododendrons, like the old *Russellianum*, *Hogarthii*, and others, do not show themselves, because they are either kept back by the weather or are put in the shade by the profusion of the later varieties. The majority of the early sorts have presumably descended from the high-coloured and early-flowering *R. arboreum*, and this accounts for their comparatively tender nature. But even if we can enjoy the beauty of a brilliant Rhododendron bush in early May only once in three seasons, is it not worth while to plant a few about a garden? A glint of bright colour in May in a garden is more enjoyable to many than all the splendour of lavish profusion of flowers in midsummer.—G.

THE WAYFARING TREE.

(VIBURNUM LANTANA.)

IF this tree was less common it would probably be better appreciated. It certainly cannot vie with its near relative, the Guelder Rose, but as it comes earlier into flower and will grow well in the most unfavourable situations, it deserves attention. The flower itself is almost white, but the yellow anthers, being prominent, give to the whole a creamy colour. It is not only for the sake of the flower, however, that this *Viburnum* deserves notice, as for seven or eight months of the year it is a conspicuous object. It is amongst the first in the spring to show its mealy buds, and the leaf-development commences whilst the majority of trees are bare. Now it is in flower. Its berries, which will shortly appear, will undergo changes from red and yellow to black. As the leaves commence to decay they assume a crimson hue, which, if less delicate than that of its sister species, always arrests attention. The wood of the Wayfaring Tree is amongst the toughest of any of our common trees and shrubs. Abroad the young growths are used for tying fagots and similar purposes for which the Hazel or Willow is generally employed in England. Less common subjects are naturally enough selected for isolated lawn planting, otherwise this *Viburnum* is very effective when kept to a single stem. There is a good example of this near here, and the tree is now a perfect mass of bloom. Within a short distance of my house the road is lined on both sides with this tree, interspersed with Hawthorn. Just at this season it forms a splendid vista, even with the disadvantage of being intermixed with other things. Although it grows so freely on very poor soils, I do not regard it as being altogether fitted for forming strong fences—*i.e.*, by itself. To form a compact fence it is necessary to have a plant which will bear and look well under rather severe and frequent pruning. For this the Wayfaring Tree is not well suited, as it is always seen at its best when allowed to grow at will. Within an iron fence by the roadside there is nothing which can excel it. I have enumerated above some of its qualities, and to this must be added its apparent disregard of dust. In seasons when the roadside vegetation is almost choked by dust, this tree seems to continue its growth unaffected. As a covert plant it has certain recommendations; but, on the whole, there is no better place for the Wayfaring Tree than that where its name implies—*viz.*, by the wayside. Along the margins of plantations which skirt the highway, behind dead, or under certain conditions live fences, it seems peculiarly at home. Owing to the abundance of its fruit and the ease with which it may be propagated, it practically costs nothing. In some ornamental groups which have been recently formed in a park near here I see it has been somewhat freely used, in spite of its being so common in the hedges. D. J. Y.

The Golden Heather.—The common Ling or Heather is very prolific in varieties, ranging from the loose straggling kinds to some of quite a dense Moss-like growth. The golden variety forms a low, spreading mass, and it is now very prettily suffused with a bright golden tint, which, as the summer advances, becomes tinged with bronze. It is rendered additionally effective when in proximity to

some of the darker-leaved kinds, and supplies a shade of colour that is not found in the blooms of any of them. From the many ornamental qualities possessed by these hardy Heaths a collection of them is always of interest, and is rarely without flowers; for some forms of the Heather will bloom till autumn is far advanced, and early in the new year the pretty little *Erica carnea* or herbacea commences to unfold its blossoms.—T.

The Golden Barberry (*Berberis stenophylla*).—Among spring-flowering shrubs this Barberry stands in the front rank, for it is a most beautiful object when the long, gracefully-disposed shoots are wreathed with golden blossoms. It is preferable to *B. Darwini*, whose rather stiff habit is not nearly so pleasing as that of the more graceful *B. stenophylla*. This last is generally recognised as a hybrid between Darwin's Barberry and the Fruegian Barberry (*B. empetrifolia*), but though frequently quoted as such, I am not aware of its origin, and should be greatly obliged if any of your correspondents could enlighten me upon that point. Such information would, I am sure, be valued by many. We employ *B. stenophylla* for flowering under glass here in early spring, and if not forced too quickly it blooms in a very satisfactory manner.—H. P.

The Scarlet-fruited Thorn This is among the earliest to bloom of all the Thorns, and its ornamental qualities rank high, for it forms a handsome medium-growing tree, the foliage of which is of a lively green tint, and in autumn it dies off tinged with yellow and red. Just now its wealth of white blossoms renders it conspicuous, and they are succeeded by moderate-sized berries, which ripen early in the autumn, and are, when in that stage, of a bright red colour. As a medium-growing tree for lawn or woodland this Thorn must not be passed over, as it is of vigorous constitution, and by no means particular in its requirements. The Scarlet-fruited Thorn can be readily raised from seeds, and though there are several varieties for which other modes of propagation are necessary, the common type is, as far as ornamental qualities are concerned, quite equal to any of them.—T.

Magnolia obovata.—This *Magnolia* may be looked upon as the last of the early flowering section, for the *Yulan* (*M. conspicua*), *M. Soulangeana*, and *M. stellata* are all past their best before the blossoms of this make their appearance. *M. obovata* does not attain to tree-like dimensions, its habit being more that of a large growing shrub, and it is very ornamental when in a flourishing condition. In colour the flowers are purple on the exterior, and whitish within, but they do not open sufficiently to show the inside of the bloom. The first of these early flowering *Magnolias* to open is *M. conspicua*, the Chinese Lily tree, closely followed by *M. Soulangeana*, which is supposed to be a hybrid between the *Yulan* and *M. obovata*. Its appearance and time of flowering would certainly suggest that such was its origin, for both in habit, colour of blooms, and time of blossoming, it is about midway between the two. In any selection of these early flowering *Magnolias* two kinds that ought certainly to be included are the small double-flowered *M. stellata* and the fine dark coloured kind, distributed a year or two ago by Messrs. Veitch under the name of *M. Soulangeana nigra*. The easiest of increase of all these *Magnolias* is *M. obovata*, and propagated from layers it is often used as a stock on which to graft the others. *M. obovata* is also known under the name of *M. purpurea*.—T.

SHORT NOTES.—TREES AND SHRUBS.

A new form of Butcher's Broom.—We learn from the *Revue Horticole* that a new form of this, producing two fruits instead of one, has been found by M. L. Planchon. If this new form will maintain its character it will certainly be a desirable acquisition to our shrubberies.

Pearl Bush (*Exochorda grandiflora*).—We have two large bushes of the larger form of this excellent plant growing and flowering freely in the open border; both plants are in exposed situations; they seem to adapt themselves to circumstances, and are at the present time covered with their lovely white flowers.—T. B. F.

The Broom.—I forward you sprays of the different coloured Brooms. We have them all growing in the shrubbery

borders backed up with Lilac and copper-leaved Beech. At this time of the year they have a very gay appearance.—THOS. B. FIELD, *Bridgenorth*.
* * * Very beautiful, and most effective at this season of the year.—Ed.

TREES AND SHRUBS IN BLOOM.

A COMPARATIVELY flowerless May has made the flowers of June more abundant than usual, and particularly among trees and shrubs, which have been so retarded, that we have Lilacs and Laburnum mingling with Thorns and other trees that in normal seasons succeed the flowering of earlier things. What with Rhododendrons, Azaleas, Brooms, Spiræas, Barberries, every well-planted shrubbery and plantation, after the first few days of summer, show a most lavish display of colour. The commoner trees and shrubs everybody knows, but there are many others that rarely find their way into ordinary gardens, simply because they are unknown or when planting time comes are forgotten or overlooked. The following are a few now in full bloom that should be remembered in autumn at planting time:—

WHITE ROSE BRAMBLE (*Rubus deliciosus*), one of the Brambles of the Rocky Mountain region, is a shrub of marvellous beauty and not half enough known, although it has been often written about in *THE GARDEN* and other papers. One would scarcely recognise it as a Bramble, as it is so very unlike the prickly bush with which the name Bramble is in our English minds associated. In fact, it is an insult to the shrub to call it a Bramble, for there is not even a Rose more beautiful. Those who have seen it once will not need a description of it, as one never forgets its chaste beauty and elegant growth. The flowers are similar in shape to those of the wild Rose, but much larger; they are white, sweetly scented, and borne on branches that hold themselves out in a most graceful way, particularly if the plant is growing against a wall and not nailed in too stidly. But it does not need a wall, as it is as hardy as any North American shrub; at the same time a wall could not possibly be more beautifully clothed than with this Bramble. Readers of *THE GARDEN* may remember Mr. Moon's delightful drawing of this shrub, published on October 9, 1880. It shows a spray of the shrub just as one may see it this week against a wall in the hardy plant garden at Kew. It is a pity that nurserymen do not give it more attention. I have just referred to the catalogues of half a dozen of the leading nurserymen, and no mention is made of it, yet there are lengthy disquisitions about plants that are worthless compared with this Bramble. If people would make a request for it at planting time, perhaps nurserymen would work up stocks.

PEARL BUSH (*Exochorda grandiflora*).—This is better known than the White Rose Bramble, and one may buy a respectable plant of it for eighteen pence. But in this case there is some misapprehension, because many regard it as a tender shrub, suitable only for a wall. This may be the case in the cold midland districts and further north, but it is unquestionably a hardy, fast-growing, and lovely shrub in the neighbourhood of London and south of it. It is the largest flowered of all the Spiræas (for, in fact, it is a Spiræa), and this week it is one of the most beautiful shrubs imaginable, as the tender green of its newly expanded foliage contrasts well with the long drooping spikes of snow-white blossoms. It grows into a large and densely rounded bush, and the shoots, being slender, droop slightly, and have not that stiff appearance that other shrubs (Mock Oranges, for instance) usually have. Like *Rubus deliciosus*, it is well adapted for a wall, although, as before remarked, it does not require protection. Such a shrub as this should not be confined to botanic gardens, or, as old writers used to say, "to gardens of the curious," but should be as familiar as Mock Oranges and Lilacs.

MEXICAN ORANGE BLOOM (*Choisya ternata*).—Another flower of the week, as in several places it is covered with fragrant white flowers. This is really a wall shrub about London, and even with wall protection cannot be considered hardy, as severe

winters, like the last, damage the plants considerably. There is a large specimen of it against an east wall at Kew that attracts attention to it by the fragrance of its myriads of white blossoms. There is not a better substitute for Orange Blossom than this Mexican *Choisya*, and no doubt its flowers have done duty many times for the genuine Orange Blossom. It is a shrub of the highest merit; its luxuriant evergreen foliage alone makes it valuable, and the fact that it can be forced into bloom in winter enhances its value. It is just the plant to place against a sunny wall of a house near a window.

JAMELIA AMERICANA is almost an unknown plant outside the botanical garden, although it has been in cultivation many years. It is a small-growing deciduous shrub, bearing at this season a profusion of small pure white flowers, and the leaves being whitish, the whole bush has a distinct appearance. There is a fine plant of it in full bloom at Kew planted with the Saxifrages, as it is a member of that family. It is perfectly hardy, and seems to thrive best when on raised rocky mounds.

NEVUSIA ALABAMENSIS, quite a newly-introduced North American shrub, is beginning to develop its true character at Kew, and already shows that it is not quite such a worthless plant as some considered when they saw it in a small state. I look upon it as a pleasing shrub when in flower, elegant in growth, and distinct from all others. Its flowers are not much individually, as they consist merely of a tassel-like tuft of stamens, but they are borne in such numbers that each spray has a feathery appearance. The colour is a greenish yellow, reminding one of some of the Meadow Rues. The finest plant I have seen of it is that now growing against an east wall. It is now in full bloom. Its hardiness is doubtful, but wall protection seems to be sufficient.

WHITE SPANISH BROOM (*Cytisus albus*) is everywhere a charming shrub this week, large bushes of it being like fountains of white spray. Nothing can be more graceful in growth than the White Broom, and its hardiness, suitability to every soil and aspect, renders it one of the very best hardy shrubs we have in gardens. Though it cannot be called uncommon, one wishes that it was more plentifully planted so as to relieve the monotony of Laurel, Privet, Barberry, and other common shrubs. The most effective place to plant the White Broom is at the point of a group of low Evergreens, so that the long wand-like shoots may overtop them and fall gracefully on all sides. Another beautiful way of planting it is in isolated masses on the lawn, and the purity of its flowers may be brought out by mixing with it a plant of the straw-coloured *C. præcox* or the bright yellow Broom (*C. scoparius*), as they generally flower together and harmonise well. If you have a dry bank where little else will grow clothe it with White Broom and double Gorse.

PORTUGUESE QUINCE (*Cydonia vulgaris lusitanica*) makes a beautiful lawn tree, and those who hesitate to plant Apples, Pears, Plums, and other orchard trees because they look out of place on lawns may plant this Quince, for though it is similar in character to the common garden Quince it is much more ornamental, having larger flowers and fruit and broader leaves. The flowers, which now are in full beauty, are cup-shaped, fully 2½ inches across, and of a blush-pink colour. This tree may be found in some fruit-tree nurseries, but it must be singled out from the common sort when in bloom, and the large flowers and broad foliage are characters sufficient to distinguish it. In some nurseries it is preferred as a stock for Pears on account of its more vigorous constitution. It is not such a productive fruit-bearer as the smaller-fruited common sort, and that is why it is not often seen.

W. GOLDRING.

Daphne Fioniana.—This is a very desirable evergreen species of *Daphne*, forming a compact, much-branched bush, a yard or so high, and thickly clothed with dark green Box-like leaves. At all seasons it forms a very ornamental evergreen shrub, and just now the terminal clusters of pretty pink blossoms

soms, with which the plant is thickly studded, are very attractive. Like those of most of its allies, the blooms of this are agreeably scented. This *Daphne* succeeds best in a cool stillish soil, and where slightly shaded from the full rays of the sun. Another species of *Daphne*, viz., *D. pontica*, is now at its best, and though the blossoms cannot claim to be showy (being of a greenish hue), yet their curious shape, the profusion in which they are borne, and their agreeable perfume, are all points in their favour. This kind will succeed as well as most shrubs under the drip of trees.—H. P.

TO THE EDITOR OF THE GARDEN.

SIR,—Mr. Miller uses strong language, and his attempt to justify his so doing is more creditable to his ingenuity than to his accuracy. Thus, he says that any statement that "most of the names are inventions" is "a downright and malignant falsehood." This is a question of fact, and is easily settled. On page 2 of Mr. Miller's book, the first full page, there are 117 names. Of these about half are translations, adaptations, or "inventions." Such, for example, are "Michaux's White Alder" for *Clethra Michauxii*; "Fetid Aloe" for *Aloe fetida*; "Panicled White Alder" for *Clethra paniculata*; and others. Better examples will be found under the headings *Crocus*, *Stonecrop*, *Starwort*, and the like. By interpolating two little words, Mr. Miller has given my general statement a personal application. "The names are no inventions of mine," he says. I never said they were. I said they were "inventions," and so they are.

Mr. Miller complains that I say the local names "seen largely taken from 'The Dictionary of English Plant-Names.'" This again is true; and he has even followed us in the mistake by which we make "Affadil" synonymous with "Daffodil." Mr. Miller is cautious in saying that "nearly all" the names "were taken from sources" open to both of us. It was to the names which were not taken from such sources that my remark referred. On page 1 of Mr. Miller's book are *Adderspit*, *Adder's Fern*, *Adder's-flower*, *Adder's-meat*, and *Ag-leaf*. Will Mr. Miller tell me where these can be found in print, save in our book—and his! Others, such as *Adam's Flannel* and *Adam's Spear*, are extracted by us from glossaries and out-of-the-way books. Of course, Mr. Miller may have himself consulted these at first-hand, but I am, I think, justified in doubting this.

I am quite prepared to go further into this question, but I do not wish to trespass unduly on your space. I will conclude with two remarks.

When Mr. Miller's book appeared (in 1885) it was noticed in the *Journal of Botany*, and a copy of the review was sent to Mr. Miller. So far as I know, it is not until now that he has noticed the charge of plagiarism therein made. If Mr. Miller will refer me to the sources whence he obtained the names *Adderspit*, *Adder's Fern*, *Adder's-flower*, *Adder's-meat*, *Ag-leaf*, *Ail-weed*, *Alpine*, *Amber* (sweet), and many more which I am ready to specify, I will modify or retract my charge. Until he does so, I repeat it with as much emphasis as possible; and I withdraw the word "seem," and say that the names of British plants "are" largely taken from the dictionary compiled by Mr. Holland and myself.

Mr. Miller considers our title inappropriate. He can hardly have forgotten, however, that he appropriated it for his own work, on the first page of which it still stands. Mr. Miller's book was also announced and advertised under our title—a mistake courteously remedied by the publisher as soon as his attention was called to it.—JAMES BRITTEN.

** It is very cool of Mr. Britten to say such names as "Michaux's White Alder" are "inventions." They are nothing of the kind! We may safely leave Mr. Miller to deal with Mr. Britten's answer to his charge, but his talk of plagiarism deserves a few words. Assuming for a moment it is true as regards such names as he cites, it is regrettable to see a man devoted to science, and a paid servant of the public in our National Museum, stoop to charge an author with plagiarism, as regards words as much the property of all as is the multiplication table. It may be necessary to state that Mr.

Miller's book gives the names of garden and cultivated plants, and, instead of "most of the names being inventions," as Mr. Britten unjustly asserts in the preface to his book, they are gathered from standard gardening books since these began to be published in England.—ED.

SOCIETIES AND EXHIBITIONS.

FLORISTS' TULIPS AT MANCHESTER.

THE Royal National Tulip Society held its Jubilee Exhibition at Old Trafford on June 1, and a far better exhibition than was generally expected resulted. By way of making it a jubilee celebration the prizes had been considerably augmented, and growers put forth every effort in order to neutralise as far as possible the effects of the late season, and to have as good a representation of flowers as possible. To those who are specially interested in the Tulip an exhibition of this character has very great attractions, and growers, large and small, gathered from all parts of the counties in which Tulips are grown, more especially Lancashire, Cheshire, and Yorkshire. Those who expected—judging from the character of the season—to see the Tulip poorly represented were agreeably surprised to find a large display, many of the flowers pure, well marked, and brightly coloured. To the outside public the florist's Tulip must be a puzzle, not being able to distinguish between feathered and flamed flowers, and not understanding that the pretty breeders are merely Tulips in the seedling and transitory state. But the growers scan them with real satisfaction, and discuss their merits warmly. The principal class was for twelve blooms, two feathered and two flamed in each class, of bizarres, roses, and byblomens, and the first prize was won by the Rev. F. D. Horner, Kirkby Lonsdale, who had the following in fine character: Bizarres, feathered—Commander and Royal Sovereign; bizarres, flamed—Sir Joseph Paxton and Orion; roses, feathered—Nanny Gibson and Annie McGregor; roses, flamed—Mabel and Mrs. Lea; byblomens, feathered—Friar Tuck and Mrs. Cooper; byblomens, flamed—Talisman and Duchess of Sutherland. Mr. James Thurston, Albany, Cardiff, was second, also with good blooms. The Rev. Mr. Horner also had the best six, Mr. Samuel Barlow, Stakehill House, Manchester, being second. Beside the foregoing classes there were several others for broken or rectified flowers. It is customary on these occasions to select the best feathered and the best flamed flowers in the show, and term them the premier blooms. The best feathered flower was a seedling byblomen, shown by Mr. Alderman Woolley, a noted grower of Stockport; the best flamed flower, bizarre Sir Joseph Paxton, shown by the Rev. F. D. Horner.

The pretty shaded and self-coloured breeder Tulips—representing the transitory state of the seedling before it rectifies—are always attractive, but it must not be supposed that the handsomest breeders in point of colour always break into the finest feathered or flamed flowers. A poor ugly breeder will sometimes be transformed into a broken flower of surpassing merit. The Rev. Mr. Horner also had the best six breeders, staging fine and clear blooms of bizarres Ariosto and Sir Joseph Paxton; roses Miss B. Coutts and Thomas Parker; byblomens Alice Grey and Glory of Stakehill; Mr. J. H. Wood, of Royston, was second. The best breeder Tulip, selected as the premier bloom, was bizarre William Lea, shown by Mr. R. Woolfenden.

The Tulip season this year is one of the latest known for some time past. One of the most popular shows in Cheshire is fixed for June 17, four days later than any previous fixture; in 1811 this exhibition was held on May 21.

A late season.—A Covent Garden salesman said, the other day, "we are three weeks late," and I doubt if that statement much exaggerates the tardiness of the season. I am always able to accurately gauge the forwardness of the season by our

Strawberries in cold frames. In a general way the first fruit is ripe in them in the last week in May. This year we shall not gather from them by the middle of June, unless we get some very hot weather. Some years ago I remember gathering ripe Strawberries in the open on May 20. This year the earliest berries are only just set. It will be far into July before the field crops can come in. I have no doubt that there will be a much less quantity of soft fruit come into Covent Garden in June this year than has been the case for a long period. The Strawberry crop will this year be very heavy, and the early gatherings will probably sell at good prices, but for the main bulk, growers must be prepared for a low figure. Last year the price per ton for fruit for preserving was a third lower than in preceding years, which was to be expected, seeing the enormous breadths that have been planted within the last few years.—J. C. B.

RAIDS ON WILD FLOWERS.

I DID not wish to convey the idea when I first wrote on this subject that I did not think our wild flowers were raided upon by the public when visiting those places of public resort where no kind of supervision was exercised, because I have seen such things myself and protested against them in THE GARDEN long ago, but I do say that when such raids are made and such wholesale destruction worked in private parks and pleasure grounds as has lately been described in THE GARDEN, those responsible for the care of such places are more to blame than the visitors. Such vandalism can be prevented easily, and such complaints as we have lately read should not be accepted as an excuse in any case for depriving the public of the privilege given by many proprietors, and enjoyed by visitors. Only those who are in the habit of seeing many people from the towns enjoying themselves under such circumstances can estimate the value of the boon to them. During the past Whit week the parks here have been crowded every day by visitors from Manchester, Sheffield, and other Yorkshire towns without a single case of misbehaviour being reported. Of course, it is understood that injury to trees or flowers is not permitted. Short of that, the people are encouraged to enjoy themselves. I fear some of your correspondents have exaggerated the matter. When I read "D. T. F.'s" account of his "enormous" attempt at wild gardening, and of its defeat by those who stole the plants by cartfuls, &c., I wondered what the proprietors of such parks as Chatsworth, and gardens like those at Belvoir and the like, would think, for I believe no other serious attempt at wild gardening has ever been defeated in the same lamentable manner.—J. S. W.

** This is all we can publish on the matter. The nuisance, where it exists, should be stopped in any way that may be most effective in the locality. It would be a great loss to all if the charms of our beautiful private places were destroyed in the brutal way described. Even in public gardens and parks this destruction has to be prevented, otherwise they would soon arrive at the desert state.—ED.

Rhododendron Mrs Isaac Davies.—We send trusses of our new hardy Rhododendron, for which we can at least claim the merit of novelty. The foliage is handsome, the plant of bushy habit, and, in common with most light coloured Rhododendrons, is very hardy. The Rhododendrons are blooming well with us this year.—MESSRS ISAAC DAVIES AND SON, *Oskivik, Lancashire.*

Very distinct, compact truss of smallish flowers, the upper petals richly blotched with deep purplish crimson on a pale rose ground.—ED.

Names of plants.—A. W. W., *White Green.*—The *Maslevilla* numbers were loose, and the flowers much shrivelled; the large flower appears to be *M. an dibislineata*; a good var. of *Odontoglossum Lindleyanum*; 4, *O. Alexandrar.*—W. B.—1, *Saxifraga longifolia*; 2, *Papaver nudicaule*; 3, *Asplenium Adiantum-nigrum.*—*Habitat.*—1, *Dendrobium Parishii*; 2, *Cypripedium concolor*; 3, *Colax jugosus.*—G. Lanoor.—*Virus pinnatifida*—K C—*Primula sikkimensis.*—M., *Southampton.*—*Cycantium phacum*, *Spiraea hypericifolia.*—J. H. P.—*Astina triloba.*—J., *Southampton.*—1, *Odontoglossum hystrix*; 2, *Bolbophyllum Lobbii*; 3, *Ornithidium coccineum*; 4, *Celogyne Massangana.*—J. E., *Sheffield.*—1, *Braema insignis*; 2, *Menicium simplex*; 3, *Didymopanax humulata*; 4, *Gymnogramma microphylla.*—G. W., *Leeds.*—1, *Gymnogramma Pearcei*; 2, *Notholaena leavis*; 3, *Diplazium lanceum.*—L. A. J.—*Scilla campanulata maxima*; send another specimen of the other plant.—Acon.—*The Snowy Mespilus* (*Amelanchier Botryanthum*).

WOODS & FORESTS.

“YORKSHIREMAN.”

THE TUFTED CYPRESS.

(CUPRESSUS TORULOSA.)

HAVING had to remove, but, I must add, rather reluctantly, an unusually fine specimen of the above tree, I was much impressed with the hard, deep purplish brown and beautifully grained wood, as well as the large size to which the tree had attained in thirty-five years. The specimen under consideration was one of two that had been planted for garden ornamentation, and it had attained to a height of 13 feet, with a straight and well-branched stem that girthed just 3 feet 1 inch at a couple of yards from the ground—no bad dimensions for a Cypress of thirty-five years' growth.

Few trees are better adapted for planting where space is rather confined than the tree in question, and being in every sense of the word highly ornamental, is thus of great value for lawn or garden decoration; indeed, in the whole range of Cypresses, there is no other so beautiful as the above—its easy, though columnar, habit of growth, slender branchlets, and bright glaucous foliage being all desirable acquisitions that are, perhaps, not so nicely blended in any other member of the family to which it belongs.

The tufted Cypress is usually classed as a semi-hardy tree, and one to be colddled in some shady, warm nook of our gardens and grounds. Although a few specimens did succumb to the intense frost of the winters of 1860-61 and 1866-67, yet many remained uninjured, and in nearly every instance where trees were killed outright, the cause might be traced to the unsuitable positions in which they were placed, low-lying and well-sheltered places being chosen in which to place this lover of high and dry ground and a cool, breezy situation. Throughout Scotland generally, but particularly along the western coast, this tree has, after a fair and impartial trial extending over a period of nearly forty years, been found to be well suited for planting, but particularly in high-lying ground, and generally away from the sea coast. In Perthshire I have seen some grand specimens of this Cypress, the clear, bracing atmosphere and intense winter cold seeming, from their healthy appearance, to indicate that under such conditions they were quite at home. In Carnarvonshire we have many trees 35 feet high and upwards, and I cannot remember during my sojourn here having seen a single plant either killed outright or injured by frost. In the “Pinetum Britannicum” it is stated regarding this Cypress that at Eastnor Castle, in Herefordshire, those at 300 feet to 350 feet above sea-level were killed, while on the higher ground, 550 feet to 600 feet above the sea, they were only slightly injured.

In planting *Cupressus torulosa* it may therefore be well to bear in mind not to place it in low-lying damp ground and where it is too much sheltered, for experience has proved pretty clearly that this handsome tree succeeds best where the wind is allowed to play freely around it, and, as a rule, in high-lying inland situations. Soil would not seem to be a factor of great moment in the cultivation of this Cypress, at least judging from the specimens here, for they are growing in stiff loam nearly approaching clay, in good loam on an open sandy subsoil, and in almost pure gravel, the two latter classes, however, suiting it best and producing the largest and healthiest trees. The branches, which are thickly produced, have a decided upward tendency, but are, nevertheless, not painfully so, as is the case with some Conifers, for the tufted branchlets, with their easy-arranged foliage, deprive it entirely of the fastigate appearance that characterises not a few of our Conifers. The cones, which are produced in great abundance and in dense clusters, are about an inch long, globular, and composed of about ten scales. There are usually seventy seeds in each cone. As before stated, the timber is hard, close grained, and fibrous, of a pleasing purplish yellow colour, and very fragrant, the latter being noticeable even when felling the trees.

This tree has been designated by some writers the Bhotan Cypress, but it is open to question if it deserves the name, for Dr. Hooker states that it is a rare plant in the Himalayas, and is apparently confined to the western side of the range. It was first discovered by Hamilton in 1802, and introduced by Dr. Wallich in 1821.

Seeds have been freely produced on the trees at Penrhyn and young plants successfully raised, the latter requiring neither great patience nor an extra amount of attention.

A. D. WEBSTER.

PLANTING FOR UTILITY AND ORNAMENT.

I HAVE always considered it practicable to plant a permanent undergrowth of evergreen and deciduous trees and shrubs to serve either as screens near or away from a mansion or cover for game, and at the same time to ensure a free growth of profitable and ornamental timber.

In one instance I have planted in masses what I intended to be the permanent trees which were to form a screen to shut out some unsightly buildings. The kinds of trees planted for the purpose were chiefly Oaks, Spanish Chestnuts, and Elms. Then others of the same kinds, but of smaller size, were planted between them by way of filling up the spaces until the principal trees begin to extend their branches, when the supernumerary trees are to be taken out in two, three, or four years to plant again as single trees, or in groups, hedge-rows, or for any other purpose for which they may be wanted, as they will be suitably prepared for such purposes, otherwise they must be cut down or taken out before they injure the permanent trees. The other spaces should be filled up with Beech and Hornbeam, which, when headed down, generally retain their foliage through the winter months, when such thick cover is most wanted. Such plants for undergrowth I take care to divest of their leading upright shoots at from 4 feet to 6 feet or 7 feet high, according to their appearance and effect with the side branches of the intended permanent trees. Divesting them of their upright aspiring shoots prevents them from injuring the permanent trees, and increases their lateral or side branches, so as to keep up a permanent undergrowth. This work should be attended to for a few years to prevent them acquiring fresh leaders, which they are naturally inclined to do.

At the base of the permanent trees I planted young Hollies, either common or variegated, for future effect, at from 1 foot to 2 feet from the stem, with the head leaning towards it, to allow for the increase of the trunk or stem, as well as to form a surer mark than any other I could think of to know the permanent trees by. Then round the outsides of the belt and occasionally in the interior, I planted Spruce and Silver Firs and Scotch Pines, each kind by themselves in groups or masses, as it were; the Firs being from 1 foot to 7 feet in height, taking special care to shorten the leading upright shoot, or break out the central leading bud of the upright shoot, at the desired height; also to shorten or break out the leading bud of the side branches, where necessary, to thicken the growth, and prevent it getting out of bounds and destroying or injuring the fences. Scotch Pines should be planted principally at or near the outside, as they do not endure under the shade so long as the Spruce and Silver Firs. In front of this belt, viz., the side most in view, were planted various kinds of evergreen, deciduous, and variegated dwarf flowering trees and shrubs: at least to be kept dwarf so as not to injure the effect of the permanent forest trees in the background, as well as more effectually to ensure the main object, an effectual permanent blind, not forgetting embellishment as well. Although I have recommended Beech and Hornbeam for under-cover, I would prefer common Hollies, common Laurels, Rhododendrons, or other suitable Evergreens, which will endure under the drip and shade of other trees, but they are of such slow growth at first, and are, besides, dearer, and not so easily procured as the Beech and Hornbeam. At any rate, the Evergreens should be planted at the first making of the planta-

tions, and, as they get up, the Beech and Hornbeam could be removed if thought desirable; but in each case attention must be, for several years, regularly paid to divesting them of their aspiring shoots, and occasionally shortening some of the side branches to prevent too much straggling and to ensure the permanent undergrowth. I will just observe that Beech and Hornbeam are best adapted, in distant high exposed situations, for permanent undergrowth in narrow belts or clumps, and Evergreens nearer home in more sheltered places.

By following up this plan for a few years, we can ensure a permanent close and thick undergrowth of evergreen or deciduous trees and shrubs, with the most beautiful, picturesque, and profitable forest trees, instead of those unsightly naked plantations, open at bottom, with nearly valueless timber trees, so frequently to be seen; which plantations, with a very little trouble or expense, might be made both profitable and ornamental at the same time. But, alas! gentlemen do not see this; or, at least, they will not pursue it, too often, I fear, from the causes I have previously hinted at.

I could say much more on this subject, and on that of pruning and training hedgerow timber trees, but more particularly single evergreen trees, or masses of evergreen trees in noblemen's or gentlemen's parks, with accompanying undergrowth for shelter and protection to the trees—such parks being generally very deficient in these respects, and having rather a dreary effect in winter without these accompanying embellishments, when there are hundreds of acres ornamented with only deciduous trees.

W. B.

SOIL EXHAUSTION BY TREE ROOTS.

ONE would suppose it unnecessary to point to the fact that it is essential to have trees well furnished with strong and healthy branches to the ground, whether planted as shelter-belts, screens, or specimens on lawns; instead of this, however, they are too often allowed to remain with their roots engaged in a life and death effort to extract the requisite food and water from the soil, which, through having had to feed three times the number it was capable of sustaining, in the end becomes so exhausted that the whole of the lower branches perish and become not alone unsightly, but absolutely useless for the purpose intended. And if we come to the internal part of the grounds, where this very common course is followed, the condition of the trees is usually much the same as that of those on the outer portion, often not showing a single fairly-grown example that gives promise of continuing in a healthy state to anything approaching its allotted time; such trees, owing to their position, are often held in high estimation by their owners, who, by their unwillingness to part with any, allow them to remain in a state that will inevitably cause the destruction of the whole. They seem unable to see that the earth can no more sustain two plants where one requires all the nutriment present than it can feed two animals confined on a space only large enough for one. The two cases are analogous; but trees do not show the positive effects of starvation so soon as animals do. There can be no question that half of any given number of trees, especially when occupying positions from which they can ill be spared, are greatly to be preferred to double the quantity existing under conditions wherein their food requirements are so far insufficient as to lead to their gradual, but certain destruction.

Nothing less than sufficient room for the branches of a tree from infancy, and a corresponding space of ground unoccupied by the roots of other trees, can secure a healthy condition for the full period of its existence, yet it is surprising the efforts which trees are capable of making in order to repair the injuries which they have suffered when the causes by which they have been affected are removed, and in most cases even where they give unmistakable signs of suffering from insufficient food through overcrowding. If the number be reduced so as to afford those remaining a chance of succeeding, they very soon show the benefit done them; and by these means, which rarely fail, unless in cases in which

decay has gone too far, large numbers of trees that have got past their best would be so far invigorated as to attain and keep in fair condition for many years. It should not be forgotten that of trees in pleasure grounds, such as those under consideration, a great portion have their roots wholly in soil, the Grass being kept continuously mown without anything to counterbalance the impoverishing effects until the whole is as poor as it is possible for it to become, and with no opportunity of much being done that would strengthen their roots; if they, in addition, occupy the ground in too close proximity to each other, the evil is very much intensified.

Where shrubs are grown over the roots of the trees new soil and manure in quantities sufficient to afford a good deal of assistance can be, and frequently are, applied with considerable effect, but the shrubs with their roots near the top are the first to take advantage of the manure and derive the greatest benefit, especially in the case of many species of deciduous trees. It is to judicious thinning that I would point as the most effectual means for the preservation of trees in the places I have alluded to. The subject is worth consideration.

T. B.

PRUNING FOREST TREES.

GREAT difference of opinion prevails as to the necessity for pruning forest trees and the season at which such operations should be carried out. But undoubtedly the weight of authority is favourable to early summer pruning. The month of June is strongly recommended, because at that time the wounds heal up much quicker than during July or August, when the motion of the sap becomes slower. A standing rule with the pruner that no wound remains exposed to the action of the atmosphere for a longer period than one year. If the aim of the owner of woodlands was confined to the production of the greatest amount of wood upon a given area in the shortest possible time, it is questionable whether pruning of any kind should be executed; for every branch cut away from a tree lessens the quantity of foliage presented to the action of the sun and the atmosphere, and therefore decreases the absorption of carbonic acid gas and the formation of wood, of which carbon is the main constituent. But where the object in view is the growth of straight, lengthy, clean, and sound timber, thinning and pruning must commence soon after planting and continue until the trees attain considerable proportions. By thick planting, early thinning, and careful stopping of rambling shoots or rival leaders, pruning will seldom be necessary except in the removal of injured branches. But as the growth of a tree is slow, and he who plants seldom lives to train up his trees to maturity, pruning in an advanced stage of their growth is often necessary in order to lessen the evils resulting from early neglect.

Trees differ so much in habit and in their rapidity of growth, and are so largely dependent upon the soil and situation in which they are placed, that it is impossible to lay down any precise rules for their management in this respect. Those trees meant to form large and good timber should never at any stage of their growth be suffered to become too much crowded, nor over-topped or whipped by their nurses, and as they rise they should be allowed sufficient space to enable them to develop well-proportioned heads, equal in length to form from one-third to one-half the height of the entire tree. It should also be borne in mind that by preserving a complete canopy of foliage overhead the moisture is retained in the soil, the stems rise rapidly, and the formation of side branches is retained.

The advantages of early pruning are nowhere more observable than in young plantations of Oak and Spanish Chestnut. Two years after planting it is no uncommon occurrence to find a considerable number of the young trees hide-bound and becoming distorted in their growth. Such, if left to themselves, seldom or never attain to the size of timber trees. But if cut over with a clean section within 2 inches of the ground they will push forward vigorously during the following spring and summer.

By rubbing off all but two of the strongest shoots in June or July, and allowing these to grow on together until the following March, and then cutting out the weaker of the two, and afterwards keeping the other single upon the stub, a vigorous growth may be ensured, which will in a few years far exceed that of the uncut trees. A most remarkable instance of this is mentioned by Forsyth, who, the second year after planting a bed of Oaks, headed down one-half and left the other to grow naturally. In giving an account of their progress a few years afterwards, he states that one of the plants thus cut over was 18 feet high and 15 inches in circumference at 6 inches from the ground, while the largest of the uncut ones was only 5½ feet high and about 4 inches in circumference.

But, while recommending the early and careful pruning of forest trees, I would not be considered an advocate of the excessive lopping and pruning introduced by Pontey, and so ruthlessly carried on by his successors, who looked upon and spoke of the branches of trees as being merely "robbers of the stems." To produce lengthy timber, every branch which threatens to rival the leader should be shortened. By adopting this method instead of cutting away the branch entirely the trunk is strengthened by the sap being detained in its descent. Timely attention will obviate the necessity for heavy prunings at any stage of a tree's growth. The pruner should, however, be conversant with vegetable physiology, otherwise that twilight of uncertainty in which all his operations are performed may lead him to commit grave errors. In close plantations the destruction of the lower branches is really caused by the exclusion of light, and the result is generally unsoundness of stem. This is found to be the case so extensively in Canada and other large timber-producing countries, that a very small proportion of the trees grown under such circumstances is fit for exportation.

The whole art of pruning and training timber trees lies in adopting a proper mean between the two extremes of cutting away the branches of a tree so as to give it the appearance of a mere May-pole in the one case and that of a dense spreading bush in the other. A severe mutilation of the head of any tree must for a long time paralyse the action of its roots, and on this account the heavy pruning of neglected trees, if undertaken at all, should be extended over two or three seasons. Deciduous trees will require the most careful training in order to produce sound timber. As considerable difficulty is experienced in pruning trees of a resinous kind without injury to their growth, it becomes the more necessary to plant and rear them in close order. The lower branches under these circumstances are soon killed back, and may be removed so that the longitudinal structure of the bole is but little injured, as, by the early destruction of the laterals, the superincumbent layers of wood are entirely free from knots. Thus it happens that Fir timber grown in close plantations, where the early removal of the dead, bolt-like insertions left by the dead branches is attended to, becomes the most valuable, while single trees, from their coarseness of grain and abundance of large knots, are almost worthless to the builder. It is also found that Ash grown in close plantations becomes much tougher and clearer in the grain.

In exposed situations both the pruning and thinning of trees should be much lighter around those margins of plantations which face the prevailing high winds of the district. By too close packing it often happens that only the face of the very outermost trees are clothed with foliage, so that any injury to one of these admits the destructive winds. This may be guarded against by a judicious early thinning of such margins, so as to secure a belt of low-branched trees.

A. J. B.

Preserving timber.—Among methods which have been brought forward for the preservation of bridge timber and railroad ties is one which subjects the finished timber to an adequate dry heat, and then immerses it in a hot bath composed of certain proportions of asphalt and carbolic acid. The effect of this treatment is that, on cooling, the

solvent of the asphalt evaporates, leaving a skin of coating of asphalt on the surface of the wood, which resists water and keeps the antiseptic material fixed securely within the pores of the wood. The exterior of the wood, on the completion of this process, presents a smooth and dark surface requiring no paint.

The Birch is capable of withstanding a much greater degree of cold than any other tree. In the Old World its northern limit is 71° upon the west, and 63° upon the east coast; in America its northern limit is 64° upon the west, and 58° upon the east. In Germany, the highest elevation at which it is found is 5200 feet above the level of the sea; in Sweden at 3900 feet; and in Lapland at 1722 feet. It is worthy of remark that this tree decreases in size not only as it advances towards the north, but also as it proceeds southwards beyond the limits of its native region. It attains its highest perfection and greatest height in Germany and Southern Sweden.

Planting waste land.—It is an undisputed fact that the planting of waste land with trees would be the means of bestowing a great benefit on this country in various ways. There are millions of acres of waste and almost worthless land, so far as agriculture is concerned, that could be made most profitable plantations, and the owners of it should not allow the present favourable opportunity to pass without adding largely to the area under forest trees upon their estates. The low price of labour, and the ease with which any amount of it can be obtained at the present time, should be a strong inducement to all enterprising landowners to engage at once in planting, upon a judicious and well-arranged plan, all the waste land upon which trees will grow, and other properly chosen ground, upon their estates. A safer investment of money, or a more profitable one, cannot easily be found in these times, besides the great benefits immediately derived by the country, through the employment of the present abundant supply of surplus labour. Estate improvements of every kind can now be carried out in the most economical manner, and those who employ the greatest amount of labour at the present cheap rate will reap the greatest reward at a future and not far distant time, when trade and wages regain their natural buoyancy.

Riven v. sawn Oak fence.—It does not say much for the observation of the bulk of the people if, as "Yorkshireman" says (p. 523), "it is not generally known that riven stakes are stronger than sawn ones." Of course, it is this fact which leads to the use of cleft wood for spokes, hammer shafts, and similar things. What I cannot understand is the statement that only unsaleable Oak is used. With us, wood that comes under this denomination consists of unsound or very rough and knotty stuff, and to give the impression that this answers well for cleaving into fencing stakes is an error. At any rate, some further explanation is necessary. It is true that a certain class of posts or stakes may be cleft from the straightest of Oak tops, but not such as "Yorkshireman" indicates on p. 523. For splitting out these 3-inch by 2-inch stakes, small Oak is certainly the most suitable material, but it must be sound and fairly clean at the grain, and therefore, in the ordinary acceptance, cannot be classed as unsaleable. I wish a few more particulars had been given as to the use of these stakes, viz., the height of the fence and the distance from stake to stake, also how far they should be driven into the soil. This last point, I know, would vary according to the subsoil, but for the remarks to be of any real value, each of these things should be commented upon. I have but little faith in a fence erected wholly or nearly so of driven stakes or posts unsupported, if it exceeds a height of from 3 feet to 4 feet, and is likely to be subjected to any considerable lateral pressure. In fences of this class it is of little use to attempt to have uniformity, as if posts of varying size are used, appearance does not much matter. What I suggest, therefore, is that every third post or stake should be stouter, and instead of being driven, have a flat end and a hole dug for it, and rammed up in the ordinary way.—D. J. YEO.

No. 813. SATURDAY, June 18, 1887. Vol. XXXI.

"This is an Art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—*Shakspeare.*

FLOWERS IN THE HOUSE.

Under this head we propose, during the present season of flowers, to notice things, from whatever department, that are pretty and useful for the house.

FEATHERED PINK, BLUSHING BRIDE.—A seedling raised at Temple Hill, wonderfully floriferous and perfumed. The colour of pink satin.—W. B. HARTLAND, *Cork.*

HAWTHORN BLOSSOM.—One loves this for its beauty in tree, in hedgerow, but the flowers reveal their charms in other ways when brought near the eye on the table—best perhaps by themselves.

COTTON GRASS (*Eriophorum*).—Would the floral workers with immortelle wreaths do anything with this from the bogs and marshes of the County Cork? It should be gathered now. It would dye beautifully.—W. B. HARTLAND, *Cork.*

COLUMBINES.—I send you a few Columbines for the editor's table. I think they will about match any I have ever seen. The "principle of selection" for some years is bringing about a satisfactory result.—A. RAWSON.

** A very fine selection.—Ed.

MRS. SINKINS WHITE CLOVE PINK.—Here is the plant to "cut and come again" from all the summer. By pinching the first attempt at bloom on young plants, one can enjoy an August supply in quantity. In the autumn a bed of this Pink perfumes the air in the evenings like *Matthiola bicornis*.—W. B. HARTLAND, *Cork.*

SIX KINDS OF DOUBLE ROCKET.—Six forms of these fragrant old plants from the Rev. Denis Knox, Virginia Rectory, Ireland. We are glad to see them well grown, and their fine fragrance fills the house. The kinds are the French white, pale lilac, old white, pale blush, Eglington white, and old lilac. We thank Mr. Knox for reminding us all of the existence of these forms of an old favourite.

RHODODENDRON CINNABARINUM.—I send some trusses of *R. cinnabarinum*, which you will see vary considerably on different plants; this is also quite hardy here, and flowers very freely as a rule, but this year they are not so full as usual. The plants grow well, and are so distinct and beautiful as to merit a place in the most select garden.—R. GILL, *Tremough, Cornwall.*

** Densely flowered branches of this striking *Rhododendron*.—Ed.

FOR the editor's table I send *Paeonia albiflora* from a clump in the pure sunshine, now bearing thirty flowers and buds; no plant in the garden is finer in port and blossom. *Iris susiana* is also in flower after several trials to grow it here. *Ornithogalum arabicum* has also flowered well in pots in the greenhouse, and also on a sunny outdoor border. Its stary blossoms in a dense mass, each flower having a black

pearly ovary in the centre, are very distinct and effective. An old plant not easily and permanently grown. Irises are glorious; *Victorine*, *Shakespeare*, *americana*, *pallida*, *dalmatica*, *Gracchus*, *Billiotti*, *atro-purpurea*, *florentina*, and the pure white form called *Princess of Wales*, are all good. The Spanish varieties are also opening, and the oriental Poppies are gorgeous in the hot sun.—F. W. B., *Trin. Coll. Bot. Gardens, Dublin.*

WHITE PEONIES are grand now; such noble, sweet-scented blooms for ladies' wear. One flower, indeed, quite sufficient.—W. B. HARTLAND, *Cork.*

** Mr. Hartland sends a very pretty one. This magnificent family of plants is no longer in danger of being neglected, as we see large areas being cultivated about London.—Ed.

WHITE ROCKETS.—I send you some spikes of *White Rocket*; how beautiful, and such a perfume.—W. B. HARTLAND, *Cork.*

** Some of the best *White Rockets* we have ever seen were grown in Ireland, and we hope the quality will be kept up. What Mr. Hartland sends us is, we think, what is called the French white, and not the true double white.—Ed.

THE JAPAN PRIMROSE.—I send you some bloom spikes of *Primula japonica* grown out of doors from seed sown three years ago. Is it common for *P. japonica* to show so much variety from seed? if so, what about the possibility of a yellow *P. japonica*?—ARTHUR THOS. BOWLES.

** Diverse and fine varieties of this plant, which we believe is found to do very well in a naturalised condition. Many things are possible that are not desirable, and we have such good yellow Primroses, that perhaps an attempt to get a yellow Japan Primrose would be a mistake.—Ed.

SNOW IN SUMMER.—This is the name Mr. Hartland uses for *Helichrysum rosmarinifolium*, and not at all a bad one. A most excellent plant in full flower. He says: "We have this beautiful carpet of *Snow in Summer* covering the walls in southern positions. A great beauty, the sprays cut in a green state, the stems dipped in camphorated spirit and tied up in air-tight bags in a cool, dry place, may be enjoyed in perfection at Christmas, and in a most preserved state. It is one of the best shrubs extant for summer cutting, where white flowers have to be gathered for funerals. What a plant to grow in warm countries! I can grow it to great perfection, as you see per samples sent herewith."

TUFTED PANSIES.—Messrs. Dickson, of Waterloo Place, Edinburgh, send us some delightful tufted Pansies, which we are never tired of admiring. There is a very pretty white, *The Bride*, a soft creamy white, with a good yellow eye; *Ariel*, a lavender, with a whitish eye; *Formosa*, a very pretty lavender-blue, with purple eye. We do not like Latin names for these varieties. They should be christened with some pretty, simple name. *Columbine* is a very delicately marked white and lilac, with a pretty name. *Pantaloons*, purplish, with upper petals lighter; *Duke of Albany*, small, a very pleasing purple. We hope Messrs. Dickson will make a speciality of these lovely Violets, and have varieties with small flowers as well as with large. Some of the small-flowered kinds we find charming and most effective in their

profusion of bloom. *Souvenir* is a fine blue. All Pansies should have pretty names, like *Ariel*; not *rigmarole* or foreign names.

BEDDING PANSIES FROM KILDARE.—I send you a small plant each of a dozen kinds of bedding Pansies taken out of our spring bedding arrangement, where they are used in lines and masses. They have suffered very much from drought, as we could not water them, and there are cracks in the beds that you could put your foot in out of sight. Four and a half inches of rain is our total for the past four months. Hardy plants are having a hard time of it. We grow about fifty varieties of Pansies for spring bedding.—FRED. BEDFORD, *Straffan House.*

** They look very fresh, considering how much they have suffered. Too much attention cannot be given to these bedding Pansies, or tufted Pansies, if the name be preferred. We are under the impression that the raisers of them would do well to select the more delicate and varied colours in addition to the decided colours that are now popular.—Ed.

HARDY BULBS IN LONDON GARDEN.—The flowers sent herewith are all grown in the open air, and have had at no time any shelter whatever, not even a hand-glass. Will you kindly name the *Paneratium*; it came with some mixed bulbs? *Iris tectorum* has now done well with me for three years; what a very beautiful flower it is. *Ixiolirions* I have given up growing in pots, they do better in the open. *Camassias* are now going off, but have been very fine. Among choice *Narcissi* this spring, I thought *William Goldring* one of the finest, and the double *Narcissus cernuus* very pretty. The following note on *Eremurus robustus* may be of interest. In June, 1885, three plants planted the previous autumn bloomed very finely. One of them was then figured in *THE GARDEN*. Last year they did not bloom, throwing up only fine masses of leaves. This year, however, they have thrown up splendid spikes, far finer than in 1885, and are just about to bloom. I protected them by glass at the time of the heavy snow in the spring of last year. This year they have been left entirely to themselves. What glorious hardy plants they are.—H. STUART-WORTLEY (Colonel), *Rosslyn House, London.*

** The *Paneratium* is *P. illyricum*.—Ed.

ENGLISH NAMES FOR PLANTS.

PERMIT me as a foreigner to come forward in this matter, and to lay before your intelligent readers the following case: A Mexican nurseryman conversant with the English language, but not with English plant names, offers to one of his London colleagues *Mayflower* at 30s. per dozen; in consequence the English nurseryman would reply that he could not make any use of the offer, as *Mayflowers* could be bought in the London market at 2s. per dozen, he—good man—having no idea that with the expression *Mayflower* was meant *Flor de Mayo*—*Laelia majalis*. It is all very well that plants having become popular should have a popular name, but if the matter be pushed too far, only endless confusion would be the result. Although England takes the foremost rank in horticultural and botanical matters, yet it cannot be denied that another nation also has the right to call plants after its own fashion, and if an English horticulturist calls *Korolkowia Sewerzowi* a rather barbarous name, what would be the consequence if he had to do with the same plant bearing a Russian national name? If any of the large English trading firms would offer plants or seeds only under their English names, they would soon find out a decrease in business. I take this matter from an international standpoint; horticulture and science are international, and to a great

nation the widest views in that direction are the most benefiting and the most honourable.—MAX LEICHTLIN, *Baden-Baden*.

* * * *The question raised by us is that of English names for English-speaking people, one apart from the international convenience referred to above. For example, the French people use French names for plants: it does not prevent them using the Latin ones when they want them.*—ED.

CHRYSANTHEMUMS.

E. MOLYNEUX.

CONTINUE the potting of the plants into their flowering pots, for whatever purpose they are grown, as fast as the pots in which they are now growing are filled with roots. Neglect of this will entail serious disappointment later on, by a partial loss of the lower leaves. Stand the plants as fast as they are potted in a sheltered situation. When the weather is such and circumstances admit the plants being placed in their summer quarters, preparations should be made first for their reception, particularly those plants intended to be grown for the production of large blooms, which necessitate a tall growth requiring special means to keep the plants in their proper upright condition. If such a position as I named in a former issue, viz., one row on the side of a path running east and west, or one row on each side of a broad path running north and south be selected, it is better to stand the pots just within the border or quite clear of the path, as the continual watering with liquid manure is apt to disfigure the gravel. In such a case, boards whereon to stand the pots should be used, as a sufficient quantity of ashes cannot be placed in such a temporary position to prevent the ingress of worms through the soil and ashes. Where ashes are used, the foundation should consist of a thick layer of broken bricks or clinkers for a free drainage of the water as it passes through the pots. Bricks, two to each plant, are sometimes used, and where plentiful answer well. Provision must be made for securing the plants against strong winds. This is best done by erecting a trellis-work, to which the plants can be fastened. The strongest and neatest method of effecting this is that of making a permanent structure of iron standards. The end standards should be 1½ inches square, and be kept in position with iron supports 1 inch square; the intermediate posts may be flat iron 1½ inches wide and three-eighths thick. To these connect stout galvanised wire, to which a coat of paint has been given, to prevent damage to the tender shoots.

Such contrivances are sometimes objectionable as permanent objects; and if so they can be easily taken down and stored away if the wires are fastened with bolts and nuts. In some districts cultivators have at command an unlimited number of stakes of various lengths and thicknesses; a framework of these can be put up which is strong, cheap, and easily taken down and stored during winter. The upright stakes should be of sufficient stoutness to prevent the plants swaying about, and be placed at such a distance as their strength and the length of the cross rails necessitate. For the tallest plants, three cross rails are necessary, while for the moderately tall-growing sorts two are enough, and one for the shortest plants. Some growers stretch twine from post to post instead of the rails, but this soon becomes slack by exposure to the weather, and is not sufficiently firm to prevent the plants rocking to and fro. Place to each plant a stake of the same height

as that to which the plants will grow. When the plants are placed in position, the stakes are tied to the cross-rails, thus making all secure. The branches produced at the first break are spread out, the centre one being tied to the tall stake, and the others to small temporary stakes fastened from one cross-rail to the one above, thus giving equal light and space to each of the three branches; by placing the pots 1 foot 6 inches apart ample space is allowed between each. When the plants have to be arranged all together, the taller plants must be arranged at the back and the dwarfer in front; thus each line is not interfered with by the shade from the front rows, and the tall growing kinds do not interfere with those of dwarf habit. A knowledge of the relative heights of each variety is necessary to effect this arrangement, and for the guidance of the inexperienced I append a list of names with the height in feet, which differ somewhat in accordance with the treatment and the method under which the plants are grown. The heights given are based upon the idea that the plants are grown to one stem until they naturally break into other growths, and not upon the stopping principle.

Under the last-named system the plants are generally not so tall; therefore this circumstance must be taken into account when allotting out the space for each. The tall growth made by some varieties goes a long way towards condemning the method practised for the production of large blooms. If equally good flowers could be produced under any other system of culture, it would indeed be a boon in many ways, but my experience proves that it is not possible. Almost every sort has something special about it, either in the habit of growth, colour of the wood and leaves, or in the formation of the flower buds. To the inexperienced in these matters it is a good plan to arrange all the plants of one variety together for the better observance of these traits in their character.

Varieties 3 feet high—L'Adorable, Val d'Andorre, Fleur Parfait, Dolores, Mr. Cullingford, Miss Margaret. *Varieties 4 feet high*—Golden Eagle, Golden John Salter, Hero of Stoke Newington, Lady Hardinge, Lady Slade, Le Grand, Princess Teak, Princess Beatrice, Barbara, Fleur de Marie, Georges Saut, Yellow Perfection, Emperor of China, Chevalier Damage, Triomphe du Nord, Albert, Simon Delaux, Sœur Dorothee Souille, Golden Dragon, M. Henri Jacotot, Criterion, Meg Merrilies, Grandiflorum, Bronze Dragon, M. Desbrieux, M. Mousillac, Madame de Sevin, Duchess of Edinburgh, Madame Deville, Cullingfordi, Madame Godeaux, Princess Louise, Prince of Anemones, Angelina, Lady Talfourd, Miss Hope, Beauté des Jardins, Garnet, Père Delaux, Gloriosum, Martha Harding. *Varieties 5 feet high*—Hiver Fleuri, Grand d'Alveole, Nouvelle Alveole, Souvenir de l'Ardene, Flamme de Puncch, Dr. Macary, M. Astorg, Margot, Fabian de Medina, Marguerite Villageoise, Mlle. Lacroix, Cloth of Gold, Christine, Christine (pink), Dr. Sharpe, Distinction, Felicity, Golden Christine, Mrs. Forsyth, Mrs. Pethers, Gluck, Empress, King of Anemones, Baron Beust, White Globe, Empress Eugénie, General Bainbrigge, Guernsey Nugget, Jeanne d'Arc, Mrs. J. Crossfield, Mrs. Brumlees, Mrs. Dixon, Mrs. W. Shipman, Nil Desperandum, Pink Perfection, Refulgence, Mlle. Cabrol, Fernand Feral, Boule d'Or, Mrs. Sharpe, Mrs. Halliburton, Prince of Wales, St. Patrick, Progne, Madame Boucharlat, Rosa Bonheur, Ethel, Agréments de la Nature, Magnana Bonum, l'Incomparable, La Nymphe, l'Africaine. *Varieties 6 feet high*—Golden Empress, Queen of England, Empress of India, Alfred Salter, Lord Alcester, Jardin des Plantes, John Salter, Lord Derby, Mabel Ward, Mrs. George Glenny, Mrs. George Randle, Novelty, Cherub, Eve, Emily Dale, Beauty, Bronze Jardin des Plantes, Lady Carey, Venus, White Venus, Bronze Queen of England, Mlle. Madeleine Tezier, King of Crimsons, Madame Clos, Acquisition, Mdlne. Thérèse Clos, Triomphe de la Rue des Châlets, Elaine, Fanny Boucharlat, Jeanne Delaux, James Salter, Lady Selborne, Marguerite Marroch, Striatum Perfectum, Ceres, Duchess of Albany, Dormillon, Mrs. Mahood, Album Plenum, Bouquet Fait, William Robinson, Oracle, The Sultan, Cry Kang, Mlle. Moulise, M. Delaux, Mdlne. Laing, Alpha, Gorgeous. *Varieties 7 feet high*—Sarmia, Soleil Levant, Peter the Great, Mons. Ardene, Japonaise, Daimon, M. Brunet, M. Tarin, Balmorcan, Comtesse de Beauregard, Comte de Gerniny, Baron de Prailly, Red Gauntlet, Mrs. J. Wright, Mrs. Burbridge, Pelicun, Maiden's Blush, Beverley, Golden Beverley, Lord Wolsley, Prince Alfred, Prince of Wales, Mrs. Heath, Mr. Bunn, Fidibus, Lady Margaret. *Varieties 8 feet high*—Belle Paule, Fair Maid of Guernsey, Le Sceptre Toulousain, Thunberg, Madame Bertie Reublatler, Sir Stafford Carey. *Variety 10 feet high*—Mdlne. C. Audiguier.

CUTTING DOWN CHRYSANTHEMUMS.

JUDGING from the numerous examples of Chrysanthemum culture to be seen in private establishments, I am of opinion that the best methods of growing these autumn flowers are not so well known as they might be. The superiority of a well-grown collection on the restrictive system compared with a collection grown in the usual way is so great, that the points of difference and the method of proceeding are worth pointing out, especially as the present time is suitable for carrying out the cutting-down system. Some difference of opinion exists as to the merits of cutting down, but it is emphatically an exhibitor's question, and need not concern private growers. If the very finest blooms are desirable, *i.e.*, one bloom to a plant, cutting down is neither necessary nor desirable; but if quantity and not quality is wished for, then probably no better way exists than the usual pinching out of the points. On the other hand, if compact and comparatively dwarf plants with good healthy foliage down to the rims of the pots, and first-rate blooms are a desideratum, then the best way to attain this is by cutting the plants down. Assuming that the plants are healthy and in 6-inch pots and have not been pinched, they should be cut well into the hard wood. The exact whereabouts may easily be ascertained by a consideration of the number of shoots desirable. Generally speaking, unless for specimens, three to six shoots are enough; in that case three to six breaks should be allowed for. There need be no anxiety as to the pushing forth of the apparently dormant buds, as a few gentle syringings and a little less water at the roots will quickly set any doubts at rest on this head. As soon as they have broken well and have grown 2 inches or 3 inches, they should be potted in their flowering pots.

As soon as the new growth is long enough the plants should be staked, allowing a stick to every shoot. Bamboo canes, which may be had in 4-foot and 5-foot lengths, make excellent Chrysanthemum sticks, and they have the advantage of being rigid and durable, and also reasonable in price. Having decided on the number of shoots, all lateral growth should be pinched out immediately it can be got at, unless more than one bloom to a shoot is desired; in that case two, three, or more can be left of those lateral shoots near the top, but the blooms will not be so fine nor the effect nearly so striking as when each shoot carries one bloom only. Considerable discrimination is necessary at disbudding time in selecting the best buds to remain. Select the most central and finest buds, taking out the remainder as soon as they appear with a small sharp knife or Grape-thinning scissors. If the plants have never been neglected as regards water, have had copious supplies of weak liquid manure, been well syringed in hot, dry weather, greenfly and mildew kept at bay with sulphur and tobacco powder, and have stood during the summer in an open position fully exposed to the sun, a grand display of blooms will reward the cultivator, and well repay the attention and labour bestowed upon the plants. Some naturally tall growers (and amongst them are some of the best, such, for instance, as Madame Audignier, Comte de Gerniny, Fair Maid of Guernsey, &c.) refuse to grow dwarf, as, in spite of cutting down, they will average 6 feet to 7 feet. Such splendid varieties should not be discarded on that account, as they add much to the beauty of a collection or a group. F. W. SEERS.

Hova imperialis.—This is now in bloom at Guernsey House. It bears large waxy flowers of a reddish brown colour. It is one of the most handsome of the Hoyas, and is not often seen in bloom.

What are greenhouse flowers?—Will you kindly tell me through THE GARDEN if Azalea mollis and Roses are considered greenhouse plants, and eligible for a class of twelve cut stove and greenhouse flowers? At the Reading show held on June 2 the first prize was awarded to a box of cut flowers containing blooms of these plants. The judges when appealed to answered that Azalea mollis and Roses were greenhouse flowers.—ALFRED CLARK.

* * * We cannot imagine by what rule the plants you name can be classed as greenhouse plants in England, any more than such things as Likes, Lilies of the Valley, Spireas, Guelder Rose, Dillytras, or the many other hardy plants that are used by gardeners for early forcing, and therefore those you name are not eligible in a competition in which stove and greenhouse flowers only are asked for.—ED.

FLOWER GARDEN.

NARCISSUS HORSFIELDI.

SEEN in a strong clump, like that figured in the annexed woodcut, this Daffodil has, in my opinion, but one rival, and that a flower scarcely distinguishable from it except by a Daffodil expert—I mean Empress. Its noble flowers are well set off by the broad, glaucous foliage, which stands up stoutly, and contrasts in a marked way with the poor, green leafage of so many other kinds. The clump figured, the kind gift, some two or three years ago, of my good friend "Veronica," bore in a space of less than a square foot sixteen perfect blossoms, all of unusual size, the average being over 4 inches across. I find this Daffodil likes a cool, moist soil and partial shade, as it increases rapidly and flowers well under these conditions, in which maximus will barely exist. Amongst its neighbours which flourish best are Primula



Narcissus Horsfieldi. Engraved for THE GARDEN from a photograph sent by Mr. Greenwood Pim.

japonica, P. denticulata, P. rosea, P. sikkiensis, and Trillium grandiflorum. G. P.

Wulfenia carinthiaca.—How often one gets a wrong impression of a plant from having grown it badly! My opinion of this, after growing it for some years in a moderately dry part of a rock garden, was that it was worthless as a garden plant. It was given one chance more, a stock of young plants having been raised from seed and planted in a cool, damp place partially shaded. The fine, healthy, well-shaped leaves and well-coloured, purple, one-sided flowers, as enclosed (flowers a little past their best), show how very wrong was the first treatment and estimation of a good plant.—G. J.

Tulips for the border.—Although not commonly seen, except in botanic gardens, the species of Tulip have strong claims on those who delight in a rich display of colour in the border during the spring months. The various species offer a wide range of colouring, a few of the brightest hues, as *T. Gesneriana*, the parent of the florist's Tulip, and the grand Turkestan species known as *T. Greigi*, which has in addition bold foliage blotched with deep chocolate-purple. We noticed them recently in a bulb border at Kew, and were agreeably struck by their portly bearing and fitness for such positions. The two mentioned above are amongst the showiest, but a good selection would also comprise the quaint

T. cornuta, segments narrow and of a yellowish red; *T. elegans* (appropriately named), colour deep crimson; *T. Oculus solis*, also well named, the flowers being of a bright red; *T. sylvestris*, our common yellow species; *T. viridiflora*, which is a well-formed flower, the segments creamy yellow with wide greenish band down the centre; and *T. flava*, also of bold character, the flower of a soft yellow and immense size.—E.

PRIMROSES.

THE plan I have adopted of growing these may possibly meet "R. G.'s" (p. 485) requirements. It is one, moreover, that I can confidently recommend as giving the best results where the soil is not naturally favourable to this class of hardy flowers. I sow thinly in shallow boxes as soon as the seed is ripe, as then I can rely on nearly every seed germinating, and encourage continuous growth all through the following summer. Although I have spoken of sowing as soon as the seeds are ripe, I prefer to wait until the middle of August, which amounts to the same thing, as in that short time the germinating powers have not sensibly decreased. My reason for not sowing till that time is that the plants do not

One advantage gained by annually raising Primroses from seed and treating them as above described is a much earlier display of bloom. The continuous unchecked growth at the natural resting period of the Primrose induces an abnormally early flower development. It is just what happens in the case of the Persian Cyclamen, which, naturally a spring bloomer, is made, by a certain system of culture, to commence flowering at the close of the autumn. My plants began to bloom in October, and had the winter been mild, I should have gathered Primroses plentifully during the three dullest months of the year. The difference between them and older plants in this respect was most marked. Another winter I intend putting some of the plants in a cold frame, for I am sure that, with proper treatment in summer and shelter from cold and wet in winter, we may have good Primroses through the winter months. The quality of the blooms from one-year-old plants is so much higher than is obtained from older stools, that if this were the only gain, it would be worth the trouble of annually raising plants from seeds. Last year all my Polyanthuses were one-year-old plants, and the flowers were quite one-third larger than they are this season. J. C. B.

NARCISSUS TRIANDRUS.

I AM surprised to learn in THE GARDEN (p. 533) that Mr. Baker has identified Mr. Brockbank's lobed or campanulate form of this Narcissus as the *N. reflexus* of Brotero. It can scarcely be considered as a new or distinct variety, having been for some time familiar to all who have grown or observed *N. triandrus* in any considerable quantity. It seems that wherever the pale-coloured triandrus abounds, it varies largely, not only in the relative lengths of corona and perianth, but also in the form of the edge of the corona, of which all intermediate shapes may be picked out from a plain, straight edge to a boldly lobed form. As to the name, I believe it has been agreed by the Narcissus Committee, that for the present at least, the names calathinus and reflexus shall be dropped, and triandrus only used. Personally, I should prefer the adoption of the term reflexus, since triandrus is, as Mr. Brockbank mentions, a misnomer; while confusion might arise from the name calathinus having been applied also to *N. odoratus*. I do not understand what Mr. Brockbank means by saying it is clear that his specimen with the large corona belongs to *N. calathinus*. The relative size of corona is no differentiating character. Wherever the plant is found it is extremely variable in this respect, and I take it that a pinch of seed from any one bulb would give a variety of forms. In short, triandrus, reflexus, calathinus, are simply names of one and the same plant, though the illustrations attached to the names happened to be—indeed, could scarcely help being—made from three different forms of the flower. A botanist drawing the plant in the Isles de Glénan would be sure to find and represent something a little different to that which a botanist would gather and draw in Portugal or Spain, though the plants are entirely the same. The pretty name Ave Maria is probably given not only to the campanulate form, but to the pale triandrus generally. White flowers of a delicate appearance have often, in the south of Europe, the name of the Virgin Mary assigned to them. We are familiar with Madonna Lilies, and I have heard the Italian peasants call the little mountain *N. poeticus* Madonette, or little Madonnas. A friend of mine travelling in Spain some years ago told me he had seen a very pretty little white flower (he was no botanist) which the country folk called Ave Maria. This, I think, was in Aragon. G. H. ENGLEHEART.

A fairy Catchfly (*Silene pusilla*).—A very beautiful little white alpine plant. The plant no bigger than a little Moss, the flowers thick as stars in the milky way; white, star-like, exquisite in form, and, like so many alpine flowers, quite covering the vegetation. It is too small and fragile to be shown in a drawing. From Mr. James Backhouse, at York, to whom we are indebted for so many

pretty things in this way. Mr. Potter says it is easily grown and very hardy.—W. R.

NOTES ON HARDY FLOWERS.

THE warm weather of the last few days has had a magical effect upon vegetation, and our gardens are now wearing a summer look. Pæonies, Pyrethrums, and many other favourites are now fast opening their flowers. There are, at the present time, many plants of interest in bloom at Mr. T. S. Ware's nursery at Tottenham, a few of which we may note with advantage. Irises are few in number, but a form of the Rush Iris (*I. juncea*) merits attention; the flowers are of bold character and of a pleasing canary yellow. The dwarf Flag (*Iris pumila*) is one of the most interesting in bloom now; this produces its beautiful deep purplish violet flowers close to the ground, and in this respect it stands alone. A noteworthy species is *Iris longipetala*, with large flowers coloured with lilac on a white ground; a variety called *compacta* is well named; it has broader foliage, and the growth is more compact and dwarf, and is altogether very distinct. The scarlet Alum Root (*Heuchera sanguinea*) is effective just now, the flowers being of a bright red and freely produced; it is a good rockery plant; so also is the Golden Drop (*Onosma tauricum*), which bears in clusters yellow drooping flowers; this plant will thrive on a gravel heap, and there is a tuft at Tottenham flourishing to perfection in soil of this character, and with full exposure to the sun. Among the Anemones, the Snowdrop Windflower (*A. sylvestris*) is in bloom. Of this the Austrian form is much better than the English, the flowers pure white, with purple blotches at the base of the petals. *Primula japonica* is very showy on the rockery, with its bright whorls of crimson flowers. In moist spots the leaf growth is remarkably robust. *P. sikkimensis* is distinct, its large umbels of drooping yellow flowers, produced on stems about 18 inches high, having a graceful and delicate appearance. The orange-scarlet Iceland Poppy was also in fine condition; this is remarkably bright, and presents a contrast to the white and pale yellow forms. Lady's Slippers were very interesting. *Cypripedium Calceolus* was very fine, thriving freely in a moist, shady nook, screened from bright sun. *C. parviflorum*, a form of *C. pubescens*, the labellum yellow, and the sepals and petals brownish, with flowers sweetly scented and smaller than those of *pubescens*, but of a darker colour, is also worthy of note. *C. macranthum* is a gem, the flowers very large, and of a deep rosy crimson. We noticed a specimen in a shady, moist position, thriving freely in loam and limestone; it is one of the most lovely of all the hardy Lady's Slippers. The time of Lilies is not yet, but the earliest of all, *Lilium pyrenaicum* minor, is at its best. This is always the first to bloom; the flowers are pale yellow, with two divisions arching backwards. The major variety is later and not so free-flowering. *L. dahuricum*, a very dark form of *umbellatum*, we noticed in a pit; the flowers are rather small. *Lilium kantschatcense*, sometimes classed with the Fritillarias, is becoming scarce; it has small, almost black flowers, and is very dwarf. Tom Thumb Lily (*L. tenuifolium*) is also of small stature, but it has the glorious colour of the scarlet Martagon Lily, and is also sweetly scented. *Habelia rodopensis* is very rare, and will do for the choice rockery, but its pale lilac flowers lack brightness and beauty. The lovely spring Gentian was in full bloom; in colour this and the blue Gromwell (*Lithospermum prostratum*) are almost identical, both being of a remarkable depth of blue. *L. graminifolium* is a good rock plant, the colour a deep bluish purple. *Cyclobothra pulchella*, one of the hardiest of the group, produces at this season its fine yellow flowers, which give life to the garden. The flowers of St. Bruno's Lily (*Anthericum liliastrum*) are very conspicuous at the present time; the major variety is most vigorous and later than the type. This will be found one of the best plants for cutting. A bed of *Dodecatheon splendidum* was past its best, but there was enough left to show what a glorious plant this is for shady places; it fully deserves its name.

Ixiolirion tataricum, flowers bluish purple, reminds one of *Triteleia laxa*; it is of free growth, stands any amount of frost, and is proof against both dry and wet weather, though from its appearance we should not think this the case. *Camassias* are useful at this season, and there are several kinds. *C. Fraseri* is finer than the old Quamash (*C. esculenta*); it has flowers a trifle paler in colour, but they are larger. Mr. Ware has also a new form of elegant character, the flowers small, of a delicate lilac, and borne thickly in rather long spikes. *C. esculenta atro-carulea* is a good variety, the flowers conspicuous and of a deep purple. *Geum minimum* also deserves notice. This is a variety with reddish scarlet flowers, and it blooms throughout the winter if the weather is mild. It is a useful border plant. *Eremurus robustus* was showing a magnificent symmetrical spike; this, when fully developed, will give the plant an imposing appearance. The flowers are a delicate rose colour. It starts into growth very early, so that, unless when planted amongst shrubs or in some way protected, it is apt to be injured by spring frosts. E. C.

INDIAN PRIMULAS.

REFERRING to the remarks on these in THE GARDEN (p. 535) by Mr. W. Brockbank. I sowed in the spring of 1886 twenty packets of Indian *Primula* seeds, many of them supposed to be new. We raised plants from all the packets except Elwesi, supposed to be the finest of all *Primulas*. The first new kind to flower with us was *P. obtusifolia* var. *Gammicæna*. It received first-class certificates from the Royal Botanic and Royal Horticultural Societies about the end of March. Ten days later *P. Reidi* flowered, a lovely species with creamy white flowers, and having a distinct and exquisite perfume. Later, *P. geraniifolia* produced pretty trusses of rose-coloured flowers. This is also a very distinct species. The latest to flower are plants raised from a packet marked "*P. elongata*, yellow, near Choombie, about 11,000 feet near streams in shade, wet banks." This has proved itself to be *P. imperialis*, a synonym for *P. prolifera*. It may be best described as a yellow *P. japonica*; the flowers are rich deep yellow, and produced in whorls of eight or less on stems about 2 feet high. We have four plants of it now in full beauty.

We had two different packets of *P. reticulata*, but all the plants produced from them are *P. sikkimensis*. The varieties vary considerably in the colour and form of the flowers as well as the number on the trusses. If Mr. Brockbank took his plants to be *sikkimensis*, why make a species of a plant so much like another?

We had *P. capitata* (Hook.) and *P. bellidifolia* (King) in mixed packets, and raised two forms of *capitata*; nothing else; one, a major form, which Mr. Wilson exhibited in the autumn at South Kensington last year. Ours flowered a week later. It received a certificate as a new form. We have raised a distinct species from packets of *P. Kingi*, although most of the plants were *sikkimensis*; they have not yet flowered, that is, those that were not *sikkimensis*.

We also sowed seeds of *P. soldanelloides*, but got no plants; this must be linked with Elwesi as a failure. It is but right to add that Mr. Dewar saw our plants of the supposed *reticulata*, and pronounced them to be *sikkimensis*. Messrs. Veitch, of Chelsea, had a similar experience.

J. DOUGLAS.

Aucubas.—Although "T," in THE GARDEN of 28th of May (p. 482), says that a spot not too much exposed to the sun should be chosen for seedlings, I think it necessary to inform your readers that my experience has taught me that the *Aucuba* requires a complete shade, and that they grow best under other trees in the north of the garden; and this makes them more useful, because they thus hide naked trunks. They are very fine during the whole winter, as they do not lose their leaves, and are covered with their pretty red berries. But to obtain this it is necessary to intermix the males and females. The *Aucubas*, and particularly the dwarf

varieties, are also very handsome as pot plants for indoor decoration, and the American florists grow them largely for that purpose. As the males and females are different in foliage, it is advisable to sow all the seeds, because the offspring will be different from the parents, and some fine new spotted varieties can thus be obtained. Of course, the females are preferable for pot culture on account of their berries.—JEAN SISLEY, *Monplaisir, Lyons*.

VIOLETS.

IT is exceedingly interesting to find so excellent a gardener as "J. C. B." is advocating the raising of single Violets from seed. But having lived many years in a district where single Violets, and specially the Russian, Superb, and The Czar, are grown in vast quantities, and having grown both these and *Victoria Regina* largely also, I have never yet met with natural seedlings, or, at least, only in very small numbers. Still further, I have not heard the market growers complain of their stocks being affected by seedlings. One would think that were Violets naturally productive of fertile seed, when plants were grown in vast quantities on the same ground for at least three years successively, seedlings would be abundant, and yet I have not seen any. On the whole, the market growers would, I think, prefer to stick to the present plan of renewing their plants, which is invariably done as soon as possible after the last bloom is gathered. As I have said, the plants remain in the same spot about three years, and at the end of that period have become big clumps. When replanting is decided on, the outer margins of these clumps are cut off with a spade, shaken out, pulled to pieces, and portions formed into young plants, which are dibbled perhaps out in the open in rows at 2 feet apart, or else in the orchards beneath the standard trees—the favourite place—at such intervals as may be most convenient. Violets endure drought pretty well, for I have seen breadths after replanting to be almost withered and leafless, and yet a month later green and full of vigour. By the autumn these have become big tufts, and early in the following spring produce fine flowers in plenty. The young plants or pieces are simply dibbled in, perhaps a bit roughly, but the result is as good as if half a dozen chapters of directions had been written and implicitly followed. I have but recently seen a similar process followed in the case of double Violets, but planted on a broad, sloping, west border beneath a high Hawthorn hedge. The soil is of the ordinary field kind, but well manured, and the grower turns out thousands of fine plants every autumn with extreme ease. He has, of whites, *Comte de Brazza* and *fragrantissima*, both excellent; *Marie Louise* and *Neapolitan*, mauve; and the fine old *King of Doubles*. It only needs Mr. Chambers' fine new double blue kind to be added to these to make the best possible half dozen of double Violets. London fogs are the chief enemies of Violets in this locality, but more especially the double varieties. Harm does not arise because the plants lack robustness or have not been well seasoned, but the fog is a distressing metropolitan adjunct to which Violets are victims. Even in frames they are not always safe; still in such case the injury done is materially alleviated. After all, to our many growers Violets remain one of the most profitable of market flowers. A. D.

Golden Meadow-sweet.—The golden-leaved form of our common *Spiræa Ulmaria* is remarkably bright, showing up conspicuously in the rock garden at Kew. This and the golden *Moneywort* rank amongst the best of our variegated hardy plants.—E.

A combination.—An exceedingly beautiful combination is made by clumps of *S. domon's Seal* and *Dielytra spectabilis* intermixed. The best position is one somewhat protected from late frosts, as the latter is tender to some extent, but still when grown thus naturally it blooms during May and June, and produces richer coloured flowers than when under glass. Both the above plants have a pendulous habit of growth, and produce a very charming effect when strong and well established.—D.

Aquilegias.—The Columbine is naturally the most striking and effective of garden flowers, but some of the garden varieties of *coronaria* are lumpy and associated with dull leaden colours. Still, the

flowers of the best kinds, such as glandulosa, chrysantha, cærulea, and californica, are very elegant and beautiful, although none have more beauty allied to size than the first named. But that is a dwarf and somewhat weak grower, lacking that robust habit found in the strong chrysantha, for instance, which once well established seems imperishable. But it is a curious fact, so far as my experience has gone, that intercrossing these two kinds seems to induce even more robust growth than chrysantha exhibits. That is hardly the result looked for in crossing a weak with a strong kind, but the strong chrysantha, being the pollen parent, seems to have so strongly impressed itself upon the weaker, that the seedlings are much more robust in growth than those of chrysantha itself. A cross made a few years since between chrysantha and a white form of coronaria gave a batch nearly all rosy coloured and a few flowers spurless, but the growth is, as compared with others, remarkable, the line of plants coming up year after year with wonderful vigour. It may be that in intercrossing species or forms of species we spoil the floral characters of these species, but if we get robust and enduring habit, very much is gained, whilst I have not yet seen the product of such cross which is not pleasing as a garden flower, and many of Mr. Douglas's hybrids, for example, are very beautiful. Glandulosa from seed sown in a frame last spring is now giving plants carrying ten to twelve blooms, which, transferred to pots, are lovely objects in the greenhouse.—A. D.

Spring bedding.—When at Plawhatch a few days ago I could not help admiring the spring bedding, which was at its best. The place is situated on very high ground, and is consequently exposed. After the long winter one would scarcely have expected to see things looking so well. Mr. Draper, the gardener, informed me that he always plants much closer than is usual for spring bedding, as experience has taught him that the plants stand severe weather much better. When the surface of the beds is perfectly covered, each plant protects its neighbour, and it is obvious the frost cannot have the same hold upon them as when there are open spaces between each plant. As mentioned previously, the beds are now at their best, and this fact raises the question whether spring bedding is not a mistake. Although the plants have survived the cold and look well, it is only the recent warmth that has brought them to their present state of perfection, and now the beds are wanted for the summer display. No one would think of disturbing the plants when in full beauty; therefore the summer bedders will be fully a month before they are in position. Bearing in mind that the spring bedders are short-lived, this loss of time becomes a serious matter. On the other hand, who could tolerate bare beds close to the house from October to June? Slowly, but surely, the love for beautiful hardy flowers is increasing, and at the same time the bedding craze is becoming a thing of the past. As an example of this, a nurseryman, who used to sell great quantities of bedding plants, tells me that there is not nearly the demand there used to be, and several large plant houses formerly devoted to them are now utilised for growing cut flowers for market.—A. HERRINGTON.

A new Jacob's Ladder.—I should be glad of your opinion of this. As it grows with us, it is a thoroughly good garden plant, far better than any other of its family, and a long way ahead of Polemonium Richardsoni. It is a handsome and graceful plant, 2 feet high, foliage very good and symmetrical, and of a fresh, pale green colour; the flowers, the pretty grey-blue that you see, with bright yellow anthers, measure on an average $1\frac{1}{2}$ inches across, often $1\frac{3}{4}$ inches, and are carried in compact, branched heads of twenty or thereabouts. It was raised here in 1884, from seed sent from the Saharanpur garden. The packet was labelled "without name;" it was probably collected wild, as other packets accompanying it were marked with the elevation. Botanically it is not distinct from *P. cæruleum*, so reported from Kew, where the first flowers were sent for identification. I therefore know it as a fine Himalayan Jacob's Ladder, and

have given it to one or two friends under that name. It is perfectly hardy, and will grow, as far as I know, in any part of any garden, only avoiding over-rich treatment, when, especially in a damp climate, it is shy to flower. Here it is perfectly free, and certainly a good thing.—G. JEKYLL, *Munstead, Godalming.*

* * A very graceful Jacob's Ladder, sent by Mr. Duthie, Saharanpur, who will, no doubt, kindly supply a name for it.—ED.

WORK AMONGST JUNE FLOWERS.

THE latest of the Auriculas are now quite over. Even the latest alpinæ in a shady position in the rock garden could not stand the heavy rains of the last forty-eight hours. The fancier must not be idle; he will have plenty to do in keeping his plants quite free from insect pests. As soon as warm weather sets in, it is difficult to say whether the green-fly on the leaves or the white Auricula aphid on the roots increase most rapidly. For the destruction of green-fly fumigating with Tobacco smoke is the most speedy and the most certain remedy. The woolly aphid on the roots can only be effectually dealt with by turning the plants out of the pots and carefully removing the pest, either by washing the roots if they are very badly attacked, or, if only slightly infested, by removing the aphid with the fingers. Repot the plants in clean pots, and use sweet turfy loam, enriched with a fourth part of decayed stable manure, also leaf-mould and sand. The small seedlings and the offsets removed from the parent plants in the spring must also be repotted when necessary. On the careful attention which the plants receive at this season their future well-being depends. Full cultural instructions have been given in previous numbers of THE GARDEN; it is enough now to remind growers of the importance of attending to the work in good time.

THE TULIPS are now in full beauty. Last year, on the 26th of May, they were in about the same stage as they are now. It is now, as I write, the 4th of June, a difference of only nine days; but a few warm nights—the temperature ranging sometimes above 50° as a minimum—has brought them on as if by magic. They were planted on the Dahlia ground, and that having been very richly manured, the flowers are much larger and brighter in colour than usual. Some of the very finest are the following: Bizarres—Sir J. Paxton, very dark, heavy flame on clear yellow ground; Everard, scarlet flame; Colbert, deep rich gold, maroon flame; Dr. Hardy, a more refined flower than Everard; Masterpiece, the best-feathered bizarre and the earliest; George Hayward, grand variety. In byblømens, Lord Denman, a large, handsome variety, was the earliest; Friar Tuck, a handsome feathered form; Duchess of Sutherland, very fine and the darkest byblømen, except Mrs. Jackson, which is a very striking variety, but the stamens are stained; David Jackson has never gone out of the breeder form with us. Talisman must be put down as the finest flamed byblømen; the flowers are so correctly marked and of the largest size.

In roses, Chamer is pre-eminently a flamed flower; it is not only of the largest size, but rich in colour; Heroine, very fine; Mabel, large and fine, broken from the breeder state this year; Lady Sefton, flamed scarlet; Madame St. Arnaud, very delicately flamed clear rose; Pretty Jane, large and fine, broken this year from the breeder form; Lady Catherine Gordon, flamed scarlet; Tomlin's Fanny, distinct and pretty. These are a few of the most striking at present in flower.

PINKS showed signs of suffering early in the year, but we gave a good surface dressing of rich compost, and they have started into vigorous growth and promise to give a large quantity of bloom; they generally come into flower about a month later than the Tulips. Ranunculuses are also growing with remarkable vigour, and show the strongest bloom that it was ever my good fortune to see, and not a plant has missed. The ground was rather dry a few days ago, and I contemplated giving them a liberal watering, but a good shower of warm rain

came on the 2nd and again on the 3rd, with a night temperature of 51° as the lowest point, and the leaves have become brittle with the rich supply of moisture. May, June, and July are all pleasant months for the florist, who grows full collections of these fine old favourite flowers. The double Anemones are just opening their many coloured flowers; they are not a week behind the Tulips, and before these two are well over the Pinks and Ranunculuses will be in bloom. The forcing Pink pipings ought to have been put in by the end of April, and by this time ready to be planted out in the open ground; they will, if well treated, form large clumps by the end of September; at that time they may be potted up to become established before winter sets in. In less than a month the pipings of the laced varieties should also be taken off and planted in boxes, where they soon produce roots in a frame partially shaded. The successful culture of these depends upon the attention the young plants receive after they are rooted. It is necessary that they should be grown into good strong plants by the end of September at the latest. They ought to be planted by the first days of October into the beds where they are to flower.

CARNATIONS AND PICOTEES in pots are receiving a considerable share of attention; they also show the effects of the warm nights and genial rains. We are now staking them, and have also placed about half an inch of rich compost on the surface of the pots. All that they require now is to see that they receive enough water at the roots when the weather is dry. In hot, dry weather they are often attacked by green-fly, which can be destroyed by dusting with tobacco powder. Maggots lurk in the axils of the leaves, and at night they issue forth to eat the tender buds. Thrips are more troublesome than either, but they can be kept off by syringing the plants daily in dry weather. The seedlings from seeds sown in April are now sturdy young plants; they are in boxes 2 inches or 3 inches apart, but in a few weeks they may be planted out in a bed in the garden, and by the end of the season will make vigorous established plants, which will defy the severest winters. Tree or perpetual-flowering Carnations are best out of doors now; the pots may be neatly arranged on a border of ashes, from which the water can run away freely. However much the plants may be cared for under glass, they never make the same healthy, stocky specimens as those produced in an open position out of doors. The plants must not be allowed to become root-bound before they are repotted into their flowering pots. The weather being so fine on the 3rd, we took advantage of it to plant out the Dahlias. It was a question whether to plant out at once, or to repot them into larger pots, but being pressed with work at this season and the weather being so favourable, labour was saved by planting them out at once. The less risky way would have been to repot them, place in a cold frame, and plant out the stronger plants in two or three weeks. If there is danger of frost during the next ten days, it is easy to invert a pot over each plant at night, removing it in the morning.

PANSIES are flowering profusely from plants raised from cuttings in August last. The young plants were kept in boxes during the winter, and were planted out early in April. We grow the largest proportion of what are termed fancyes; these have very richly coloured flowers, but we cannot omit a liberal proportion of the selfs, the white and yellow ground varieties. By and by the flowers will show a tendency to degenerate, but they are renewed by picking all the flowers off, surfacing the beds with rich manure, and pegging down the growths into it. The roots soon lay hold of the rich stimulant, and a second splendid display of flowers is the result. J. DOUGLAS.

Primula reticulata—I think Mr. Brockbank will prove mistaken in believing that he has got *P. reticulata* in flower. I have several hundred seedlings raised from seed, which came from India labelled *P. reticulata*, but they are all *P. sikkimensis*. But if Mr. Brockbank has the true plant, I hope he will show it at some scientific meeting, as I believe

it has not yet been seen in cultivation. Several species sent to me from those who have raised plants from the same seed have all proved *P. sikkimensis*. *P. reticulata* has a leaf with a cordate base, a very distinct character in Himalayan Primroses. I believe I have it, but the plants are very small and came up very late last year from a packet marked "unknown." They will not flower till next spring, and I fear may die, as many Himalayan Primroses do in English gardens, in their second winter.—C. WOLLEY DOD, *Edge Hall*.

Ranunculus Lyalli.—This excellent plant, almost new in English gardens, is now in good flower at Mr. Bartholomew's, Park House, Reading. It is a giant Buttercup, of a dazzling white, 2½ inches across, flowering in branching heads, like a Marsh Marigold. The blooms have a double row of petals, which gives a half double look to the flowers. The root leaves are large and handsome, also like Marsh Marigold, but peltate. Anyone wishing to see this good new plant from the Antipodes has permission to call at Park House, where it will be in bloom for some ten days from the present date (June 19), as nearly as may be judged.—G. J.

Chrysanthemum multicaulis.—A plant to me new and which I am this year growing for the first time. It is from the Continent. A hardy annual of very dwarf Daisy-like growth, the foliage lying round close to the ground. The flowers, about 1½ inches over, are single, bright yellow, and thrown up singly, just as the flowers of the Daisy are on single stems. Curiously enough, also, the flowers close up at night. If a name may be coined, I venture to dub it the Butter Daisy, for it resembles *Bellis perennis* much more than it does the *Chrysanthemum* tribe. Not many flowers are yet open, but I anticipate when in full bloom it will prove to be a remarkably pretty thing, and a real gain to rock plants.—A. D.

Coloured Ivy leaves.—Mr. Groom, in his article on "Raids on Wild Flowers" in *THE GARDEN* (p. 510), alludes to the pretty colour which some of the Ivy leaves assume during the winter months, and "presumes it is owing to the nature of the soil." I cannot agree with him as to the cause, for if it was owing to the soil, why should we see these beautiful leaves all over the country? They are generally found in places fully exposed to the sunlight, and from this fact I have come to the conclusion that the colour is caused by the action of light upon the fluid contents of the leaves at a time when they are in a dormant state. What becomes of the colour in spring when growth commences? It disappears. Has Mr. Groom ever noticed that when *Pelargoniums* are put out to harden off previous to planting the leaves assume various colours, owing no doubt to their being starved in a pot and growth at a standstill? The colour disappears as soon as fresh growth commences.—A. HERRINGTON.

SHORT NOTES.—FLOWER.

Mossy Saxifrage (*Saxifraga hypnoides*).—This charming plant we saw growing well on a garden wall at Kew. It was in full flower, notwithstanding its dry and sunny position.—E.

Marica cœrulea.—A large lily of remarkable beauty, bearing on a tall and gracefully arching stem a succession of blue flowers about the size of *Iris Kämpferi* in twos and threes at a time. Now in bloom at Park House, Reading.—G. J.

Alpine Wallflower (*Cheiranthus alpinus*).—This brightens the rock garden at Chiswick at the present time, and several plants were blooming in one of the pits. It is of dwarf habit, and the showy yellow flowers are borne with great freedom.—E.

Iris susiana.—I have a plant of *Iris susiana* bearing a strong flower spike, a flower of which will be open in a few days. The plant has stood planted under a wall facing south all through the past severe winter in a small back garden, and has had no protection other than that of the wall.—JAMES RONCA.

Herbaceous Pæonies.—Will any of your readers give me the names of a few double varieties that will thrive in the neighbourhood of London (Clapham)? I have planted several this spring, but they all seem to be dying off, although I have taken great care in mulching and manuring them, &c.—RICHARD VESLEY.

Heering salad.—Mr. Barnandt, of Holland, says the name "heering sallats" is applied in Holland to carpet bedding. The heering salad was composed of herrings, the

yolks of eggs, mustard, and sundry vegetable materials, each differing in colour, arranged in patterns in dishes, and was set outside the restaurant to entice the customers in. Not a bad name!

The Plantain leaved Leopard's-bane (*Doronicum plantagineum excelsum*).—This is a fine plant for the enrichment of the border in spring. It may be regarded as a very robust form of the type; the flowers are yellow, and make a great show of colour.—C.

PHACELIA CAMPANULARIA.

ANNUALS, and especially those of showy character, ought to make features in every garden, however small it may be. They are of distinct habit and bright appearance, besides being highly useful in many ways for which plants of a perennial character are not adapted. In borders or beds of permanent bulbs, annuals such as the *Phacelia* are remarkably useful for giving colour to the garden during the most enjoyable months of the year. Bulbs, generally speaking, are at rest during the late summer and early autumn months, and this is the time when the garden should wear a gay aspect. This may be accomplished by a judicious use of these charming plants. Great care, of course, is required in selecting suitable kinds; for instance, where



Phacelia campanularia.

the ground is heavy and the bulbs require all the sun they can obtain to ripen properly, it would not do to plant those of dense growth; whereas in a light soil the selection as to habit is of no consequence. Many of them are so floriferous, that the display will abundantly compensate for the trouble of sowing and thinning, which in the case of hardy kinds, as *Phacelias*, is a small matter. When sown in the open ground—and we believe this practice to be far preferable to sowing in pots—the main thing will be to sow the seed thinly. As soon as the young seedlings have produced their first leaves, thin out to the required distance apart, say from 6 inches to 12 inches, as plenty of room is essential to the development of foliage and flowers. *P. campanularia* (here illustrated) is one of the latest introductions, the seeds having been received from California about five years ago. The flowers are smaller than those of the old *Phacelia Whitlavia* (*Whitlavia grandiflora*), but much brighter in colour, being vivid gentian-blue, and very striking when grown in a mass. It ripens seed freely in this country. *P. Parryi*, a species with deep violet flowers, is also well

worth growing; it makes a charming companion to the above. Others, such as *P. loasifolia*, *Menziesii*, &c., are also very desirable. K.

HERBACEOUS PLANTS AT MANCHESTER.

A GRAND collection of plants was brought together at Manchester, the two most noticeable features being the classes for Orchids and herbaceous plants. In both of these departments Manchester stands unrivalled. There may be finer collections of Orchids in the south, and there is nothing in the north to equal those of Sir Trevor Lawrence and Baron Schroeder. There is, however, nothing in London or anywhere else to equal the grand exhibits of herbaceous plants contributed both by professional growers and amateurs. Nowhere are herbaceous plants so carefully and well exhibited as at Manchester; they are neither bunches of cut flowers, huddled together, nor plants dug up out of the ground, but are carefully grown in the pots in which they are exhibited, and do not therefore flag when the exhibition is half over. At Manchester both nurserymen and amateurs compete. One exhibit alone, that of Messrs. James Dickson and Sons, Chester, occupied 300 square feet; while Messrs. Arthur Dickson and Son had a large exhibit; and Messrs. Broome, Mellor, &c., amongst amateurs, contributed good collections.

Amongst hardy plants there were many common enough, but from the excellent manner in which they were exhibited, had all the charms of novelty. This was the case with some large pans of the Cobweb Houseleek (*Sempervivum arachnoideum*). The plants were shown in pans about 18 in. in diameter, on which pieces of stone had been placed, so as to form a slight elevation. Over these the Houseleek creeps irregularly, and forms a pleasing carpet. With exposure to wet these curious plants lose their peculiar characteristic. There were several good specimens of Lilies exhibited, amongst them the fine Bermuda Lily (*L. longiflorum* Harris). Besides these were good examples of the following early-flowering Lilies: Crimson-anthered Lily (*L. Szovitzianum*), one of the most beautiful of all; Nankeen Lily (*L. testaceum*), tall and stately, with its beautiful uniform colour; Siberian Orange Lily (*L. davuricum*); and the ordinary Madonna Lily (*L. candidum*), which as a white Lily is unsurpassed, and has proved itself amenable both to pot culture and forcing. Terrestrial Orchids were exhibited in great beauty. I have never seen our common native Lady's Slipper (*Cypripedium Calceolus*) in such fine condition. Then there was a beautiful group of the lovely Mocassin Flower (*Cypripedium spectabile*) in fine flower and foliage; the yellow Mocassin flower was also in fine condition; it is somewhat strange that the American species is more easy to cultivate than our native ones. I have found it so, and I believe others are of the same opinion.

Of what we term more especially alpine plants there were some beautiful pans; the spring Gentian (*Gentiana verna*) was one mass of bloom, and what can be more lovely than this when well grown? Alpine Pink (*Dianthus alpinus*) was superb, but there is some confusion about these Pinks that I should like some day to touch upon. It is a lovely little thing when smothered with its bright pink flowers almost on the ground itself. Charming little colonies of the Bird's-eye Primrose (*Primula farinosa*) were very lovely; also *P. Munroi*. *P. obconica* can hardly be looked upon as a hardy plant, but it was very attractive. *Armeria Lauchiana* was also a pretty plant with stems 4 inches to 6 inches in height; its rosy crimson flowers make it very bright, while its dense close habit fits it for edgings. The Androsaces—difficult plants to manage—were represented by probably the easiest grown of the family, *A. sarmentosa*, which rapidly covers the ground. There was an excellent example of it here smothered with flowers; the woolly-leaved *A. lanuginosa* was also exhibited. It was somewhat late for the Anemones, but the Snowdrop Anemone (*A. sylvestris*) was in good condition with its pure white flowers; but let growers be careful, as it is of very free growth, so that once it obtains a firm hold, it is almost impossible to eradicate it. The charming yellow Wood Anemone (*A. ranunculoides*), bright yellow in colour, was also

interesting. There were some good pots of the very fine Sir Watkin Daffodil, which still maintains its character. Plantain-leaved Leopard's-bane (*Doronicum plantagineum excelsum*) was shown, but this fine showy plant can only be seen to perfection when growing in a border where it can have plenty of room. *Tulipa retroflexa* attracted attention, as did also *T. cornuta*. Iceland Poppies were also well shown. The Quamash (*Camassia esculenta atro-violacea*) was very beautiful; it is an improvement on the ordinary type. The ramosus section of *Gladiolus* is excellent for early blooming in pots, and some of the varieties, as *Rosy Gem*, *ardens*, *elegantissimus*, and *Ne Plus Ultra*, were shown in fine condition, and are very useful for cutting. They are always exhibited well at Manchester. *Pæonia tenuifolia* and its double variety are pretty and interesting. *Phlox Nelsoni* and *setacea* were in good condition, and also a species named *Phlox stellaris*, which has a pretty drooping habit and bears numerous lilac-white flowers. Then there was the charming *Rock Forget-me-not* (*Omphalodes Lucilike*), and *Celsia Areturus* makes a fine pot of yellow bloom, and, although not so showy as the fine *Celsia cretica*, is still very pretty.

There was, of course, a good display of perennial Larkspurs, which are so effective in the garden. Of these, the lovely variety known as *Belladonna* was fine, but there were many good varieties and some excellent seedlings from Messrs. Jas. Dickson and Sons. These will soon be in perfection in the garden, and it was pleasant to have a view of them somewhat in advance. By gentle forcing, and in some instances retarding, the different varieties can be exhibited together, and thus lovers of these beautiful and interesting plants have an opportunity of selecting either for rockery or garden and avoiding those of indifferent character.

DELTA.

FRUIT GARDEN.

W. COLEMAN.

UNHEATED FRUIT HOUSES.

ALTHOUGH I am strongly in favour of a flow and return pipe, if not for forcing purposes, certainly for the protection of the flowers in the spring, for ripening the wood in the autumn, and making the structure useful and enjoyable through the winter, there are many ways in which unheated houses may be made useful and profitable. In gardens of note where forcing is carried on with spirit, a large cold house or glass-roofed shed is invaluable all through the spring for hardening off and retarding plants, and now, even the middle of June, I question if a structure of this kind, wherever situated, will not be found full, if not crowded. Plant growers can, of course, enumerate an immense number of plants, including forced *Roses*, *sub-tropicals*, &c., which require a certain amount of hardening before they are fit for turning out into the open air; also of plants coming on for summer decoration when the forced stock is over and hard-wooded specimens are making their growth. None of these cultivators would object to hot-water pipes, but, provided they were not forthcoming, few, if any, would decline the house without them.

To the fruit forceer they are equally valuable for precisely the same purposes, as orchard houses can be relieved by the transfer of pot trees that have failed or given crops of fruit, also of *Pears* and *Plums* that it is their wish to work through a cold house to the open air to ripen their fruit. Many of the better varieties of early and mid-season *Pears*, which can be had in better condition from the open air than from glasshouses, require gradually inuring to a free circulation of fresh air until settled summer weather favours the final move, and this structure I have found ex-

tremely well adapted to the purpose. For retarding or keeping ripe *Strawberries*, or ripening up late varieties, a few shelves near the glass not only do good service, but they also relieve the mind, as these breeders of parasites and insects can be quarantined as it were away from the occupants of the forcing houses. When cleared of these, no cold house need be allowed to stand idle, as *Tomatoes* got well advanced in another place will yield heavy crops of fruit throughout the latter part of the summer and the autumn. From this time through the early part of the winter the vegetable gardener, and possibly the *Chrysanthemum* grower, would have their pull, and although the latter might find stagnant moisture a drawback, the former could easily occupy the whole of the space with his *Veitch's Cauliflower* and *Protecting Broccoli*, his pot *Parsley* and *salading*. In the unheated orchard house failures sometimes occur, but fruit trees of all kinds, *Peaches* and *Nectarines* included, have been grown plentifully and good. Indeed, these fruits, also the better kinds of *Gages*, *Golden Drops*, and choice *Cherries*, grow to a large size and finish perfectly in ordinary seasons. In a large lean-to house here without the aid of fire-heat I grew some of my best autumn *Peaches* and *Nectarines* for many years, and I do not remember ever having missed a crop. When at last I succeeded in getting it heated, I at once set about putting up a span roof with rough boarded sides, and furnished it with a set of old pot and tub *Peaches*, which many gardeners would have thrown into the fire. These relieved of their pots and tubs and mounded round with soil soon made fresh, healthy wood, and as yet, this year included, they have set enormous crops of fruit. The *Peach* and *Nectarine*, however, although less hardy than the *Plum* or *Cherry*, when overtaken by intense frost on open walls, in cold houses, are not so liable to be affected by a damp atmosphere when in flower, and for this reason I consider them safer and better adapted to cold or unheated house culture. All sticklers for colour, myself included, consider *Peaches* from standard or bush trees less valuable than fruit from trellises; but a fair percentage can be coloured, and where *Peaches* are used in a multitude of ways, as we use them here, pale *Peaches* can be turned to profitable account. As all the numerous varieties are not alike suitable for this mode of culture, very late sorts, like *Walburton*, the *Mignonnes*, whose buds suffer from damp in winter, and others subject to mildew, should be avoided. *Bellegarde*, *Stirling Castle*, *Violette Hative*, *Alexandra*, *Noblesse*, *A Bee*, *Hale's Early*, *Crimson Galande*, *Belle de Doné*, and *Magdala* succeed well with me. *Prince of Wales*, *Barrington*, *Sea Eagle*, and the *Nectarine Peach* I have tried, but, owing to the great weight of their fruit, which turns them point downwards, and their lateness, they do not answer my purpose so well as the preceding. Of *Nectarines*, the latest, like *Victoria*, excluded, all the sorts I have tried answer very well. The old *Elsruhe*, *Stanwick Elruge*, *Violette Hative*, and *Lord Napier* are excellent—good croppers and hardy. In the south of England, where the climate is little inferior to that of Jersey, suitable varieties of *Grapes* are now grown without the aid of fire-heat; and, if I mistake not, Mr. Worthington Smith for years has grown good *Madresfield Court Muscats* near London. The price of good *Grapes* now does not leave a margin for unnecessary expense; therefore, those who have the command of warm sheltered spots should give the *Hamburgh*, *Madresfield*, *Royal Muscadine*, the best of the *Sweetwaters*, and *Foster's Seedling* a

trial. When in the neighbourhood of Gosport the other day, I learned that many amateurs had tried and succeeded with *Hamburghs*. What they can do near the sea, skilful gardeners may accomplish further inland. I conclude by saying heated houses are preferable to cold ones; but those who cannot get the first may derive much pleasure from the use of glass alone without the aid of fire-heat.

APPLE BLOSSOM.

IN view of the suggestions made in THE GARDEN, p. 507, that note should be taken of the varieties of Apples which make the most ornamental trees, a close observation of all the sorts which have flowered freely here (Berks) this year has been made, with several interesting results. In the first place, it would seem that just as the varieties producing the most highly flavoured fruit are usually the worst growers and most liable to canker, so the sorts whose fruit is particularly brilliant in colour have generally pale flowers, which are not conspicuously ornamental. A notable instance of this is *Cox's Pomona*, a variety with very bright and beautiful fruit, but of which the flower is almost white, even the buds being only of a sort of yellowish colour with a faint pinky tint. Now, *Apple blossom* which has not at least bright rose-tipped buds is hardly worthy of the name, and is certainly not worthy of inclusion in an earthly paradise where its presence is only desired, as on a flowering shrub or ornamental tree; so that a look-out has been kept for varieties which, while forming handsome trees, produce most freely and constantly the largest and brightest blossoms. It is consequently a mere accident that the list includes many of the very best—mostly cooking—Apples; but such is nevertheless the case. One of the best and brightest of all, making a good tree, free and constant, sheeted with bloom and glowing buds, and with a first-rate cooking *Apple*, is *Hawthornden*, commonly called *Old Hawthornden*; and next to it, perhaps, in freedom and brightness of flower, and rather before it in value of fruit, comes *Lane's Prince Albert*. *Lord Derby* is exceedingly handsome, producing great clusters of very large flowers and grand crimson buds, making a handsome tree and bearing first-rate fruit. The flowers of *Ringer* are very large and abundant, and the buds bright red, as are those of *Stirling Castle*, while both varieties are first-rate Apples and make good-looking trees. *Annie Elizabeth* and *Lord Suffield* produce magnificent and highly coloured blossoms, but in both there is rather a purplish tint underlying the red of the buds, which detracts somewhat from their brightness; the exceptionally handsome habit of the former, however, and the profusion and general value of the latter, involve their inclusion even in a select list. The flowers of *Dumelow's Seedling* are rather pale, but very good-looking, the buds being of a clear fleshy pink colour; they are very freely produced, and the fruit is perhaps the best all-round late cooking *Apple*. This variety has many synonyms, of which the most common is *Wellington*. *Court Pendu Plat* makes a handsome tree, and flowers so late that the brilliant red buds with which it is constantly furnished are always conspicuous among the paler cloud of expanded or passing blossom of other varieties with which it may be associated. *Hambledon Deux Ans* makes a large and striking tree, especially as a standard, producing freely its well formed flowers and fairly bright-coloured buds; and *Barchard's Seedling*, though less useful, makes an even gayer standard tree, either when in bloom or when covered with bright yellow, red-streaked fruit. *Golden Pippins* also make fine standards, and although the flowers are rather paler and not over large, yet they are produced in such masses as to be highly effective. *Warner's King* (syn., *D. T. Fish*) is good, well coloured, and constant, and the moderate-sized flowers of *Blenheim Orange* are pretty enough upon large trees, but not sufficiently freely produced upon young plants. *Tom Putt* is very handsome and good in all ways, in flower, fruit, and form of tree, and the same may be said of *Mère de Ménage*, in spite of its flowers being

rather pale. Lady Hemiker, a first-rate and showy Apple, has handsome, solid-looking flowers and bright pink buds, but does not always make a well-formed tree; and Sturmer Pippin, a very good-looking tree, has large flowers and bright red buds, which, however, lose their colour somewhat rapidly. Frogmore Prolific is not so red in bud as some varieties, but is nevertheless very good, and always flowers abundantly. Loddington Pippin and Bedfordshire Foundling both produce very beautiful round flowers in large clusters, rather pale in bud perhaps, but most attractive, and the latter especially a handsome tree. Catshead has one of the largest individual blossoms among Apples, but it is hardly free enough; Cellini, though only of moderate size and pale, is not so dingy looking as Cox's Pomona, and is so free and constant as to be effective, and the same may be said of King of the Pippins and Tewkesbury Baron.

Of the paler-coloured varieties one of the handsomest is Grand Sultan, with very large, almost pure white, flowers throughout, and another is Lord Grosvenor, with exceedingly handsome round flowers and fresh, though not deep-coloured buds. It is interesting to note that this variety, which some growers have asserted to be identical with Jolly Beggar, is quite distinct in flower and habit, the blossom of the latter, where the two sorts are growing side by side under precisely similar conditions, being comparatively small and insignificant. Margit, though the flower is pale, makes a pretty tree, especially as a bush, and in a sunny position the fruit is very bright.

Perhaps it will be equally useful to enumerate some of the varieties least valuable for the production of a display of bloom, and foremost among such come the sorts whose petals are produced, so to speak, on a long stalk, whereby the calyx is visible between the petals, and the flowers have no appearance of solidity. Golden Noble is a typical example of such a flower, and so, more or less, are Small's Admirable and Echlinville Seedling. Duchess of Oldenburg again, in addition to being almost colourless, has narrow twisted petals, which give the bloom a singularly flimsy appearance. Cornish Gilliflower, with its curious semi-pendulous habit, is not effective, and both Gloria Mundi and Winter Greening, in addition to having pale flowers, make unattractive upright trees. Some varieties, such as Worcester Pearmain, Duchess's Favorite, &c., are gay enough in autumn with their brightly coloured fruit, but the flowers of these and the following are mostly poor and pale in colour: Gipsy King, Golden Harvey, Queen Caroline, Alfriston, Washington, Scarlet Golden Pippin, Red Quarrenden, Old Nonpareil, Mannington Pearmain, and Ribston Pippin, which is also very subject to canker. Cox's Orange Pippin, the best of the dessert Apples, though free and constant, is not among the most conspicuous in bloom, but it seems little short of impious to criticise such a delicious fruit as if it were a mere flowering shrub, and it may be suggested that Cox's Orange Pippin should be abundantly planted where it can have the full sunshine, when the fruit will assume a brilliancy of colour that will quite compensate for the lack of brightness in its flowers. T. W. G.

Late keeping Apples.—Notwithstanding the value of early Apples the late varieties are far more so, considering that when the former are in use there are so many other fruits available for both the kitchen and dessert. The former could be dispensed with much better than the latter, and, strange as it may appear, there is a great predominance of early Apples in most private gardens. Take from February until June, there are few kinds of fruit available for dessert, but not so from July until Christmas. This state of things arises from two causes; firstly, from a bad selection; and, secondly, careless storing. It is quite as easy to have a good supply of first-class late Apples as early, if care is taken, as there are plenty of good late-keeping kinds. In this garden we have a good selection, many of the sorts having been planted within the last ten years, and the last two years we have had a liberal supply well into the spring or early summer.

This year, in the first week in June, we had good samples of twelve varieties. It is quite unnecessary to put them into barrels to keep them, as we preserve them in an ordinary fruit room from the time they are gathered. This is where the fruits were kept that were so well spoken of by the editor of THE GARDEN; then why go to so great an expense to provide storage accommodation!—J. CROOK, *Farnboro' Grange, Hants.*

PLANTING VINES IN JUNE.

GROWERS of Grapes by express find propagating young Vines one year and planting out the next what we term yearlings is altogether too slow, especially where the old Vines they are intended to replace have been forced early, and the house becomes ready for re-planting by midsummer. Whether or not a year is gained and Vines, grown into a fruiting condition by the time they are twenty months old, live to make centenarians, experience alone can prove, but one thing is certain, many people now adopt the method I am about to describe, and all agree in saying the system so far is satisfactory. In order to carry it out properly the planter must have the convenience for propagating and growing on his own Vines, especially when long distance separates him from the trade, otherwise the check produced by removal from strong bottom-heat which nurserymen employ might frustrate his intentions. Assuming that the house to be planted will be ready by the middle of June, well-ripened eyes should be put in in February and grown on steadily, first in, then upon a hotbed from which the young plants can be transferred to the borders when the latter are in condition for their reception. There are two methods of preparing these Vines—the first, and probably the best, being the sod system, originated and practised by Mr. Thomson, of the Tweed Vineyard, Galashiels. The second is the old plan of striking the eyes in small pots, and giving perhaps one shift to prevent the roots from becoming coiled to any extent, or what is generally termed pot-bound. Of the two, the sod system takes up the most room, as it is necessary to lay the turves Grass side downwards on the top of a bed of fermenting tan or leaves, and fill in between the squares, which should not be less than 9 inches across, with light rich soil to draw the roots and prevent them from drying out. Mr. Thomson, in his work on the Vine, says he allowed the roots to form a complete network over the surface of the turves, and some time before he wished to transfer, each sod was cut round with a sharp knife to induce the formation of several young roots wherever a main root was shortened. These plants in due course were moved bodily with a tan fork, and they grew away freely without feeling the check.

PREPARATION OF THE HOUSE AND BORDER.—Internal planting, it is hardly necessary to say, is imperative, and cleanliness being equally important, the old inside border should be removed bodily, the walls and foundations well scalded and linewashed. The woodwork also should be washed or painted. The arrangement of sound drainage on a concrete bottom then follows. The border for the first year need not be more than 3 feet in width, but it should be formed of materials that will ferment, otherwise fermenting leaves or manure must be placed against it to raise the temperature to 60° before the Vines are planted. The better to secure this warmth it is necessary to cut fresh turf some time in advance and stack secure from wet, when the fresh herbage will soon produce the desired effect, and it will be ready for chopping down and mixing with suitable correctives. These may consist of old mortar rubbish, bone-dust, or horn shavings, and lively burnt refuse from the charring yard—the most useful department in all good gardens. When ready for wheeling in, large sods, Grass side downwards, must be placed on the drainage, the border, close to the front arches or supporting piers, being kept up by narrow strips to form an inside retaining wall. The better to ensure revival of the heat, the border must not be made too firm, but 6 inches at least should be added to allow for settling; further,

as nothing succeeds like success, a lining of hot leaves where plentiful will give valuable assistance at the outset and reduce the necessity for continuous watering. When the border is ready and the Vines are transferred, they should be lightly covered with soil, moderately watered with hot water at a temperature of 90°, mulched with fresh Mushroom manure, and slightly shaded. Similar Vines from pots need not be shaken out, but the coiling roots should be picked out with a pointed stick and carefully spread out in the direction they are to follow.

AFTER TREATMENT.—If summer weather has set in and the sun produces a genial temperature, strong fire-heat will not be necessary. Still, this aid must be at command when ordinary vinery treatment cannot be maintained without it, and atmospheric moisture at first must be abundantly produced by frequent syringing with tepid water, not so much the young Vines as the border and every part of the structure. If all goes on well, shade may soon be dispensed with, and there will be a fair prospect of the Vines filling the house with stout, short-jointed canes by September, when more fire-heat may be essential to the ripening of the buds thoroughly. If the house intended for this method of planting can be got ready earlier in the spring the eyes may be put into the turf in December or January, or Mr. Wildsmith's method of making the border first and striking the eyes upon it may be adopted. On the other hand, the work may be deferred until July, and then the lower buds of the young canes will ripen fairly under sharp autumn firing. I give my first choice to June, as we then have the summer before us; solar heat and daylight are increasing, and all the Vines, including supernumeraries intended for fruiting the second year, get thoroughly ripened.

DISTANCE AT WHICH TO PLANT.—If a good hit has been made upon the propagating bed, and the small squares of turf are found bristling with tiny rootlets ready for immediate action, many may be tempted to plant thickly, fruit, and cut out duplicates, but this is a delusion, as crowding injures the Vines intended for a permanency, and very few indeed cut out supernumeraries until after they have done irreparable mischief. Close planting, if only to avoid temptation, then, should not be thought of, and the old method of putting a Vine under each of the rafters carrying 3-feet lights discarded. Better plant opposite the centre of each light, as the pruning-buds on the spurs will then get the fullest benefit of sun and light, so essential to perfect ripening. This matter of distance, however, must be governed by circumstances, the most important point being the length of rafter, which may vary from 12 feet to 24 feet. Taking the medium of 18 feet, the permanent canes should be 6 feet apart, to favour the ultimate training of two rods from each stem, and the immediate growth of alternate duplicates for giving a few bunches the following year. All the Vines may be stopped when they have made half their allotted length of rod, and those intended to remain will make roots in proportion to the leaves and laterals they are allowed to produce the first season, the second breaks, as a matter of course, being trained to the wires until they reach the apex of the house. Supernumeraries, on the other hand, must have their laterals pinched and re-pinched at the first leaf from the base to the pruning-bud, precisely the same as we manipulate Vines intended for fruiting in pots. The second leaders also may be checked, but not to an extent that will endanger the breaking of the lower buds. Fruit in preference to strong wood being the chief aim, this method of pinching will plump up the main buds, and full exposure to light and sun-heat will favour perfect maturation, the keystone of success in fruiting young Vines.

HEAT AND AIR.—I have said June planting favours growth with a minimum of fire-heat, especially in hot, brilliant seasons, but there are periods even in summer, when gentle fires are essential to the maintenance of a brisk vinery temperature, say of 65° to 70° through the night and 75° to 80° by day. Muscats, of course, require a little more heat than would be good for Hamburgs, but in order to

secure quick, solid growth of short-jointed wood, the heat must be adequate to the free admission of air without lowering the temperature. Air through June and a portion of July should be admitted at the top, the earlier the better, to let out vitiated vapour and prevent the foliage from scalding; then as solar heat increases the full volume must be balanced by opening or closing the front ventilators. From this time forward, the Vines being in full vigorous growth, the usual mode of free ventilation to consolidate the wood should be practised, but the final closing must be made to ensure a temperature of 85° to 90° with sun-heat and moisture. In due course the wood will begin to change colour, when still more air with plenty of heat and slightly decreased moisture will favour gradual ripening; but on no account must the main leaves suffer from drought or the attacks of insects.

WATER.—The new borders being narrow and more or less open to the action of the air, the top and internal side should be well protected with mulching or long stable litter. This covering, in preference to the direct syringing of the foliage, should be kept constantly moist, not only to draw the roots upwards, but also to produce a steady rise of atmospheric moisture. Water, pure and simple, will answer this purpose at first, but by degrees it may be tinged with clarified liquid and soot water. No rule can be laid down for the watering of the compost, but, considering the quantity of wood and foliage the Vines are expected to make, it is only reasonable to suppose the supplies must be liberal and frequent.

W. COLEMAN.

SUMMER PRUNING OF CURRANTS.

"J. S. W." (p. 509) says: "I am unable to see how anything but a reduced crop is gained by the summer pinching of Currant shoots as directed by 'J. G.' at p. 470;" and further states that "the Black and Red Currant shoots produced annually from the older wood almost bear at any joint their whole length, and the finest clusters are always nearest the top."

Although I have many Currant bushes, and have made a study of market fruit culture for years, I have never met with a market grower who adopts this extension system of growing Currants, and those who do not pinch in summer cut the young wood down closer than I recommended; in fact, there is no fruit, with the exception of Nuts and Filberts, so severely pruned as Currants. I am sure anyone looking at a market-grower's plantation of the Baby Castle variety, pruned to from eight to twelve main shoots, spurred in as close as a Vine, and noticing the enormous crop of bunches, would never think of adopting the other system. According to "J. S. W.'s" directions, it would need ladders to reach them after the first few years. All I said at p. 470 I still adhere to, for this reason, viz., I have tried it myself with excellent results for many years, and if "J. S. W." has not done so, I would advise him not to miss another season without giving the plan a trial. I am well aware that Black Currants may be grown successfully by leaving the young wood at full length and merely thinning out in winter, but to treat Red and White kinds in the same way is something new. Although the finest buds will, as "J. S. W." says, be always nearest the top, if left to develop full length, it will be at the expense of the old spurred-in branches, as they will soon cease to fruit altogether. On examining some bushes treated as "J. S. W." suggests, I find the last year's shoots average from 1½ feet to 2 feet in length, the bunches being mostly at the top, with a few straggling ones along the lower parts. Although the bushes thus treated soon became larger, after a few years the weight of fruit in the aggregate was more than that produced by the closely spurred-in bushes. Those who do not pinch in summer will, I am sure, cut down closer than I recommended in winter if they expect a full crop of fruit.

J. G.

Ants in vinery.—Will any reader kindly suggest means for destroying the ants with which my vinery is infested?—W. G. G.

SEASONABLE WORK AMONG FRUITS.

ALTHOUGH many growers thought some time ago that the cold weather and keen cutting winds had injured the blossoms to a serious extent, it is gratifying to learn from all quarters that fruit crops generally are likely to be highly satisfactory. Blight and grub, as a rule, blow up in myriads with the east wind, of which this season we have had more than enough, but, so far contrary to expectation, fruit trees of all kinds are remarkably free, and the young growths, though late, are healthy and promising. In the broad orchards so important to west midland fruitists the finest, boldest, and cleanest, although not the brightest, blossom I ever witnessed are now going over. Twenty-four hours' steady rain, which might have been more acceptable from a warmer quarter, has been a godsend both to the newly-set fruit and the roots of the trees, and something indeed extraordinary must now speedily happen to prevent them from giving an abundant yield. This abundance, if I may be pardoned for counting the chickens almost before they are clear of the shells, however, is of little use unless preparations are at once made for careful hand-picking and storing, as this is the only method of turning our increased Apple and Pear produce into profit. I say this advisedly, as I have seen many tons of bright fruit left to rot and sink into the ground, and wagonloads of that bright, saleable, and all-round useful Apple, Tom Putt, ground into cyder worth 3d. a gallon, when I have been selling a good sample at 6d. a dozen. Paul may plant, Apollos may water, and God may give the increase, but until this increase is preserved on a gigantic scale, English fruit growers will not stand the tithes of a chance against the colonists.

The season being late, the general routine also is late; still, work in every part of the fruit garden is crowding in, and the better to keep it in hand the good old maxim, "nothing must be allowed to stand over to the morrow if it can be performed to-day," this year will be found peculiarly applicable. Ripe fruit we may secure, but we must have ripe wood also, and those who take time by the forelock and, next to doing their work well, do it at the right time, are most likely to succeed. Turning to the walls, we find

PEACHES

growing very fast, and many of the shoots are fit for tying, nailing, or pegging in. A few more shoots may require pinching or cutting out, as it is a great mistake to lay in more than will be wanted for another year, and thinning must not be neglected. When Peaches set as they have done this season, thinning is a pleasant piecemeal business, as the trees must be looked over several times, and then, so conservative are gardeners, a neighbour might often do a good turn by putting on the finishing touch. An even spread of fruit, naturally the finest, is the main point, and possibly it matters little whether each Peach hangs from or stands upon the shoot. Oftimes choice is out of the question, but when I can have my pick I follow out my Peach house rule—point upwards to the sun 100 Peaches to 100 square feet of foliage. These brief remarks convey all I have to say upon Peach thinning, for this year at least. Some few, I believe, crop heavier, but I cannot see the utility of straining the trees in the production of stones when they might be more profitably employed in furnishing a smaller number with pulp. Our only insecticide this season has been soapsuds, followed by copious washings with the hose, and my trees never gave less trouble. Where, for convenience and the comfort of moving about with clean feet, a dusting of old lime rubble and long litter have been placed upon the wall path, the heavy crop of fruit will now justify a second addition of the latter, and sparsely foliaged trees will pay for a dash of bone-meal or guano.

PEARS

on walls, also pyramids, have set plenty of fruit, and in due course will require much thinning; meantime the most forward trees, especially on south and west walls, may be divested of gross breastwood to let in light and air, and force the sap

into the lower branches. A clean sweep at this early season is not advisable, as weak growths assist and protect the fruit; whilst strong ones from the main stems, if left alone, soon become robbers. The steady rain has brought about an acceptable change, but it came from the wrong direction to be of much use to us for cleansing heavily copped trees on the above aspects; consequently the hose has been turned on to wash off the decaying blossoms. If well-cropped trees on the Quince stock have not been mulched, timely attention, should the season turn out dry, will save much trouble. Warmth as well as moisture being essential to the full and early development of the fruit, a mulch that will not chill the roots and keep out solar heat will be found the most suitable.

PLUMS AND SWEET CHERRIES

require similar treatment, but the process of pinching over every part of the trees may be more general, especially where the young tips are touched with aphids. If black fly puts in an appearance in any part of the fruit garden, it is sure to be found upon Plums and Cherries, and these being generally trained upon the fan principle, all shoots left for laying in should be dipped before the points are injured. Tobacco-water is the favourite insecticide, and, provided it is used in a weak state, not once, but twice or thrice, until the trees are free, I know of nothing safer. When Cherries, which ripen their fruit early, appear clear of living insects, copious washing with clean water must follow, otherwise the fruit will remain dirty until the time arrives for gathering. Already our feathered friends are ready for action, but timely covering with nets before they get a taste is the only means by which they can be prevented from making a speedy clearance. At one time strong-growing sweet Cherries on our cold ground were seriously affected by an exudation of gum; lifting and replanting on a higher level did not entirely stop it, but recently I have given young trees more wall space, left more breastwood intact throughout the summer, and this troublesome disease has greatly moderated.

STRAWBERRIES

of all kinds, young and old, are blooming strong and profusely; the foliage, too, is plentiful and good—two points, provided they are well thinned and fed, which must tend to quantity and quality. Established plantations from which bulk of good average fruit is the first consideration, do not often get, if they require thinning, but younger plants, whose produce is intended for special purposes, require this attention. The process of thinning and tying, or propping up, to keep the fruit free from grit and vermin, should go hand in hand; and trapping where mice and slugs are troublesome should be vigorously followed up before their dainty food is ready for them. Where fresh stable litter is used for covering the ground between the rows, it answers best when introduced before the plants come into flower; but better late than never—this work may still be carried on, as one day's rain or a thorough washing with the hose will cleanse the straw from all impurities. Maiden plants from which forcing and planting stock is to be obtained, must not feel the want of water. If well planted last August and divested of their flower-scapes in May, runners will be strong, if not early; moreover, they will be plentiful. The mode of layering is entirely a matter of taste. Some growers layer the runners in small pots, and shift into the fruiting size as soon as they are well rooted. Others fill the fruiting pots at leisure, convey them to the ground, and save further trouble, also checks, by pegging them firmly into the compost. Each plan has its advantages and the reverse, but, provided the stock is satisfactory and the work is properly performed, either plan will ensure 90 per cent. of fruiting crowns. The greatest objection, I believe, to pegging down into the fruiting-pots is the watering, which many think sours and washes out the most valuable constituents of the compost. I always adopt this method, as I have the convenience for watering with the hose, and the plants invariably flower and fruit to my entire satisfaction.

Varieties for forcing.—With the exception of perhaps half-a-dozen sorts met with in almost every

garden, the choice of varieties, like the method of preparing them, is a matter of taste. Vicomtesse Héricart de Thury, La Grosse Sucrée, Sir Charles Napier, President, Paxton, Keen's Seedling, and British Queen stand well, and take a great deal of beating. For early work Vicomtesse Héricart de Thury for a long time stood first, but many, myself included, now give preference to La Grosse, for not only is it the first to ripen, but the fruit is much more even in size, equal in point of colour, and possibly superior in flavour.

BUSH FRUITS,

especially Currants and Raspberries, will still pay for the addition of any extra mulching that can be spared to them, also they will derive great benefit from copious supplies of water. The crops these invaluable bushes are carrying are unusually heavy, and, having escaped spring frosts, the bunches of Currants will be very fine. It will be necessary to keep a sharp outlook for the caterpillar, which, once established, soon ruins the crop, and by the destruction of the foliage injures the trees for the succeeding year. Hand-picking is tedious; poisonous insecticides are dangerous; but, applied before the fruit begins to colour, quicklime is a safe and sure remedy. If rain does not wash the bushes after the caterpillars have been destroyed, a sharp dash with the hose or garden engine will cleanse the fruit and convey nutriment to the roots. Young trees must now be manipulated and trained to suit the several purposes for which they may be required. The bush form is most frequently met with, but the Red Currant is well adapted for training into compact pyramids, which look well and can easily be protected from birds. Trained to clean, single stems, they also form handsome standards for growing in neat, dressy gardens where bushes take up too much room.

GOOSEBERRIES

here are our least promising crop. The heavy load the trees carried last year may have affected them, but the principal cause of failure must be placed to the credit of the bullfinch. In addition to our usual and hitherto never-failing preventive, a wash of lime and soot, alum water was repeatedly applied to the trees. Old nets, too, were cast over them, but all to no purpose. Gooseberry and Green Gage buds they would have, and the scarce and tardy spring favoured their depredations. Thanks to the Small Birds Act, this part of the country is literally teeming with feathered life, and nothing short of good netting in future will prevent them from clearing off the crops of fruit and vegetables they take a fancy to. Where these beautiful but voracious creatures have disfigured the trees, a general trimming of the budless wood and some thinning of the young shoots will produce a beneficial effect not only in letting in light and air, but also in restoring the bushes to a neat and compact form. A correspondent lately recommended the summer pinching of bushes, an operation quite novel to me. I approve of thinning to let in light and air, but all shoots necessary to the formation of the tree in my opinion should be allowed to grow to their fullest extent. Old Currants we sometimes top when the nets cannot be stretched to span the rows or ripe fruit is wanted early, but plenty of foliage swells the finest berries and protects them from birds having an eye for colour.

FIGS.

The thirty hours' steady rain which fell at the beginning of the month will have penetrated the borders, and a mulch of long litter whilst letting in sun-heat will keep the roots sufficiently moist for some time to come. Where the trees are grown under climatal disadvantages, plenty of wall space, thin training, and close nailing will favour the growth and ripening of fine short-jointed wood. Wall Figs must not be pinched, but damaged shoots that are not carrying fruit may still be shortened back to secure an even relay of young wood, and all suckers must be removed to give the stems the full benefit of solar heat.

GRAPE VINES

on open walls and gables this year are unusually late; consequently the ripening of the

fruit in many places is extremely doubtful. Independently of this they are well worth more extended culture, as few climbers produce a better effect. Moreover, being free growers, many a bare wall and roof might quickly be covered with their graceful and refreshing foliage. Like the Fig, they revel in heat, and for this reason they should be freely disbudded, and the shoots retained stopped at the first joint beyond the fruit. Whether this ripens or not, neatness will repay the pains bestowed upon them, and close training will favour the ripening of the wood for another year. It is not yet too late to plant unpruned yearlings from pots, and although ripe fruit may be out of the question, surplus Vines still standing in the open air should be turned out without delay. Quite recently we have turned out a number of these superfluous canes for covering and keeping cool the roof of an iron room. Each rod is trained to a single wire running from a raised bank on the south side to the ridge, all the breaks are allowed to ramble, and, judging from the start they have made, there exists but little doubt that they will reach the highest point by the end of the season. Our prime object being shade, we do not care for fruit; but of this, aided by reflected heat and the igneous nature of the soil, I do not despair, when the rods, a foot above the roof, get thoroughly established. Where ripe fruit is the first object, Royal Muscadine, Grove End Sweet-water, Black July, and Miller's Burgundy are considered suitable varieties, and in favoured localities the Black Hamburg in times past has ripened excellent fruit. Cheap glass, however, and bad seasons have dashed the ardour of hardy Grape growers, but these changes do not detract from the value of the Vine, whose fruit only is tender, for beautifying cottages, or planting against old trees in warm soils and sunny situations.

RED SPIDER.

No one will deny that this troublesome pest is very difficult to eradicate, or even to keep in check, and no one will positively affirm that sulphur-painted pipes are of any real service in destroying insect life. Owing to the coldness of the season, many fruit growers have been obliged to give much more fire-heat than usual to the Grapes, Melons, and other crops, and as bright sunshine, cold easterly winds, and heated pipes are conditions almost certain to lead to an attack of red spider, many more, no doubt, besides myself, have far too much of it to contend with. Once more we have tried painting the flues and pipes with sulphur with no better results than on previous occasions. On several evenings the sulphur fumes were so strong, that we did not care to stay in the house, and certainly were very doubtful as to their effect on the Vines. Luckily, very little harm was done to the foliage of the latter, and unfortunately none whatever to the spider. We have also tried the effect of sulphur fumes in the Melon house, but here again no perceptible harm was done either to the plants or spider, and I am of opinion that once the latter effects a lodgment it cannot really be got entirely rid of, for that season at least. Cold spring water, applied either through a hose or syringe, disturbs them and at the same time destroys many; but they soon recover from this temporary check. "Why not repeat the dose?" some will ask, and in the case of Vines cleared of fruit it is practicable enough, but we prefer to keep the bloom intact on the berries, and this is out of the question if frequent syringings are given. As regards Melons, it is not wise to frequently saturate with very cold water the soil in which they are rooting. Moreover, according to my experience, water, however often and forcibly it may be applied, will not really destroy red spider either on Vines, Peaches, Melons, or Cucumbers. Last season we grew Cucumbers on the "express system"—that is to say, without giving any air—but in spite of the very frequent overhead syringings and the maintenance of a moisture-charged atmosphere, the spider spread rapidly; in fact, appeared to delight in the treatment given. Prevention is undoubtedly better than cure, and if all were as thorough in their preventive measures as Mr. Burrell

in THE GARDEN (p. 492) appears to be, we should hear less about the mischief done by red spider. At the same time, I question if he would always be able to pride himself in having "invariably kept the upper hand of it" were he in charge of more modern houses or any largely constructed of iron. He labours under a great disadvantage in that he has so many flue-heated houses under his charge; but take away half the rafters in these structures, narrow the remainder, or substitute iron bearings, and he would find matters very much worse than they are now. I do not wish to detract in any way from the merit of having so successfully combated the dreaded spider, and merely comment on his practice for the sake of drawing attention to the fact that circumstances materially alter cases.

Sulphur is undoubtedly the best preventive of the spread of red spider, but it must be applied direct to the foliage, otherwise it is useless. Directly the spider is seen on the Vines the under side of the infested leaves ought to be well coated with flowers of sulphur, this being most cleanly when applied with a sponge. Our plan is to dip the latter first in water and then in the sulphur, no difficulty being experienced in lodging a good quantity of the latter on to the leaves. Where much of the foliage is infested, sponging all of it is a somewhat tedious operation, but more time is often spent over a few stove plants that stand less in need of sponging. In the case of Melons and Cucumbers, the quickest method of coating the foliage is through a syringe. A handful of sulphur worked through a muslin bag will mix readily with the water, and sufficient of it may be lodged on the underside of the foliage, in the course of one or two syringings, to check the spider. As a rule, spider on Peach trees may be kept in check by daily syringings, this being discontinued when the fruit is ripening. After the fruit is all gathered the foliage should be well coated with sulphur, and plenty of air being left on the house, no further trouble need be taken. I do not affirm that sulphur on the foliage actually destroys all the spider it comes in contact with, but it completely checks its spread, which is a very important gain. W. I.

GARDEN FLORA.

PLATE 601.

ANEMONE-FLOWERED JAPANESE CHRYSANTHEMUMS.

(WITH COLOURED PLATE.*)

WITH the advent of the above race of Chrysanthemums a very pleasant break was made from the stiff appearance of the older type of Anemone-flowered varieties represented in the annexed cut. The newer race, which the accompanying plate faithfully depicts, explains clearly the difference between the ordinary Anemone-flowered and the Anemone-Japanese. There are several newer varieties which are decided improvements upon those illustrated, as they possess a more defined disc, and the guard petals match better, thus more closely resembling the Japanese section, and for the information of those readers who do not know the sorts illustrated, the uppermost one is Duchess of Edinburgh, which I believe was the first to make its appearance, and at the time caused quite a sensation amongst growers and lovers of Chrysanthemums. The middle placed variety is Madame Thérèse Clos, and the other Souvenir de l'Ardene.

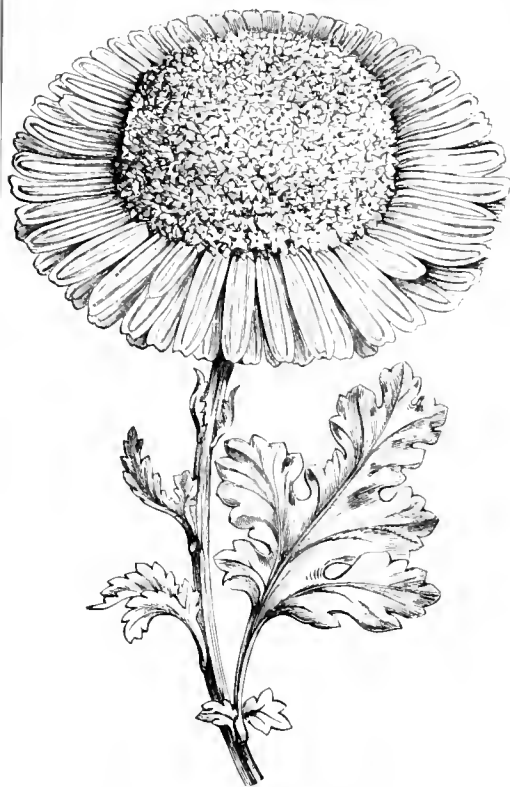
The varieties in this section appear to be finding favour with most people for conservatory use, and also for exhibition, and deservedly so, for when well grown they are very attractive. When the newer varieties first made their appearance upon the exhibition stage they caused such a favourable impression, that many feared they

* Drawn for THE GARDEN in Royal Exotic Nursery, Chelsea, Nov. 20, 1886, by H. G. Moon, and printed by G. Severeys.



would elbow out the older varieties of Anemone-flowered varieties; but, now that the various Chrysanthemum societies are providing special classes for them in their schedules, there is no fear of this being done. The colours of some of them are so chaste, and the characters so distinct, that they cannot well fail to become great favourites. A good yellow variety is much needed, as that colour is indispensable to give the necessary effect in a stand of cut blooms. A pure white variety would also be welcome, as at present the list of sorts is but short, but, no doubt, in time other kinds will be raised. There are several methods of cultivating the plants, but the way in which the forms of the flowers, as also the colour, may be obtained is that adopted for the production of large blooms. Some of the varieties do well trained "bush" fashion, as they flower very freely, and make splendid objects for the conservatory.

Many people think that they are more difficult to grow than either of the other sections, but I have not found them at all capricious, constant attention being the most important matter.



Anemone-flowered Chrysanthemum.

Those wishing to grow this charming race of Chrysanthemums cannot do better than procure good plants by cuttings in the usual way, and grow them on without a check. If this is done, no difficulty will, I think, be experienced with them. It must be borne in mind that the attention paid to them during the months of June, July, and August must be unremitting; that there be not the slightest neglect in watering and carrying out other details.

I find that the Anemone-Japanese varieties can be more heavily cropped than any of the other of the large-flowered sections. The buds should not be selected too early, as thus the flowers are liable to become coarse in the petal, and the centres do not develop so well as when the buds are formed later, and the colours also are, as a rule, much paler. From the end of

August to the middle of September is a good time to select the flower-buds in the south of England, but further north they may be selected a little earlier.

I append a list of the best kinds:—

FABIAN DE MEDIANA.—I consider this the best of the type. The guard petals hang almost perpendicular from 3 inches to 4 inches long, of a soft shade of pink striped with a deeper tint; the disc or centre is high and full, of a rosy lilac shade tipped with white. It is a strong grower.

MADMOISELLE CABRIOL.—A large flower, having long flat guard florets of a delicate bluish colour, which sometimes incurve, giving it quite a novel appearance; the centre lilac.

SEUR DOROTHEE SOUILLE.—Fringe petals pale lilac, centre very high and wide; white shaded rose, fading with age to nearly white. This when well grown ranks as one of the best.

MADAME CLOS.—Guard florets flat or strap-shaped, of a beautiful rose-violet; centre full, white shaded with lilac and tipped with yellow. This variety, one of the earliest, is of excellent habit and constitution, and produces blooms in great quantity.

MADAME BERTHA PIGNY.—Rose-magenta guard florets, centre of the same colour. A full, large flower.

SOUVENIR DE L'ARDENE.—Guard florets deep lilac, centre paler. Fine bold, solid flower.

BACCHUS.—Rich velvety crimson, reverse of petals silvery white.

RATAPAIL.—Buff or dull brown, with long guard florets and a medium-sized disc. On account of its peculiar colour it should have a place in this section.

MARGUERITE VILLAGEOISE.—Deep lilac, centre full, of a lighter shade. Very free flowering.

DUCHESSE OF EDINBURGH.—Guard florets bluish white; centre lilac outside, with a yellow inner ring. A medium-sized flower.

MADAME THERESE CLOS.—Guard florets rose-violet; centre disc, which is very thin, yellow.

E. M.

STOVE AND GREENHOUSE.

T. BAINES.

TETRATHECAS (TREMANDRAS).

THOUGH the individual flowers of the Tetrathecas lack the size and brilliancy present in those of some plants, this is compensated for by the profusion in which they are borne, the length of time they remain fresh and effective, and the long succession that is produced. The distinct character of the flowers, and also the graceful habit of growth of the plants, make them worthy of general cultivation. There are two forms of *T. ericifolia*, the Heath-leaved species, one in which the foliage is thickly clothed with hairs, in the other the leaves are glabrous; in other respects there is not much difference in their appearance. Both forms used to be much grown for exhibition, as when the specimens had attained a considerable size and were well managed, the innumerable flowers with which their slender shoots were densely clothed, combined with their distinct colour and form, always made them conspicuous objects.

T. verticillata, is a smaller growing species, with slender drooping shoots and very narrow leaves. The flowers are produced freely from the base of the leaves almost from end to end of the shoots, and are much larger than those of *T. ericifolia*; the colour is a combination of violet and red. The plant keeps on blooming freely and almost continuously from spring to autumn, on which account it is very useful in a small state. This species does not attain a large size, an example that is from 2½ feet to 3 feet in diameter may be looked upon as a large speci-

men. It used to be often met with on the exhibition stage, but now, like the Heath-leaved species, is seldom seen either in the exhibition tent or in the greenhouse. That both are so little grown for decoration may seem strange, as they flower so freely when quite small. In addition to their other desirable properties these Tetrathecas are by no means difficult subjects to deal with, as with fair attention they will last for many years, not being so liable to die off suddenly as some plants.

Both the species are easily propagated from cuttings made of the points of the half-ripened shoots about August. The cuttings should be put in an inch or so apart. Six-inch pots are the handiest size; these ought to be well drained and half filled with a mixture of fibrous peat and sand, finishing off with pure sand. Insert the cuttings and cover with propagating glasses that will just fit inside the pots. An intermediate temperature or a few degrees more will answer better than keeping them warmer; shade will be needed when the weather is bright, as cuttings of these plants, in common with others of a like nature, should be stood well up to the glass, or they are liable to damp. To avoid this, the propagating glasses should be frequently taken off and wiped out. Care must be taken that all decayed leaves are at once removed, as if this is not attended to many of the cuttings will be lost. If all goes on satisfactorily, the cuttings will root during the autumn, but it will be well to defer potting them off till spring. When there are indications of roots being formed tilt the glasses a little, increasing the air gradually until they can be dispensed with altogether. As soon as the cuttings are fairly rooted they will begin to push top growth; when this has made a little progress pinch out the points. This should not be neglected, as it is necessary to thus encourage the formation of sufficient shoots to furnish the plants at the base. Give gentle growing warmth through the winter. About April move them singly into small pots; a mixture of fine sifted peat and some sand suits them well. It will be well to keep the atmosphere somewhat close until the roots begin to move. Stand the plants where they will get plenty of light on some moisture-holding material, as without this the small amount of soil which the pots hold is liable to dry up so quickly that there is danger of the plants getting injured. Watering must be attended to, as if the roots were to become so dry as to cause the shoots to flag, the plants would suffer. A moderate amount of air must be given, regulating the quantity admitted according to the state of the weather; when it is hot, water should be thrown about freely on the floor of the house or pit where the plants are growing, so as to prevent the atmosphere getting too dry. Close early, syringing slightly overhead at the same time. Enough progress should be made by the middle of July to allow the plants to be shifted into 3-inch pots; give soil of a similar character to that advised for the first potting. Tetrathecas are fine-rooted subjects that, from the cutting state onwards, seem to do better in peat than loam. As the growing season draws to a close, disperse with shading and discontinue syringing overhead, giving more air so as to ripen up the growth.

It will be well to keep the temperature somewhat above that of an ordinary greenhouse, which will suffice for them when they get older, as, like most hard-wooded plants of the same age, they do not like being cold. Before top growth begins in spring shorten the shoots back, removing about half the length that was made after they were stopped, and again in

April give a shift. They are free rooters, especially the Heath-leaved species; pots 3 inches larger will not be too big if the plants are well rooted. For this potting the peat ought to be used a little rougher and the plants potted firmly. As soon as growth commences the strongest branches should be tied out horizontally to ensure well-furnished bushy specimens. Treat generally in the matters of light, water, and shade as in the previous summer, still keeping the pots on a moist bottom. After potting, withhold air until the roots begin to move, when more will be required than was given in the preceding summer. A second shift will not be needed this season, but soon after mid-summer the shoots should have their points pinched out; keep the branches well tied out; this is more necessary with both forms of the Heath-leaved species than it is with *T. verticillata* on account of their denser growth, which should be kept sufficiently open to admit of air and light getting to the centres of the plants; if means are not taken to secure this, the foliage will be deficient in substance and liable to become a prey to mildew. Treat during the summer as before recommended; towards the end of August little, if any, shade should be used, neither should the syringe be employed, the object being to get the season's growth matured. To further assist this, give more air, keeping the atmosphere drier. Through the following winter a night temperature of about 40° will be sufficient. A few sticks will be required, but only sufficient to support the principal branches, leaving the weaker ones to hang loose.

The free-flowering nature of the plants is such that even in this size they will bloom profusely. Where plants of a larger size are required without delay, it will be necessary to again shorten the shoots back in spring. By so doing the flowers will be sacrificed, but where the plants are wanted for ordinary decoration it would be a mistake to lose the bloom, as even at this stage they will have a pretty appearance. The two varieties of *T. ericefolia* will begin to open their flowers in the early months of the year, according to the temperature they are kept at during the winter. They will go on blooming for eight or ten weeks, after which cut the shoots back as before, and as soon as they have broken move into pots about 2 inches larger. More root room should be given as it is needed until the specimens have reached a size as large as they are wanted. In roomy houses big examples, that have attained something like 4 feet in height by as much through, are very effective, as when in good condition the leaves are almost hidden by the profusion of bloom they bear, but in most cases smaller plants, say from 18 inches to 2½ feet in diameter, will be the most useful.

T. verticillata does not attain so large a size as *T. ericefolia*, but it grows freely, making longer annual shoots than the latter kind. Some growers cut the shoots of *T. verticillata* back about midsummer after the plants have bloomed for a time; in this way they are kept in a more compact condition; the second growth will flower freely later on. Before growth begins to move in spring they will require to be again cut back, after which they will push freely and bloom as before. Being a smaller grower it does not need so much pot room. Where either of the species are required for greenhouse or conservatory decoration a few cuttings should be struck every second year, so as to keep up the stock, which if not wanted large can be discarded to make way for the young examples coming on.

ASPARAGUS PLUMOSUS NANUS.

WHETHER this *Asparagus* will ever supersede the Maiden-hair Fern, as "J. C. B." in THE GARDEN (p. 488) thinks, is doubtful, but at present there seems to be plenty of room for both, either in a cut state or as specimens in pots. One thing that will prevent this *Asparagus* being grown to the same extent as the Maiden-hair, for some time at least, is the fact that it cannot be increased so quickly, as cuttings will not strike, and though seeds are occasionally produced, such an occurrence is by no means common. It is therefore necessary to increase this *Asparagus* by division, which is a very slow process. Plants can be successfully divided at almost any season, except in the winter, but the best time for the operation is spring and early summer, as they will then become well established before the dull days set in. Although this *Asparagus* will at times push up a number of stems from the base, it by no means follows that the specimen can be divided into as many pieces as there are shoots, for on turning it out of the pot and removing the soil it will be often found that two or three of the shoots proceed from one crown, and cannot be taken off separately with any roots attached to them. As these plants require to be very carefully divided, a good way to remove the soil is on turning the plant out of its pot to place it under a tap and wash every particle of soil away from the roots. There is far less risk of breaking any of the roots by following this plan than if the earth is removed by force, as the water washes away the soil so perfectly, that there is no difficulty in tracing the origin of each shoot. After division the plants must be again potted, taking care not to use too large pots till root action recommences, and if they can be kept rather close up to that time, so much the better. A very good compost for these plants is two-thirds fibrous loam to one of leaf-mould, with a liberal admixture of silver sand. In the case of established plants, especially if they are allowed to run up a rafter or trellis, seeds are occasionally produced, and when this happens they should be gathered as soon as ripe, and being cleaned of any pulpy substance that surrounds them be sown at once.

Soil such as that above recommended for potting is very suitable for sowing the seeds, provided any large lumps are removed. The seeds will germinate readily in a stove temperature, and when large enough can be potted off. Though this *Asparagus* is regarded as the best of all, there are, notwithstanding this, several others well worthy of cultivation for their ornamental qualities, viz., *plumosus*, which differs widely from its supposed variety *nanus*, as in *plumosus* the branches form a confused mass of delicate greenery, while in *nanus* they are flat and frond-like; besides which, *plumosus* can be struck from cuttings, which is not the case with the other. The cuttings must be formed of the young growing shoots, taken during the summer months, and being dibbled into pots of sandy soil must be kept close till rooted, which, in a stove temperature, will occupy about six weeks. A *plumosus* itself is more dense and dwarfer than its so-called variety, so that the cognomen of *nanus* for this last appears to be a misnomer. Another very desirable kind is *A. tenuissimus*, somewhat in the way of *A. plumosus*, but more delicate, forming, as it does, a confused mass of such slender foliage that, especially when laden with moisture, it appears to be but a cloud of mist. This kind will bear cutting well, as it quickly makes fresh growth, and the young shoots strike root as readily as those of *A. plumosus*.

All these kinds of *Asparagus* will grow in loam, mixed with leaf-mould, sand, and decayed manure. Where grown for cutting from, they may be trained up a rafter or trellis, but all, and more especially *plumosus nanus*, form handsome little specimens in small pots. These varieties of *Asparagus* must not be passed over without mention of quite a different species, viz., *A. decumbens*, a deciduous kind that commences to grow in the autumn, and whose most ornamental stage is from then till spring. It is seen at its best when drooping from a shelf or in

some such spot, when the long shoots, clothed with delicate bluish green foliage, have a very pretty effect. H. P.

GLOXINIAS AT HETHERSETT, STREATHAM.

THE display of these plants at the residence of Mr. R. Hyatt is just now one of marvellous beauty, and probably the finest ever seen, as far as size of bloom, shape, and substance, and rich and varied colours are concerned. Mr. Hyatt and his gardener, Mr. Luff, have for some years made a speciality of the *Gloxinia*—first breeding for size; after this had been secured, shape and substance had to be obtained, and for the last year or two varied colours have been the chief object in the crossing and intercrossing.

In a long Peach house are a quantity of young seedlings bearing between 3000 and 4000 flowers, each from 3 inches to 4 inches across, and of almost every conceivable shade of colour, from pure white, pink, clear rose, crimson-maroon, lilac, purple, magenta, scarlet, purplish black, &c., some profusely spotted in the throat and on the limb, and some having the limb heavily marked with colour and destitute of spotting. These plants are all seedlings of this year's growth; the seed was sown on the 1st of January, and the plants have been grown on rapidly in strong heat ever since. They are now strong plants in 4½-inch pots, with tubers the size of a large Pea, bearing large, handsome leaves and an average of six flowers. In another house are a quantity of two-year-old plants in larger pots, bearing a profusion of leaves, and about fifty flowers open on each plant. These produce a charming effect. The soil used for these plants is a mixture of loam, leaf-mould, and decayed manure in about equal parts, adding a little sharp sand, but no peat. When the plants have become pretty well established, they are occasionally watered with liquid cow manure. The fish manure is very injurious to *Gloxinias*, causing the leaves to curl and put on an appearance of being scorched, and producing deformed flowers. *Gloxinias* are often staged at public exhibitions, but they are seldom seen to advantage, as, however carefully packed, the flowers, owing to their soft and fleshy character, do not travel well. To see them in their pristine beauty they must be seen at home. Their blooms are useful for cutting and for mixing with other flowers, and last fairly well in water. W. H. G.

Stephanotis floribunda.—This well-known plant is a general favourite, but it is perhaps not so generally known that it can withstand a great amount of cold uninjured, or, at any rate, without impairing its flowering properties. An example of this may be seen in Mr. James's nursery at Norwood, where a large plant is covering the roof of a house. Through an accident to the heating apparatus in the very severe weather last winter this plant became frozen, and was without any warmth for some days. After it had been frozen, the house was covered up and kept dark in order to thaw the plant gradually. The plant is now in the most vigorous health, and laden with thousands of trusses of its fragrant blooms.—W. H. G.

Nepenthes.—These plants are remarkably well grown by Mr. James in his nursery at Norwood. These plants are suspended from the roof of an ordinary stove; in fact, Mr. Clarke, who has the management of them, says: "I pot the *Nepenthes* in the same kind of soil that I use for *Dracenas*, that is, loam, leaf-mould, peat, and sand. They get little or no shade, and I find them produce the greatest amount of pitchers in a rather cool house." The latter statement we can endorse from experience, but it is a somewhat fresh experience to know that these plants grow freely and their leaves remain of a deep rich green colour growing in loam. Some of the kinds thus treated are *N. Hookeri*, *Rafflesiana*, *Dominiana*, *robusta*, *hybrida*, *Mastersiana* in several distinct forms, and various others.—W. H. G.

Ericas blooming at Norwood.—It is very gratifying to find these plants reviving in the public

estimation after being neglected for so many years. We recently observed a large number of kinds flowering with Mr. James, who appears to manage these and other hard-wooded plants in first-rate style. Amongst the kinds now blooming especially notable are huge specimens of the yellow-flowered *E. Cavendishi* and the more compact-growing *E. depressa*, the beautiful tricolour-flowered *E. Massoni*, *E. eximia*, *Candolleana*, *Bothwelliana*, tricolor rosea, *ventricosa tineta alba*, *coccinea minor*, *brevifolia*, *grandiflora*, and various others. These plants for the most part are standing in the open air fully exposed to the sun, and treated thus the flowers become more highly coloured, and they retain their beauty for a longer period than when the plants are shaded; at the same time, the pots in which the specimens are grown should be screened from the fiercest sun, otherwise the roots are apt to suffer by burning.—W. H. G.

Laced Auriculas.—If "A. D." refers to THE GARDEN, May 21 (p. 468), he will see that he does claim to have introduced them. Now, he says, he makes "no claim as to the original introduction" of them. I asked if they were Vilmorin's strain, and whether they were procured from Chiswick? Why could he not answer this in order to settle the question? At Mr. R. Dean's request the committee of the National Auricula Society allowed what he termed laced Auriculas to be shown with the "fancies." Now "A. D." complains that the judges give the prizes to "nondescripts," and pass over his laced flowers. All I can say to this is, that the best judges in the country judge at the Auricula shows, and their decisions are usually accepted as being correct. The so-called laced Auriculas are alpine, differing from the ordinary strain not so much as Belgian Pansies differ from the show Pansies. They can compete in all the alpine classes, and when "A. D." has improved them as much as Mr. Turner has improved his strain, they will be likely to take a higher place on the exhibition table. It will take years of careful selection to do this.—J. DODGLAS.

Ivy-leaved Pelargoniums.—These have of late years been vastly improved, and now we have varieties in all shades of colour with the graceful trailing habit of the old Ivy leaf. These are remarkably useful basket plants, as when trailing down and throwing out their long flower-stalks they are seen to great advantage. For covering trellises or training up columns in the conservatory few plants can excel them, and in the flower garden, large vases, flower baskets, and raised beds can hardly have a more graceful edging than the Ivy-leaved Pelargoniums. For supplying cut flowers I find the double and semi-double kinds most useful, and the way we manage to get a supply of bloom is to put some old plants into pots or boxes at the foot of back walls of plant or fruit houses, and stretch some wire netting along the face of the wall to support the shoots. The way they keep on flowering if liberally supplied with liquid food is surprising. Where cut flowers are in great request it will be found a most useful addition to the supply if a good batch of these plants is kept under glass all the season, as they are then much clearer in colour. They are of the easiest culture, and little affected by insects. They ought certainly to receive more attention than is usually accorded them.—J. G. H.

SHORT NOTES.—STOVE AND GREENHOUSE.

Medinilla magnifica.—This is blooming splendidly in the Victoria house at Kew. The rose-coloured flowers are produced in pendulous racemes, and they last in perfection for a lengthened period. The foliage is also ornamental.—E.

Seedling Begonias.—Flowers of these from Mr. Christian are of splendid colour and large size, showing what has been accomplished by the florist in the development of this flower.

Bermuda Lily (*Lilium longidorum* Harris).—This is useful for growing in pots early in spring. The plants can be brought into flower with great ease. This Lily should be grown by all who want plants for indoor embellishment, and must be highly valuable for those who have to provide material for the London season.—J. CROOK.

Blue African Lily (*Agapanthus umbellata*).—I have thoroughly tested the frost-resisting powers of this plant, and find that it succumbs to winters of ordinary severity,

and if it is not killed outright requires the summer to recover. I left a specimen out last winter. It was planted in light soil in a sunny, warm position, but was so severely crippled as to be of no further value. In future I shall adopt cold frame treatment. I have penned this note because the African Lily is considered by some to need no protection in winter.—T. W.

Streptosolen Jamesoni.—Among the many plants useful for cutting as well as for decoration in the house this holds a foremost place. It is of free growth, free flowering, and stands well when cut. To see it at its best it wants to be grown as a standard. If the growth is well ripened in the autumn, the grower will be repaid with one of the most handsome plants of recent notice.—J. CROOK.

Anthurium Scherzerianum fasciatum.—I forward for your opinion two spathes of *Anthurium Scherzerianum* with a leaf of the plant. The peculiarity is the form of the spadix, which is always the same in this variety. Is the distinction of any commercial value?—T. C. A.

The spadix is curiously fasciated towards the top, which does not add to its beauty. Although exceedingly curious, we do not consider it bears any commercial value.—Ed.

SEASONABLE WORK IN PLANT HOUSES.

ZONAL PELARGONIUMS.—These plants are very often seen grown in such quantities as to exclude things that are more varied and interesting. When massed together in a greenhouse in large numbers in summer, the idea that presents itself is that the display is only another phase of bedding which may be done as well out of doors. The season most appropriate for these flowers is in winter, when there are comparatively few plants in bloom, and when their flowers are useful for cutting. The great market growers strike their plants late, having them much smaller at the end of summer than is usual in private places, but their houses are so constructed that the plants are close to the glass; this enables them to flower freely under a comparatively high temperature. If an attempt were made to bloom plants on this method in the badly lighted houses often met with in private gardens, they would grow more to leaf than flower; it is therefore safer to depend upon older plants that have their wood hard and matured. These may consist of cuttings struck last autumn, or older examples that have been cut back. They should now be stood out of doors in a moderately open situation, giving sufficient water to keep them healthy and the growth moving slowly. They ought to be rather under than over-potted, and manurial stimulants should be given sparingly. Prepared in this way the plants will give double the amount of bloom when placed in heat that those having their growth insufficiently matured will do. The large-flowering varieties are liked by some, but the most suitable sorts are those that bloom most profusely and have the individual flowers comparatively small.

GESNERAS, TUBEROUS-ROOTED.—These deserve more attention than they now receive. They are easily managed, free and certain bloomers, and of compact habit. They are very suitable subjects for those who have limited glass accommodation. They are not difficult to propagate, yet they cannot be increased so fast as the scaly-rooted section. One method of propagation is by division of the tubers early in spring, just after the plants have started into growth, securing to each of the severed pieces a bud or shoot. The readiest way of increase is by striking the shoots, which should be taken off when 2 inches or 3 inches long. This may be done either early in spring as soon as the shoots have attained sufficient size, or in the summer after the plants have flowered. Most of the kinds if given enough warmth and moisture, push a second growth that will bear flowers later on. Where it is desirable to increase the stock, advantage should be taken of this second growth. The shoots strike readily in sand, kept warm and moderately close and moist, but these two latter conditions must be regulated by the admission of a little air, otherwise the succulent stems and soft young leaves are liable to decay. The cuttings should be put singly in small pots; treated as described, roots will soon be formed. When this occurs, remove the young plants from the cutting-frame, and stand them where they will have enough light. After they are fairly established, move into 3-inch or 4-inch pots. A compost, consisting of about three parts loam to one of leaf mould, sifted fine, with a good sprink-

ling of sand, will answer. Give plenty of warmth and sufficient moisture in the atmosphere, and as much water as will keep the roots fairly moist, but not too wet. Late-struck stock such as this will not make so large tubers as the plants propagated earlier, but, if carefully treated, they will attain sufficient size before winter to enable them to flower nicely next summer. If the tubers are not kept too cold in winter, the plants live to attain a large size.

GESNERAS, LATE FLOWERING.—*G. exoniensis*, *G. zebra*, *splendilissima*, and others of the late blooming division when well managed make a brilliant display. The plants should now be placed where they will have plenty of light to induce a satisfactory leaf growth. Enough shade in bright weather must be given to prevent the foliage becoming scorched or discoloured, care being taken to keep them quite free from mealy bug, which, once it obtains a hold, is difficult to remove without injuring the leaves.

ACHIMENES.—These plants are often too much crowded in the pots or baskets in which they are grown, the result being that the lower leaves often become brown and unsightly before the plants have finished blooming, and the flowers are not freely produced. They may be kept in presentable condition by the use of manure water. If this is applied in a weak state it may be given every time the soil requires moistening.

GLOXINIAS.—Young plants raised from seed sown in the early months of the year should now be coming into bloom. If at all under potted feed them liberally with weak manure water, which will enable them to keep on flowering much longer than would otherwise be the case. Old examples that were started early and are now carrying a full crop of bloom will produce successional flowers more or less in proportion to the help they receive from liquid manure. It is worth while to prolong the blooming as much as possible rather than let the plants go to rest immediately the principal display is over. To keep Gloxinias flowering it is necessary to preserve the foliage in a healthy state and free from thrips or red spider. Plants raised from seed sown later and intended to bloom later on in the season must not be cramped in too small pots, otherwise the flowers will be few in number and soon over. The more light they receive the better they will bloom, and the more useful will the flowers be when required for cutting. Where the growth is stout, with thick leathery leaves, the flowers remain in good condition for several days in water, but if the plants are badly managed the flowers are useless for cutting, flagging as soon as severed from the plants.

ATACCIA CRISTATA.—This plant has singular flowers, and on that account deserves cultivation. The room that even a large example of this *Ataccia* requires is very limited. It requires stove treatment all the year round, otherwise it may be lost. It can only be increased slowly. When the specimens are strong, side-shoots appear on the fleshy stem, usually below the leaves. After a time they produce roots that would ultimately descend into the soil if given sufficient time; and where large examples are required they may be allowed to remain until the plant consists of a number of crowns. Where the object is to increase the stock, the side-breaks, when furnished with young roots, should be taken off. The summer will generally be found the best time for separating them, and the severance must be effected with a clean cut, as the fleshy succulent nature of the stems is such that, if bruised, the chances are that decay will follow. Place them singly in 4-inch or 5-inch pots, well drained and filled with turfy peat, from which some of the earthy matter has been removed, add a fourth part of broken crocks with some sand, insert the suckers so that their roots are quite covered, and secure them with a couple of sticks and ties so as to make them firm. Until the roots make some progress it will be necessary to keep the plants a little close, but this must not be carried too far, or the stems will be apt to rot. As soon as the plants become established expose them fully to the air of the house. A fair amount of light is necessary, but

shade carefully from the sun; if this is not attended to the leaves will get injured. In the course of time, as the bottom leaves die off, the stems of the plants become bare, and each year in the growing season these emit roots. If some *Sphagnum* is tied round the stem, the roots will soon take to it, after which the head with the roots may be taken off and potted. If kept moderately close for a few weeks they will soon become established. This is a good time for dealing with such plants, as there is sufficient time for the stools to break. If strong, they will form several crowns which may be either taken off when sufficiently strong to be grown singly, or may remain to form large specimens.

T. B.

PROPAGATING.

EPACRIS.—The genus *Epacris* is a very extensive one, yet there is but little difference in the propagation of the various kinds, though some are more difficult to strike than others, the very succulent growing kinds being the worst in this respect. A very good way, and one that is successfully followed by many growers, is, after flowering, to shorten back the old plants that are required to furnish a supply of cuttings, and keep them rather warmer than they have been accustomed to, the result being that the plants start rapidly into growth; but the shoots are rather weaker than would have been the case if the plants had been grown in the usual temperature. This weakening of the shoots by keeping them somewhat warmer is of great assistance to the propagator; indeed, without this some plants could scarcely, if at all, be struck from cuttings. When the young shoots are a few inches long is a good time to take the cuttings, and in selecting them, a great point to bear in mind is that the weaker shoots strike far more readily than the stronger ones, and for this reason, it is possible to take a crop of cuttings from a plant without detracting from its flowering qualities if the strong shoots are allowed to remain untouched and only the smaller selected as cuttings. As the young shoots of *Epacris* are very delicate, it is better to cover them with a bell-glass when inserted as cuttings, and on that account the size of the pots employed will depend upon that of the glasses at disposal. The pots must be quite clean, but if new, they should be soaked in water before using, for, being mostly made of porous clay, they will absorb nearly all the moisture. Thorough drainage must be ensured, and a good way to carry this out successfully is to invert a small pot over the hole of the one intended for the cuttings, and surround this with broken crocks, gradually decreasing in size till those at the top are no bigger than Radish seed. The pot should be filled in this manner to within an inch of the top; then over this the soil, consisting of very fine sandy peat, must be pressed down firmly, leaving just sufficient space for a thin layer of sand on the top. Then a moderate watering should be given, and before putting in the cuttings the bell-glass should be placed in position and slightly pressed down, in order to leave the imprint of its rim on the sand as a guide for inserting the cuttings, for if sufficient space is not allowed, they are very liable to be crushed down and broken. The cuttings must then be prepared by being cut off cleanly and have a few of their bottom leaves removed. For this purpose either a very sharp knife or a pair of scissors must be used, but in either case the greatest care must be taken that the leaf is cut off in a clean manner without any bruising or tearing of the bark. The cuttings, having been prepared in this way, should be dibbled in firmly, and as the shoots are very slender the dibble employed for the purpose need not be a large one, for the finer it is the less disturbance of the soil will take place. In either case a great point to bear in mind is that the cutting reaches the bottom of the hole prepared for its insertion, and that the soil is closed firmly round. After this a thorough watering must be given, and the pots may be allowed to stand a little while before the glasses are put on, in order to dry up some of the superfluous moisture. The pots may then be placed in a

shaded part of a house where there is a little artificial heat, or they may be stood in a cold frame, in which case the most successful treatment is to allow them to stand there till callused, when, if removed into a gentle heat the formation of roots is greatly accelerated. Very careful attention will need to be bestowed upon these cuttings during their different stages in the matter of watering, shading, &c. The bell-glasses should be removed every morning and wiped dry, as too stagnant an atmosphere will cause the cuttings to damp off, and at the same time the conditions most favourable to the success of the operation are not too damp a spot nor too heavily shaded, but it must be so situated that the soil does not dry up rapidly. When the glasses are taken off a good opportunity thus presents itself to remove any signs of decay, and also to observe if any of them are in want of water. Should they be so, it is possible to moisten the soil without wetting the foliage, by replacing the glass and pouring the water around the outside of it, for in this manner the water will percolate through the whole of the soil without so much as disturbing the sand on the surface. A point worthy of consideration is, that as the delicate shoots flag so easily they must be put in as soon as possible after being separated from the parent plant. As the cuttings root, which may be known by their commencing to grow, a little air must be given by tilting the bell-glass, and this may be increased till the glass is altogether removed.

In potting off, small well drained pots must be chosen, and the soil best suited is sandy peat passed through a sieve with a quarter of an inch mesh. The young plants should, after this operation, be kept rather close and shaded till again established.

MONTBRETIAS.—The plate of these plants which appeared in *THE GARDEN* (May 28) reminds one how easy they are to increase, for not only do they push forth offsets, and may be thus propagated by division, but should it be desired to increase any particular plant to the fullest extent (which in the case of new ones will often happen), if the bulb be potted when dormant and placed in a greenhouse, it will soon after Christmas start into growth, and, generally speaking, push up not only a flowering tuft from the centre, but several underground shoots, which generally reach the side of the pot and then come up around the edge. As soon as this takes place, the plant may be turned out of its pot and the soil removed, when in most cases it will be found that these minor growths have along their underground stem, by which they are connected with the parent bulb, produced a few roots. These may be cut off close to the bulb and potted in small pots; but in order to get the growth in the centre thereof, it will be necessary to twist the stem, should it be a long one, around the pot. So treated they will grow very well in an ordinary greenhouse and soon become established, so that by the end of spring one may have from six to twelve plants the product of a single one, and where rapid increase is an important item this is a great consideration.

DIEFFENBACHIAS.—These ornamental-foliaged plants can be readily increased by cuttings, and, what is more, they make rapid progress during their earlier stages. Should any plants run up rather leggy, the top may, without fear, be cut off and inserted as a cutting. A good and, at the same time, simple way is to stick it in the Cocoanut refuse, which usually forms the plunging material in a propagating case. The naked stems may be cut up into lengths of 3 inches or 4 inches, and also laid in the fibre or in pans of sandy soil, but in either case the young plants are not long in making their appearance, and are soon large enough to pot off.

STYRAX JAPONICA.—This beautiful hardy shrub proved itself by no means readily propagated till last season. Having a large specimen in a gentle heat for the sake of hastening the expansion of its Snowdrop-like flowers, I tried the experiment of putting in the cuttings after the manner of *Fuchsias*. The experiment was quite justified by the results, for the greater part of the cuttings struck, and when established in little pots were

planted in the open ground, and are now doing well, the spot chosen for them being one protected from drying winds. T.

BOOKS.

THE FUNGUS HUNTER'S GUIDE.*

A FEW weeks ago "The Text-Book of British Fungi," by the author of the "Fungus Hunter's Guide," was noticed in *THE GARDEN*. The remarks printed in reference to the first book apply to the second, as the new and smaller work is a kind of supplement to the larger Text Book. "The Fungus Hunter's Guide"



Grey Cantharellus (*Cantharellus cinereus*).

contains a series of keys to families, orders, genera, and sub-genera of the larger fungi, illustrated with small illustrations of each genus and sub-genus. When the genus and sub-genus is at last found by these keys, a few typical specific types are briefly described.

Works with a similar aim have been published in England before, notably "The Clavis Agaricinorum," in English (illustrated, 1869), by the writer of these lines, and "The Clavis Hymenomycetum," in Latin (not illustrated, 1878), by Messrs. Cooke and Quelet. Keys to the various sections of fungi are also found in Cooke's "Handbook," and in Stevenson's lately-published "British Fungi," to say nothing of the keys in Fries' "Hymenomyces Europaei." Mr. Hay's larger work was fur-



The Sparassis (*Sparassis crispa*).

nished with a glossary of terms (one of the best parts of the book), but in this new book, which is full of botanical terms, no glossary is given; perhaps the omission was necessary, but it pre-supposes a knowledge of all the terms used.

The plan of "The Fungus Hunter's Guide" is founded on that of Cooke's "Handbook," published sixteen years ago. This is to be regretted, as since 1871, Fries—the founder of the entire system—has published his latest and most matured views ("Hymenomyces Europaei," 1874), which views have been generally accepted by mycologists. If Mr. Hay will turn

* "The Fungus Hunter's Guide." W. Delisle Hay, F.R.G.S. London: Swan Sonnenschein, Lowrey and Co.

to Fries he will find considerable alterations and additions, genera and sub-genera of fungi added, and other genera and sub-genera obliterated. It would obviously have been better to have given the matured system of to-day, as approved by the greatest master of mycology, in preference to Dr. Cooke's plan (founded on the earlier writings of Fries) of sixteen years ago.

Keys are always difficult pieces of work, for the reason that they attempt to give definite boundary lines between genera and sub-genera when it is notorious that no such boundary lines exist in Nature. In fungi the characters of the genera and sub-genera shade off into each other, and blend in various directions. In the *Dermium*, for instance, not only do the sub-



Horny Calocera (*Calocera viscosa*).

genera blend with each other, but they shade off into the distant genus *Cortinarius*. In *Collybia* the species shade off into the distant genus *Marasmius*, and *Clitocybe* and *Tricholoma* are bounded by no distinct lines. The keys, therefore, as given by Mr. Hay, although undoubtedly useful, are full of pitfalls for beginners. There is not a genus or sub-genus without exceptions. For instance, the "ring" or collar round the stem is said by Mr. Hay to be "pronounced" in *Armillaria*, but in *Agaricus melleus* it is often totally absent; under *Hebeloma* the stem is said to be ringless, but in *A. fastibilis* there is often a ring. The gills in *Lepiota* are often "remote or free," but they are also often adnexed (or not free), and in the same manner exceptions might be pointed out in every genus and sub-genus of fungi. As was said before in THE GARDEN, the newly-invented popular names are absurd, and the attempts to



The Tiger-tuft (*Lentinus tigrinus*).

replace some of the older descriptive terms by new (as *pileus* for *hymenophorum*) are failures, and must lead to confusion.

It cannot be doubted that Mr. Hay is well acquainted with many of the fungi he describes, but his list of edible species sadly needs revision. For instance, *Agaricus cristatus*, a small fungus with a horrible odour, is said to be edible, so is *A. melleus*: this latter fungus has been known to cause constriction of the throat. *A. enosmus* is termed "doubtfully poisonous," although, on the authority of Mr. Berkeley, it

once made a schoolmaster "exceedingly ill." This schoolmaster, says Mr. Berkeley, made a mistake. Schoolmasters and "professors" seldom make mistakes. *A. squarrosus* (the smell of



Zoned Lactar (*Lactarius zonarius*).

which makes many people shudder with horror) is said to be edible. *Boletus rubinus* is said to be "suspected poisonous;" but why, or by whom? It has only been seen once or twice. *Polyporus fomentarius*, as hard as Oak when mature and as tough as leather when young, is said to be edible; so is the leathery *P. squamosus*. The "dry rot" fungus is said to be "doubtfully edible." Fancy the mental condition of a man capable of cooking and eating the hideous "dry rot fungus." *Exidia glandulosa*, a shivering mass of repulsive-looking black fungoid jelly, is not the "Witches' Butter" of some country folk, as stated by Mr. Hay. The yellow, *Tremella mesenterica*, is "Witches' Butter." Several of the smaller puff-balls are given as edible, but an instance is known where an experimenter was nearly killed by



The Peg-top (*Gomphidius glutinosus*).

eating an exceedingly small portion of one of them in a raw state. These instances would not have been quoted here had not Mr. Hay's later book differed somewhat from his former. The new book should be purchased by everyone who has the "Text-Book." Amongst specially good edible fungi, Mr. Hay gives *Hydnum imbricatum*. This is a very nasty and exceedingly tough fungus. On turning to the handbook, Mr. Hays says "it is apt to be tough;" he calls it the "Sealy Urchin;" it makes, as we think, a very hard and "scaly" repast.

The illustrations are those from Dr. Cooke's "Handbook" trotted out once again. The block of *Strobilomyces* seems to have been lost, and this is a good job; the name is therefore now put in parenthesis, as if (the venerable but once gone) the fungus itself had also nearly dropped out of existence. By the courtesy of the publishers we are enabled to print six of the little illustrations of genera drawn and engraved from Nature many years ago by the writer of this note. Other of the illustrations are, however, none of the writer's; some are half his and half someone else's; a few are atrocities by unknown "artists," as *Dedalea*, *Phallus*, *Cynophallus*,

&c. In several instances the illustrations do not answer to any of the described species, and no names are given. One figure at any rate is not British, and, therefore, not likely to be found and identified. Dr. Cooke did not print names under his illustrations of the sub-genera of *Agaricus*, but if Mr. Hay had referred to the writer's previously published "Clavis *Agaricinorum*," he would have seen names for every one. The large original drawings with names have been for several years exhibited in the public room (botany), British Museum, South Kensington. Names are most necessary to illustrations, and so is the amount of magnification of the spores. This Mr. Hay will also find has been carefully attended to in the original drawings, though not given by Dr. Cooke.

Mr. Hay's work has been most laborious, and he has exercised great care in the revision of the proofs. His "Fungus-Hunter's Guide" fairly reflects the plan of Dr. Cooke's "Handbook," but the popular names are doomed to obliteration. Many of the so called edible species are offensive and poisonous, at any rate in an uncooked state. Cooking may dissipate the highly acrid poison of some of the plants, but it is a mistake to recommend poisonous and nasty things for the table. If fungi are eaten without the most exact knowledge of the plants to be consumed, unpleasant results are certain to follow.

W. G. S.

Unstable.

ORCHIDS.*

THIS is a useful and cheap treatise by one who has had great experience of the subject on which he writes; consequently the information given is ample and varied, and such as cannot be obtained in a compact form anywhere else. The book is also published at a price which will bring it within the range of journeyman and apprentice gardeners, and to such it will be of great value. The present edition is also much more complete than the first, which was very favourably received. The chapter on Orchid culture seems such an essential part of any work dealing with these plants, that it seems singular any reference to culture was not included in the first edition. The chapter on Orchid life is very interesting, and well deserving of careful study; while those on Orchid flowers and Orchid mysteries, &c., are a necessary introduction to that on fertilisation. This last is a part of the work that young growers would do well to study. The number of ways in which Orchids may be successfully reared by cross-breeding is endless. The work itself is most interesting. Some people think it slow; this it undoubtedly is, but is there no pleasure in watching the development of the seed-pods; the scattering of the seeds, like dust in the sun-beams; and the appearance of the tiny seedlings, which gradually develop under the watchful eye of the cultivator to the stately plant, which will at last reward the patient labourer with its lovely flowers?

The historical part of Mr. Castle's book is very interesting to growers, containing, as it does, the prices paid for special plants at the various important sales.

The hints on Orchid culture are very valuable to beginners, and may be safely followed. Many valuable plants have been lost for want of knowledge on the part of the person in charge of them. I well remember, some twenty years ago, trying to grow *Cymbidium eburneum*, potted in peat and Sphagnum, exactly like *Cattleyas*, but the foliage was always sickly-looking, and died off brown at the tips, but when the treatment was altered, the plants potted in loam and treated as ditch plants (which they are), success was complete. There is, of course, a knowledge which can only be obtained by practical experience, but for information what to do, how to do it, and the right time to carry out the

* "Orchids: their Structure, History, and Culture." Illustrated. By Lewis Castle.

necessary details of the work, this unpretentious little volume may well find a place on every Orchid-lover's bookshelf. J. D.

ORCHIDACEOUS PLANTS.*

THIS monograph of the genus *Odontoglossum*, issued by Messrs. Veitch, is a welcome addition to our Orchid lore. The nomenclature adopted does not in all cases accord with that of Prof. Reichenbach, but the authors tell us they have followed the arrangement of Bentham and Hooker, as set forth in their "Genera Plantarum."

The plan of the work comprises a definition of the genus, species and varieties, together with cultural instructions, the descriptions being laid down in just that happy popular scientific form suitable to all readers without being overloaded with cumbersome technical terms, so that those who run may read and understand. The work is of royal 8vo size, comprises eighty pages, and contains some forty engravings of the leading types of the genus, which are faithful portraits of the species and varieties they are intended to represent. There is also added two coloured maps showing the districts where and the altitudes at which these *Odontoglossums* grow, so that it will be the cultivator's own fault if he does not make himself acquainted with the natural surroundings and requirements of the plants committed to his charge. The chapter on the geographical distribution of the genus *Odontoglossum* clearly proves that these are purely alpine plants, and is so interesting and so full of sound information, that we quote it for the benefit of our readers:—

The *Odontoglots* are confined to the mountain regions of Tropical America, from about lat. 15° S. to lat. 29° N. They are also restricted to particular mountain chains within these limits. Their southern limit is where the great Cordilleras of the Andes begin to draw closer together after enclosing the lofty plateau of Peru and Bolivia and where a change in the climatal conditions of the Andean region becomes perceptible. The most southern *Odontoglot* at present known is *O. compactum*, which occurs on a lofty ridge near Cuzco, called Las Tres Cruces. From Cuzco northwards as far as Chachapoyas the *Odontoglots* occur very sparingly, only three or four small-flowered species having yet been found; but at the last-named place they begin to appear at much smaller intervals. *O. myanthum*, *O. gracile*, and some other small-flowered species are reported from Loxa (Loja), and still nearer the equator the magnificent *O. Halli*, the beautiful *O. cirrhosum*, and *O. Edwardi* have their homes. North of the equator the Andes break into three distinct ranges, one, the eastern Cordillera, running in a north-easterly direction. It is on this range that the greater part of the most popular kinds occur, being most numerous and most abundant on that portion of it that lies between Bogota and Ocaña, and which may thence be regarded as an *Odontoglossum* centre. The middle range, called the central Cordillera, extends northwards and terminates at Cape Gallinas. Only a few species inhabit this range, but the valleys on both sides—that of the Magdalena on the east, and the Cauca on the west—are exceptionally rich in orchidaceous plants. Northwards of the central Cordillera the land again rises, and here the *Odontoglots* again appear, the first to occur being *O. chiniquense* and *O. curatifolium*.

The delicate *O. Krameri* and *O. Oerstedii* have their homes in Costa Rica, as also the more robust *O. Schlieperianum*. The genus is represented in Nicaragua by *O. rubescens*. The average elevation of the great wedge-like plateau of Mexico is not less than 7000 feet to 8000 feet. On these elevated lands the *Odontoglossums* at first occur sparingly, but gradually increase in numbers on advancing northwards towards Taxaca, where they appear to attain their greatest northern development, beyond which they again diminish in numbers till their northern limit is reached, at about the 20th parallel. Not far from this line is the southern limit of the Sierra Madre, where *O. maxillare* has its home, and eastwards from this is the Irapuan range, on which *O. maculatum* and *O. Cervantesi* were discovered; these are the most northern *Odontoglots* known. On the South American continent, from the southern limits of the genus to as far as the Isthmus, by far the greatest number of the *Odontoglots* occur within a zone whose vertical range rarely descends below 5000 feet, or ascends above 9000 feet. There are some species indeed, such as *O. densiflorum*, *O. compactum*, and a few other small-flowered species, which grow on rocks, or on the bare ground above the timber line to as high as 11,000 feet to 12,000 feet elevation.

The climate of this zone, by reason of its elevation, is decidedly temperate, the mean annual temperature being about 14° centigrade (57° Fahr.) for the higher portion, and 18° centigrade (65° Fahr.) for the lower, but the difference between the maximum and minimum temperature observed during the year is very great, the thermometer sometimes standing at 32° centigrade (90° Fahr.) and even higher when the sun is vertical, and descending to 4° centigrade (40° Fahr.) in the night. The atmosphere of this elevated region

* "A Manual of Orchidaceous Plants." Part I: *Odontoglossums*. James Veitch and Sons, Royal Exotic Nursery, King's Road, Chelsea.

is always at a very high degree of saturation, caused chiefly by the north-east trade wind by which the enormous evaporation from the Atlantic Ocean is constantly being drifted towards the Cordilleras, where it is arrested and condensed; the rainy season of parts of the *Odontoglossum* region is thus almost continuous throughout the year. At night when the temperature falls considerably below the mean, the vapour with which the atmosphere is always charged takes the form of a dense fog, which always leaves a copious deposit of dew before being dispersed by the rising day temperature. As a consequence of these climatal conditions the vegetation of the region is uninterrupted throughout the year; the whole belt is covered with a dense forest with occasional openings. The *Odontoglots* are found in the greatest abundance in those parts of the forest which skirt the occasional openings, and along the margins of the numerous mountain streams where there is freer access of light and air, and when it not infrequently happens that numbers of plants are found fully exposed to the direct rays of the sun. It is observed of these that their pseudo-bulbs are always smaller than those which are partially shaded; they also flower more freely, but the spikes are neither so long nor the flowers so large as those produced by plants in partially shaded situations; while those growing in more complete shade—on fallen trees or on the ground where there is always an excess of moisture—have large, fleshy pseudo-bulbs, rarely flower, suffer much by removal, and generally die during transmission to Europe.

North of the Isthmus, and especially within the Mexican territory, the local circumstances are somewhat different from those of New Granada, caused chiefly by the peculiar configuration of the land. Here the *Odontoglots* appear to be spread generally over those portions of the plateau wherever the conditions suitable to their well-being exist, as well as on the slopes of the central mountain ranges, and the various spurs that branch from them. The climatal conditions of the *Odontoglossum* region north of the Isthmus of Panama are also somewhat different from those of the *Odontoglossum* region of New Granada and Venezuela. Thus, in Guatemala, there is a wet and a dry season, the first commencing in December and ending in April, and the second lasting through the remainder of the year; there is thus a decidedly pronounced rest in the vegetation of the country, but on the higher grounds, where the *Odontoglots* have their home, there is always a high degree of saturation in the atmosphere, even in the dry season, caused by the moisture from the Atlantic and the lowlands being drifted thither by the trade wind, and which, during the nights in the early part of the year, takes the form of dense fogs. In Mexico the climatal conditions of the Tierra Fria are similar to those of the highlands of Guatemala, but the rainy season is of shorter duration; the temperature is remarkably uniform, the mean summer and winter temperature varying scarcely more than 6°–7° centigrade (10°–12° Fahr.). The precipitation caused by the trade winds attains its greatest strength on the eastern slopes of the mountains skirting the high central table land; here the rainy season lasts eight months of the year, and the temperature ranges between 12°–15° centigrade (55°–60° Fahr.). Throughout the whole of the *Odontoglossum* region there is never a perfect rest in the aerial currents; there is always a gentle breeze to be noted.

Those who attentively read the foregoing will find the whole secret of *Odontoglossum* culture clearly defined. The authors, in quoting temperatures, have used the centigrade scale in addition to that of Fahrenheit. The book is published at the nursery, but we believe it may be obtained through any bookseller. G.

KITCHEN GARDEN.

W. WILDSMITH.

STAKING PEAS.

"W." IN THE GARDEN (p. 518) seems to present us with a somewhat exaggerated estimate of the cost of staking Peas, especially as he appears to be a gardener on an estate where Pea sticks are plentiful. Were he resident in or around London, for instance, he would find that Pea-stick bundles are remarkably thin, just as they are high-priced, and that Pea-staking upon a considerable scale is very expensive. My own experience in those parts of the country where a really fat bundle of Hazel could be purchased for 6d. is that staking Peas pays, let the sort be what it may. As a rule, staked Peas give finer and cleaner pods, whilst the average crop is, as a rule, increased one third, and that, in an ordinary row of Peas, means a considerable quantity. Certainly, staked Peas need more space between the rows than those unstaked. Still, in gardens I think laid Peas are in more danger from birds than those that are staked. When the cost of sticks is excessive, even if that of labour is equal, then it is quite a matter for consideration whether the expense will be repaid. About London the cost of garden labour is some 20 per cent. greater than it is in rural districts; hence, the cost of staking Peas is greater. Still, the cost

of the sticks themselves is the primary consideration. Knowing what a handy man can do with a hook in pointing and trimming sticks, and how long it takes to fix a hundred or so, I think the labour expense is but a trifle as compared with the value to the Pea crop later; indeed, the cost of staking may easily be reimbursed by the greater facility found in gathering the pods. That many of our finest tall Peas develop too much barren haulm before they begin to pod is certain, and it is hard to make stakes to pay for the support of that. Still, all who have seen a good row of tall-staked Reading Giant, Ne Plus Ultra, or other lofty growing kinds must admit that if the root sustenance is liberal, the produce is wonderful. The longer the plants can be induced to grow and bloom, the longer are young pods being produced and the greater the work or profit obtained by staking. Mulehings of long manure or Grass may be given to staked Peas, but can hardly be given to laid Peas; indeed, too often, especially in wet seasons, these have to be turned to enable them to keep from rotting on the undersides. I write thus in defence of the use of sticks in Pea culture, although I have not used one with large quantities of Peas for some twenty years. Here I grow them in the open field, and when land is cheap and holding very good, paying crops of Peas may be had in that way without stakes, but in gardens, ground must be more economically employed. Here very dwarf kinds are sown in rows 2 feet apart, 3-foot to 4-foot kinds in rows 30 inches apart, and the tallest, such as Telegraph, Telephone, Duke of Albany, &c. 3 feet apart only. Plenty of air circulates, and birds give little trouble, because there is little shelter for them near. The crops, too, are, as a rule, excellent; in fact, as seen on the ground they often look remarkable, and I have tried again and again to induce market growers to grow some of the more favoured sorts for field culture, but they are afraid, because of the cost of the seed. It will be seen that I use on a given space of ground fully one-third more seed than would be used in a garden where Peas being staked grow tall. Gathering from laid Peas is at once more troublesome, and the harm done to the haulm is far greater than in the case of tall Peas, and for that reason the crop is rarely so continuous; in fact, after two good pickings it rarely pays to go over the haulm a third time. A. D.

LATE PEAS.

As a rule, late Peas are sown too early. When they blossom in August and pod in September the produce is neither plentiful nor tender. There is a general tendency to sow everything early. It is said, "get them in the ground, then they are done with," and that is true to a certain extent, but cultivators would do well to consider when they require the produce before sowing the seed. The middle of June is soon enough to sow the first of the early ones, and the end of the month is none too late to put in the latest batch. Such Peas will grow freely during July and August, flower in September, and the pods will be ready for gathering in October. There is nothing more disappointing in connection with late Peas than to have them ready for use before their proper time, but this is mainly the fault of sowing too soon. There are only three varieties of real value for late crops, namely, Latest of All, Omega, and Ne Plus Ultra. The first two are dwarf and compact; the last-mentioned is good in flavour, but it grows too tall. In many cases late Peas are sown in out-of-the-way places, the main quarters being mostly filled up at the time the crop is sown, and they are therefore consigned to the background. This often proves a mistake, as, although they may bear well in such places, the plants generally become attacked by sparrows, which are always destructive to Peas late in the autumn—in fact, many late crops are completely destroyed by the birds. For this reason alone we always try to sow our latest Peas in prominent places. Good culture throughout is necessary to secure a heavy and successional crop. The plants will fail long before August is over if sown in poor

shallow soil, and they will only succeed thoroughly in a deep rich staple. Trenches 12 inches in depth and 18 inches in width should be thrown out. Manure heavily in the bottom and sow the seed there. This will save them from the drought in July and August, and cause them to produce luxuriant and fertile growth. When this is secured there is no danger of failure in the late crop of Peas. J. MUIR.

Margum.

Late Broccoli.—We are now in the second week of June, and the variety of Broccoli known as Model is still in excellent condition with us. The heads are of medium size, excellent colour, and fine flavour. It is a first-rate May and June Broccoli, and I am much pleased that it was included amongst our vegetable seeds of 1886.—J. MUIR.

Over-cropping Cucumbers.—As a rule, all who grow Cucumbers try to have them in fruit as soon as possible, and make the plants bear a heavy crop. There is no harm attempting the first, but the last-mentioned plan is very injurious. When the fruits are hanging as close as they can be packed, the plants become exhausted and soon fail. All who wish to have Cucumbers in bearing condition throughout the whole season must avoid heavy cropping. It is always better to thin the fruits when they are small, or cut them before they have gained maturity, than to allow them to bear too much. We have had plants in fruit from May until November, and they proved most useful, but those which produced a heavy crop at first soon began to show signs of distress, and were never very satisfactory afterwards.—J. MUIR.

KITCHEN GARDEN NOTES.

PREPARING GROUND FOR PEAS.—Sprouting Broccoli and Cottagers' Kale, two of the hardiest as well as the most profitable winter greens, are only now being cleared off, having afforded us an unbroken supply of sprouts for many weeks past. The ground is required for late Peas, and we are therefore having it done as well as our stinted amount of labour at this busy season will admit of. A good coating of manure has been applied, and deep or double digging, *i.e.*, one spit deep and the next spit forked up, and manure spread over that, is the way the ground is being treated: and in addition to this manuring, the Peas will be sown in shallow trenches drawn out with hoes, a second dressing of manure being given by scattering in the trenches soot or some kind of artificial manure. Both late and early varieties of Peas will be sown as soon as the ground is ready.

THINNING OUT SEEDLINGS AND HOING.—A more favourable time for this work I have never known, and except Beet, Salsafy, and Scorzoner, which are scarcely ready, all others have been thinned, and at the present time we are busy hoeing amongst the various crops. There was necessarily a large amount of trampling over the ground during the thinning operations, so that extra deep hoeing is required to again lighten up the ground. As we only earth or ridge up Potatoes to prevent them coming through the soil, surface-hoeing between the rows to keep down weeds has to be done some three or four times during the season. The second hoeing is now being done, as is the case also with the plots of Jerusalem Artichokes, Sea Kale, and Rhubarb; in fact, with all crops not mulched.

PLANTING.—When the weather is showery and the ground available, no opportunity is lost of planting out small successional lots of Cauliflower, Coleworts, and Savoys. In our case, for want of ground, such small plantings cannot be succeeded by the main plantings of Broccoli, &c., till the crops of early Peas and Potatoes are exhausted, and therefore we take some pains to keep the plants in the best order, first by late sowing and on a north aspect, and next by keeping them thin on the ground, either by drawing out the weakest to make room for the others, or by pricking out. We have not time for the latter, and, except for early sowings in heat, the

former plan answers admirably for all except Brussels Sprouts; these should always be transplanted before the final planting.

MARROWS, CUCUMBERS, CHILLIES AND TOMATOES.—The two first are growing freely, and once a week require attention as regards pinching, training out, pegging down, and weeding. At no time do we allow the growths to become crowded, a state that for the most part is the precursor of mildew and of green or black fly, which, if once they get the upper hand, failure is almost certain. Methodical or regular weekly attention is the best way of ensuring freedom from such evils. We add fresh soil to each, according as the presence of surface roots indicates such a requirement. Abundance of water and overhead syringing in dry weather are essential to a vigorous growth. Chillies we have only just planted out on mild hotbeds composed mainly of the Grass from the mowings of lawns. The soil is a mixture of loam and vegetable mould in about equal proportions, and is made rather firm, which, I fancy, conduces to fruitfulness rather than to an undue amount of wood growth. Tomatoes on walls and in the open are already in flower and the plants strong, being in 5-inch pots when first turned out. Those on walls are well secured, and those on the open border supported with stout stakes, one to each plant, the plants being trained upright, cordon fashion, only one stem being allowed to a plant. The consequence is that we get an abundance of side lateral growths that fruit much more freely than sucker stems from the base of the plants. The ground can scarcely be too firm, and our plan of mulching all the ground about them with long litter is a help to the plants. Tomatoes that are fruiting in pots we have now turned out of the houses, and arranged them in warm sheltered nooks about the houses, where they will continue fruiting the most part of the summer, if given rich top-dressings or waterings of liquid manure, which they ought to have at least twice a week.

GENERAL WORK. Hoeing, staking Peas, watering in dry weather Celery and all recently planted Cauliflowers, Coleworts, &c. To mulch, as litter becomes available, Peas and Runner Beans, and, in fact, any crop that is likely to benefit from the practice. To make other sowings of Lettuce, Endive, Radish, and Spinach, and in showery weather sprinkle Onions with soot and Turnips with finely sifted wood ashes, which is an excellent antidote against the ravages of Turnip fly. W. W.

Insecticides and their use.—Pyrethrum when fresh and pure kills by contact many soft-bodied larvae and other insects. It may be applied either dry or in solution—a tablespoonful to a gallon of water. Pyrethrum consists of the dry powdered flowers of three varieties of Pyrethrum, and loses its insecticidal properties after prolonged exposure to air. Hence the necessity of obtaining the fresh article—often a difficult thing to do, because dealers palm off their last year's supply as fresh, rather than throw it away. Pyrethrum is excellent for killing Cabbage worms, Cherry and Rose slugs, Currant worms, and other pests. Hellebore—a substance composed of the powdered root of white Hellebore—kills both by contact with the skin of insects and also by being eaten. It is especially valuable for destroying Currant worms and similar insects. It may be applied as a simple powder, or mixed with water, one ounce to two gallons, and sprayed on. Kerosene, like Pyrethrum, has only recently been successfully used for this purpose, but promises to occupy an important place in the future of economic entomology. Probably the soap emulsion, prepared according to the following directions, will prove the simplest and most practical method of using that has as yet been recommended. The formula is: kerosene, 2 gallons, 67 per cent; soap (common) or whale oil, half a pound, and water, half a gallon, 33 per cent. Heat the solution of soap and add it, boiling hot, to the kerosene. Churn the mixture by means of force pump and spray nozzle for five or ten minutes. The emulsion, if perfect, forms a cream, which thickens on cooling, and should adhere without oiliness to the surface of glass. Dilute

before using one part of the emulsion to nine of cold water. Tobacco as an insecticide is good, but as it cannot be purchased in a prepared form, it is more difficult of application.—C. M. WEED, in *Orchard and Garden*.

TREES AND SHRUBS.

W. GOLDRING.

THE SNOWDROP TREE AT HAMPSTEAD.

WE were pleased to see two young Snowdrop trees laden with blossoms in Sir Spencer Wells' garden at Hampstead on the 18th ult. It seems curious that a little tree so beautiful should only meet with the fate of a botanical curiosity. Its name is happily characteristic; the flowers come in plenty; the distant effect of the tree is very pretty and distinct; it is quite hardy. These young trees were planted by Sir Spencer Wells only a few years ago; now every twig carries flowers. We have never seen the Snowdrop tree a large one. With us, it is a true lawn or pleasure-ground tree; but we have seen it in old age with a very picturesque habit, as at Syon House a few years ago. The old tree we saw there is probably now dead. In trees, as in landscape pictures, merit is not always the way to popularity. We see people gloating over pictures rich in effective doses of strong colour, but embodied falsehoods as regards the ways of sun and light. We see diseased variegated trees popular, while this tree of rare beauty and refinement is seldom grown. W. R.

Cupressus nutkaensis compacta.—The Nootka Sound Cypress is well known as among the most ornamental of our hardy Conifers, and quite recently its merits were dwelt upon in THE GARDEN. I did not, however, see any mention of this variety, which is characterised by a dwarfer and more compact habit than the type, and forms a very ornamental member of the smaller growing Coniferae. Where the larger form would be inadmissible this is a very good substitute. It can also be kept for a long time in good health when treated as a pot plant, and on that account it is well suited for furnishing balconies and such spots.—T.

Skimmia fragrans in flower.—The best known Skimmia is *S. japonica*, and that is chiefly grown for its ornamental berries, but the species under notice forms just now an attractive flowering shrub, for each twig is terminated by a cluster of whitish blossoms. Like the other members of the genus, it succeeds best where the soil is fairly moist and not too fully exposed to the sun, but at the same time where quite clear of overhanging trees. Irrespective of flowers or fruit, it is a neat evergreen shrub, and one that will succeed fairly well even in smoky towns, for I have seen it preserve its original freshness for years in such a spot where little else would grow. Cuttings of this Skimmia may be taken at almost any season of the year if kept in a close frame till rooted. If put in now they will strike in about six weeks.—T.

SHORT NOTES.—TREES AND SHRUBS.

Blue Gum tree (Eucalyptus globulus).—We have received flowers from Mr. Christian, Chislehurst, who has a specimen in a conservatory bearing hundreds of flowers. The colour is a creamy white, and the fragrance delicate. This very rarely blooms in this country.

Snowy white flowered Bramble (Rubus deliciosus) is well named, the flowers having a delicate and delicious fragrance. They are pure white and of bold character, showing up well on a wall, in which way it is grown at Kew. We are not over-rich in spring-flowering wall trees, so those who require a choice addition to their collection might add this with advantage.—C.

The double Kerria.—This plant is well adapted for growing against a wall. The bright yellow flowers are borne profusely and contrast effectively with the fro-h green colour of the young leaves. Some of the cottages in Sussex are perfect pictures, although alone embellished with this shrub. An excellent combination was seen a short time back near

Three Bridges. The cottage wall was covered with Ivy and the Kerria loosely tied up in front, the sombre hue of the Ivy imparting an additional charm.—A. HERRINGTON.

Laburnum hedges are not commonly seen, but they have their uses. At this season, when loaded with flowers, they are delightful, and the elegant light green leafage is beautiful from early spring until late autumn, but especially so in the first-mentioned season. In only two or three instances have we noted the Laburnum grown in this form.—T. W.

THE SHRUBBY TREFOIL.

(*PTOLEA TRIFOLIATA*.)

THIS is one of those old-fashioned North American trees that were introduced to England during the early part of the last century by Bishop Compton, when he lived at Fulham Palace, as the Bishop of London does now. From 1675 to 1713 Bishop Compton was continually introducing foreign trees to this country, chiefly from North America. He made his garden at Fulham quite a nursery for trees and shrubs, rearing seedlings and propagating young plants himself. He not only devoted all his leisure time to his favourite tree, but spent large sums of money in introducing new kinds. The Ptelea was one of his special favourites, and history tells of the trouble he took to import seeds, how he tended the seedlings, and how, after all, he lost all his plants in a few years. The date London gives of the first introduction of the Ptelea is 1704, and after it was lost, Catesby, a celebrated traveller in North America, was the means of reintroducing it from Carolina about the year 1724, so that it has been in English gardens for upwards of a hundred and sixty years.

The tree is a handsome and uncommon-looking tree, small in size, the average height of the largest trees being only about 20 feet, and this height is attained only when the tree is stem-pruned. If unpruned, its style of growth is more that of a shrub than a tree, and it makes a large spreading head like an Elder. The large trifoliate leaves make it distinct from all others of a similar character. The flowers are small, greenish white, and inconspicuous, but the fruits or seed vessels, as they are like those of an Elm, but much larger, give the tree quite a remarkable aspect in late summer. The Ptelea thrives best in a damp and rather shady spot, though it will grow in any soil or situation. It looks better rising out of a group than isolated on a lawn, as it is apt to become bare at the base. A far more effective plant than the original is a golden-leaved variety (*aurea*), which is one of the finest golden-leaved trees we have, as it preserves its colour throughout the season, and is so hardy that the leaves seldom become disfigured by wind or cold in spring. The Ptelea is a tolerably common tree in nurseries, being easily propagated by seeds or cuttings.—W. G.

The Spanish Furze (*Genista hispanica*).—This is a remarkably pretty low-growing shrub, forming a dense mass a foot or so high, which at this season is completely covered with rich golden blossoms. It is eminently fitted for planting on rockwork, as, associated with other and perhaps larger growing shrubs, it is liable to be overshadowed; whereas when nestling on a ledge of rockwork, or forming a golden cushion at the base thereof, its beauties are then displayed to the best advantage. In dry soils the roots run deep, and on that account it will resist drought better than many other shrubs. Cuttings of the half ripened shoots put in a frame strike root without difficulty, or an established plant can often be divided with sufficient roots to each portion.—H. P.

Early flowering shrubs.—*Prunus Bissardi* is not so striking now as some would have us believe. It is not, in my opinion, so good at the present time as the purple Beech. In the autumn it is very

beautiful; the flowers are of a dirty white or washed-out pink colour. The common Service Tree (*Pyrus Sorbus*) is just now very telling, and its flowers are strongly scented. *P. M. Dovastoni* has been very pretty; it is very desirable owing to its early-flowering character. *Spiraea Thunbergi* is, I consider, one of the most graceful and ornamental of all shrubs; it has been flowering for a long time in a secluded spot amongst a lot of Evergreens. *Cerasus communis* is very early, and standard trees look well peering above low-growing Lilacs. Thorns and Chestnuts are all in flower now, and present a charming appearance. Maples are looking very fine, and it is somewhat strange that they are not more grown.—W. A. Cook.

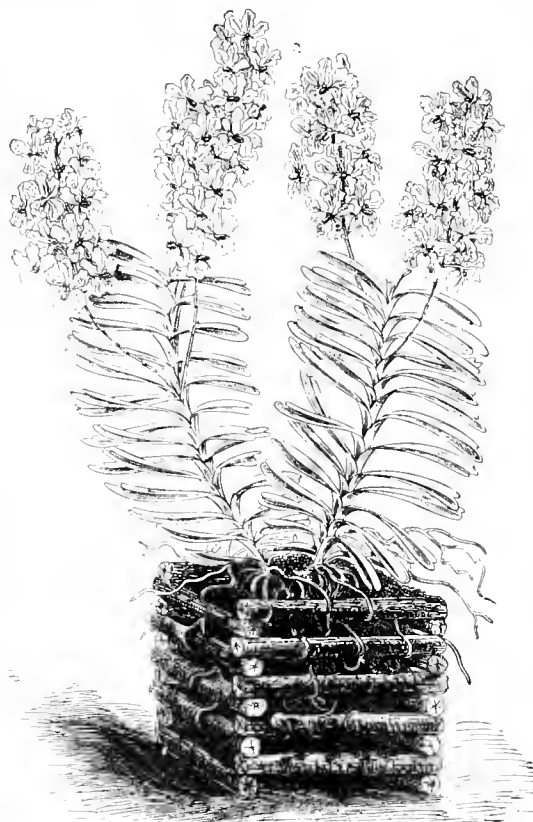
ORCHIDS.

W. H. GOWER.

THE BLUE VANDA.

(*V. CÆRULEA*.)

THIS beautiful species is a native of Khasya, where it grows upon the branches of forest trees at from 3000 feet to 5000 feet elevation.



Vanda cœrulea.

In the winter hoar-frost is said to occur on the ground below these Vandas, whilst in the flowering season the temperature runs up to 80°. In cultivation this has always been a difficult plant to manage, the chances of maintaining it in health for any length of time being very uncertain. It certainly enjoys a fair amount of heat during the summer, but in winter it should be removed into the Odontoglossum house. At all seasons the plant should have an abundance of air and moisture, and very little Moss or peat should be used about its roots. The leaves of the plant are small compared with the size of its flowers; these are arranged in a two-ranked manner, whilst the spikes of bloom are more or less erect, oftentimes becoming drooping by the weight of their numerous flowers. These are, in

the sepals and petals, of a lovely shade of lavender-blue, tessellated with lines of a darker hue; lip small, deep violet. Its colour is rare amongst Orchids, and when grown and flowered in the manner shown in our illustration, it is an object of rare beauty.

FLOWERING ORCHIDS AT SOUTHAMPTON.

THE collection of these plants at Wilton House, Southampton, the residence of Mr. H. J. Buchan, is a very rich one, being extensive in number of plants, and also in the great number of species and varieties; just now about 150 distinct kinds are blooming, and over double that number of plants are contributing to the display. Amongst the leading features is the grand show of *Odontoglossum vexillarium*; twenty-six plants of this species are bearing nearly 800 flowers. Mr. Osborne grows these plants on the north side of an intermediate house, in which position, he says, they get just the heat and shade they enjoy, and are not subject to attacks from thrips, as they frequently are when grown in strong light. This same treatment also suits *O. hastilabium* admirably, judging by the numerous strong spikes, each bearing upwards of fifty flowers. In the coolest house, *Odontoglossums* are blooming most profusely, notable being *O. Halli*, with spikes 5 feet long, laden with flowers; *O. leucoglossum* and the distinct and beautiful *O. polyxanthum*; as also *O. naevium majus*, which seems to be extremely rare in its native country, as none of the numerous collectors find it. Other noteworthy kinds are the bluish-purple *O. Edwardi*, the creamy *O. ramosissimum*, whilst of *O. Alexandra*, *O. Pescatorei*, *O. odoratum*, and *O. roseum*, the show is extremely beautiful and varied, more than three dozen members of this genus now contributing to the display. Associated with the above, but in the very coolest part of the house, is a large collection of *Masdevallias*, the chief kinds being *M. Harryana* in great variety, the curious *M. Crossi* and *Sehlmi*, *M. ignea*, *M. Denisoniana*, the fine form of *M. Veitchi* called *grandiflora*, *M. rosea*, the hybrid *M. Chelsoni* and numerous others. The *Ocidiids* are also well grown and flowered. Amongst them we noted fine examples of *O. Marshallianum*, some of them grand varieties; the old, but beautiful, *O. sessile* and *ampliatum majus*, *leucochilum*, *stelligerum*, and many other kinds too numerous to mention. *Cattleyas* are extremely gay, the most notable being *amethystoglossa*, *Schilleriana*, *Aclandiae*, and *superba splendens*. *C. Skinneri* has been very fine, but is fast going past, to be succeeded by numerous forms of *Mendeli* and *Mossii*. The rare *C. Sanderiana* is now also displaying its large and gorgeous flowers. Two varieties of this plant are now flowering, and may be distinguished by their growth; one form has short, thick, clavate pseudo-bulbs, whilst those of the other are more slender and a foot long. The dwarf form produces the richest coloured and largest flowers. There are here also some wonderfully fine varieties of *C. Warneri*, *Lælia elegans*, and *L.*

purp. ata. The *Lady's Slippers* (*Cypripediums*) come in for a considerable amount of attention; the beautiful *C. Sedeni candidulum* was raised by Mr. Osborne at about the same time as it appeared with the Messrs. Veitch, of Chelsea, and from the same parents. The most conspicuous kinds now flowering are the long-tailed *C. caudatum*, bearing thirty flowers—it is said to thrive best in small pots; the yellow-flowered *C. Druryi*; the beautiful *C. lavigatum*—perhaps more correctly called *C. philippinense*—*ciliolare*, *Lawrenceanum*, *superbians*, and others. Turning to the purely Fast Indian plants, *Dendrobiums* are well represented; amongst the black-haired kinds, *D. Jamesianum* and *eburneum* are blooming profusely, so also is the pure white *D. Dearei*, which continues in full perfection for so many weeks. Of the more or less knotted-stemmed kinds, *D. crassinode*, *Parishi*, *Ben-*

sonia, and tortile roseum are very striking, as also are *D. suavissimum* and *densiflorum*. These plants are grown in strong light, but shaded from the hottest of the sun's rays, and are thoroughly rested by reduction of the temperature in winter. Vandas are represented by numerous forms of *suavis*, tricolor, and the beautiful variety of *teres* called Andersoni. The Moth Orchids now flowering are *Phalanopsis amabilis* and its rosy companion *P. Sanderiana*; whilst *P. Schilleriana*, which is usually looked for at the beginning of the year, still continues in its pristine beauty. Other distichous-leaved kinds are several forms of *Acrides* and *Saccolabium*, *A. Warneri* and *A. affine* being particularly good. *Oncidium lanceum* is just producing its spikes. These plants are suspended close to the glass, where they are exposed to the full light, the atmosphere being kept well charged with moisture. Under these conditions the plants thrive well, and the leaves are not disfigured by that nasty black, cankerous spot, which is too common a feature upon this species.

Green flowers are not usually very attractive or desirable, but exception must be made to three kinds now flowering with Mr. Bachan, viz., *Cyclogyne Parishii* and *pandurata*, and *Epidendrum prismatocarpum*; the two former, East Indian plants with black and green flowers, are grown in the hottest house; the latter, although a native of Mexico, also enjoys the same strong heat. It has erect spikes of green, black, and pink blooms. The terrestrial *Calanthes* are represented by such kinds as *C. veratrifolia* and *masuca*, some plants of which are bearing a dozen or more spikes. These have been potted in a compost consisting of turfy loam, cow manure, some nodules of charcoal, and a little sand. After the pots are tolerably well filled with roots a little Clay's Fertiliser is mixed with the water, and administered until growth is completed.

W. H. G.

Dendrobium speciosum.—If it is not generally known, the information cannot be too widely diffused that the above named plant can be made to bloom freely and regularly with very simple treatment. After the young growths are matured, the plants should be gradually hardened off, and then set outdoors in the full sun during the summer months, and during this time water should be entirely withheld. After removal indoors in autumn, no water should be given until its spikes begin to swell, when more heat and moisture will be required to develop its flowers. *D. Hillianum* may also be treated in the same manner with the like beneficial results, but on account of its pseudo-bulbs being more slender, it cannot so well withstand so severe a drying, and therefore care is necessary to avoid shrivelling. I have for several years treated both plants in the above manner and have always been rewarded with a fine display of bloom.—W. H. G.

Cattleya gigas.—A fine form of this superb species is now flowering with Mr. Penfold at Beldington House. The plant is grown in an ordinary intermediate house, and during winter has been rested in the coolest end of a warm greenhouse; it has two spikes bearing ten blooms, the individual flowers measuring upwards of 9 inches across, sepals and petals large and broad, rosy lilac in colour; lip bold, rich violet-purple, with a large yellow eye-like blotch on each side of the throat. Several plants of this species are also very fine at Selborne, the residence of Mr. Southgate; the plants here are also kept cool during the winter months; they vary much in habit, some producing very stout and long pseudo-bulbs with broad foliage, and others comparatively slender and weak ones. Mr. Salter says he has invariably found that the bold and robust growers are the shyest ones to bloom. This experience is substantiated by the fine form now flowering with Mr. Penfold, whose plant is but moderately robust.—W. H. G.

SHORT NOTES.—ORCHIDS.

Oncidium lamelligerum.—This somewhat rare *Oncid* is now flowering freely in Mr. James's nursery at Norwood. It is a supposed natural hybrid between *O. macranthum* and *O. serratum*; in colour the flowers resemble the former and

in shape the latter kind. The habit of the plant is very robust, and it succeeds under the coolest treatment.—W. H. G.

Odontoglossum Regelianum.—This interesting new species is now flowering with Mr. Sander at St. Albans. It appears to have some affinity to *O. constrictum*, and when fully established in cultivation will doubtless prove a welcome addition to the now numerous class of cool house orchids. The sepals and petals are yellow, streaked and blotched with reddish brown; lip white in front, spotted in the centre with purple, and stained at the base and on the crest with a somewhat deeper shade of the same colour.—W. H. G.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL.

JUNE 11.

THERE were many interesting exhibits at South Kensington on Tuesday last; but the display, although larger than at the previous meeting, was small considering the season. Pyrethrums and Peonies comprised the most important hardy flowers, and Orchids were represented principally by a group sent by Mr. F. G. Tautz, Studley House, Shepherd's Bush.

First-class certificates were awarded as follows:—

PYRETHRUM MARGARET MOORE.—A large handsome flower, over 3 inches across, the florets broad, and of a delightful shade of pink. Shown by Mr. T. S. Ware.

IXIOLIRION TATARICUM.—A hardy bulbous plant from Turkestan; excellent for the border or rockery. It blooms freely, the flowers exhibiting two shades of purple. From Mr. T. S. Ware.

HEMEROCALLIS MIDDENDORFIANA.—A distinct Day Lily, and far superior to the old *H. flava*. The flowers are of large size, and bright yellow in colour. It will be a valuable acquisition to our hardy early summer-flowering plants. Exhibited by Mr. T. S. Ware.

DOUBLE PYRETHRUMS.—Magician, a distinct variety, the flowers neat and finely quilled, colour pink tipped with yellow; Florentine, a somewhat loose flower, large, white, with faint tinge of pink; Aphrodite, pure white, beautifully quilled, but wanting in form; Figaro, a neat flower, the colour bright crimson, tipped with white. Exhibited by Messrs. Kelway and Son.

MASDEVALLIA LUTEA OULATA.—A distinct variety of *M. Harryana*; the neatly shaped flowers of medium size, and an intense shade of scarlet, the yellow throat affording a bright contrast. Exhibited by Mr. F. G. Tautz.

CYCLOGYNE DAYANA.—A fine specimen, bearing four pendulous racemes, each upwards of 3 feet in length, and each bearing about two dozen flowers. The sepals and petals are light brown in colour; the narrow tubular lip white, with conspicuous dark brown stripes on the lateral lobes, the margin distinctly ridged. Shown by Mr. Ballantine, gardener to Baron Schroeder.

ODONTOGLOSSUM VEXILLARIUM RADIATUM.—This bears freely comparatively small flowers; the sepals and petals are rich pink, the blood-crimson stained base of the lip giving the flower an effective appearance. It is at once distinct and pleasing. Exhibited by Baron Schroeder.

EREMULUS ROBUSTUS VAR.—A white-flowered form, the spike, as shown, measuring fully 3 feet, and, judging from its appearance, would develop to fully 10 feet, as is the case in the type. The flowers are white, and more densely produced than in the parent. Shown by Mr. E. G. Loder, Floore, Weedon.

PELARGONIUM DUKE OF CLARENCE.—A show variety; the flowers large and of good form; the lower sepals scarlet, the upper suffused with velvety purple; the trusses of bloom are, however, rather small. From Mr. E. B. Foster, Clewer Manor, Windsor.

There were several Orchids shown, the chief exhibit being the group from Mr. Tautz, which included, amongst others, the following: *Dendrobium microglossum*, the flowers small, pink, and

freely produced; *D. Veitchianum*, the colour yellowish green, the lip large and much dilated; *Laelia purpurata alba*, pure white save the lip, which is blotched with velvety crimson-purple; *Cypripedium superelliere ornatum*, a large flower of light colouring; *C. Lawrenceanum atro-rubrum*, a striking variety, the lip chocolate-brown, the dorsal sepal fully 2 inches in diameter, suffused with rich crimson at the base and striped with the same hue; the whole flower has a glistening appearance, which greatly adds to its beauty; *C. Lawrenceanum grandiflorum*, a large-flowered form of the type; *C. caudatum giganteum*, a bolder flower than the old *caudatum*; and *Acrides Houlettiana*, a beautiful species from Cochin China, the flowers large, sepals and petals pale yellow tipped with light magenta, the lip white, blotched with magenta. A silver-gilt Banksian medal was awarded. Mr. F. Wigan, Clare Lawn, East Sheen, sent a large form of *Phalenopsis grandiflora*, the flowers of great width and substance; *Cattleya gigas Sanderiana*, a fine variety with a very highly coloured lip; and *C. Mendeli limbata*, very chaste, white lightly tinged with pink, the front of lip bright rosy crimson. A good specimen of *Cattleya Warneri* and a showy variety of *C. Mossie* came from Mr. E. H. Whitwell, Barton Hall, Darlington; there are now so many forms of *C. Mossie* that unless the variety is of exceptional merit it is useless to give it a distinctive name. *Cypripedium Cheltonia* was shown by Messrs. Heath and Son, Exotic Nursery, Cheltenham. Mr. R. B. White, Ardarauch, Gareloch Head, exhibited *Dendrobium polyphlebium*, a hybrid between *D. primum* and *D. Parishii*; the flowers are of similar shape to those of the former; the colour rosy pink. Baron Schroeder exhibited besides the two Orchids certificated, *Odontoglossum vexillarium vestita*, a variety with flowers almost pure white. *Odontoglossum crispum*, Blair's variety, sent by Mr. Blair, gardener to the Duke of Sutherland, Trentham, Stoke-upon-Trent, is a distinct and well-coloured form, the sepals and petals white, blotched with rich brown and pale lilac. From the collection of Mr. Day, High Cross, Tottenham, came a variety of *O. crispum* named *Wolstenholmia*; the plant bore a long raceme, but the flowers lack brightness, the washy lilac blotches on the sepals and petals giving them a dull appearance. A variety of *O. crispum* called *albanense* was shown by Messrs. Sander and Co., St. Albans, the flowers large, blotched and barred with light brown on a white ground; the same firm also exhibited another form of *crispum* named *Schroederi*; it is very distinct, the shell-like sepals and petals white, of a rich bright crimson colour. *Cattleya Mossie Pectersi*, sent by M. Pecters, Brussels, is a good form, but the plant was in bad condition; the flower is of bold character, and rich pink colour. The Duke of Marlborough, Blenheim, contributed *Cattleya Mendeli picturata* and *C. M. limbata*, both good varieties; the former rose-coloured, with the tubular lip white, blotched light crimson; the other rich pink, save the lip, which is vivid crimson.

Messrs. Veitch and Sons, Chelsea, exhibited *Anthurium Bakeri*, the spathe small and of a green colour, the spadix much developed, the berries large and highly coloured; an interesting plant. Dr. Wallace, Colchester, sent *Blandfordia flammula aurea*, flowers golden yellow. It is probably owing to their difficult cultivation and shy-flowering character that *Blandfordias* are not more often seen. *Leschenaultia biloba major*, a greenhouse plant too seldom seen, came from Mr. W. Balehin, Hassocks, the flowers of a brilliant blue and most effective when seen in a mass; a cultural commendation was awarded.

Hardy flowers made an interesting feature. The group from Mr. T. S. Ware comprised many choice plants. Amongst Irises the most noteworthy were *I. Victorine*, rich purple falls, whitish standards; *I. pallida dalmatica*, lovely lilac colour; and *I. Gracchus*, crimson striped falls and canary-yellow standards; very pleasing. Of the Day Lilies, *Hemeroallis flava grandiflora*, a large form of the type; *H. Dumortieri*, orange-yellow, distinct shade; and *H. Middendorfianna*, previously described, were the

best. There were also examples of the interesting *Lewisia rediviva*, the flowers white and borne on short stems; *Panicratium illyricum*, white, small, and delicately fragrant; and the yellow *Calochortus pulchellus*, very pretty. A silver Banksian medal was awarded. Messrs. Barr and Son, Covent Garden, also had a large group, consisting principally of Peonies, Irises, and Pyrethrums, some of the varieties remarkably effective. A silver Banksian medal was awarded. Mr. Gordon, Twickenham, sent a collection of Peonies; the flowers had, however, suffered considerably in transit. Messrs. Kelway and Son, Langport, Somerset, were awarded a bronze Banksian medal for several boxes of single and double Pyrethrums, the varieties showing to what a high state of perfection these flowers have been brought; Milton, deep crimson, was one of the most showy of the doubles. Messrs. J. Carter & Co., High Holborn, sent well-grown plants of the Edelweiss and the pretty *Stenogastera concinna*; for the former they were awarded a cultural commendation.

Mr. R. Dean, Ealing, contributed *Aquilegias*, the deep blue-flowered *Phacelia campanularia*, a remarkably showy annual, and *Chrysanthemum multicaule*, single yellow flowers, very pretty. Seedling Carnations were sent by Mr. R. Spinks, Victoria Road, Hoxley; and a choice variety of Pansy blooms by Mr. Henry Eckford, gardener to Dr. Sankey, Baschurch, Salop. *Anemone King of the Scarlets*, a double scarlet variety, was shown by Mr. R. Gilbert, Dyke, Bourne, Lincolnshire.

Messrs. H. Collyer and Co., Tunbridge Wells, exhibited a dark-leaved form of the popular *Ampelopsis Veitchii* named *purpurea*; if it proves as free-growing as the type, it will be a valuable acquisition. Messrs. Paul and Son, The Old Nurseries, Cheshunt, sent *Rhododendron Fortunei*, Mrs. Chas. Butler, a pleasing variety, the flowers large, delicate pink, sweetly scented. Mr. E. G. Loder, Floore, Weedon, showed well-developed flowers of the striking *Cypripedium macranthum* and *C. Calceolus major*, a large-flowered form of our common Lady's Slipper. From Mr. G. F. Wilson, Heatherbank, Weybridge, came an unnamed yellow Primrose, probably a hybrid between *P. japonica* and *P. involucrata*, resembling the former in foliage, while the flowers remind one of the last-mentioned. A few plants of interest were sent from the Royal Gardens, Kew. They comprised *Salvia scapiformis*, a small plant bearing a profusion of light lilac flowers on spikes about 6 inches in length; it comes from Hong Kong; *Oxalis brasiliensis*, a free-flowering Brazilian Wood Sorrel, the flowers bright rosy pink; very useful for the cool house; *Streptocarpus Dunalii*, a native of the Transvaal; flowers reddish, freely produced; the delicate violet-coloured *Wahlenbergia graminifolia*; and the Golden Drop (*Onosma taurica*).

Fruit committee.—The subjects brought before the committee were few in number. Mr. G. Norman, The Gardens, Hatfield House, Herts, showed Melon Dempsey's Favourite and Sir Charles Napier Strawberry; the fruits of the last mentioned were remarkably fine. There was little competition for the prizes offered by Messrs. Suttons & Sons, Reading, for the best brace of Melons: Mr. T. Lockie, Oakley Court Gardens, Windsor, was first, and Mr. H. W. Ward, Longford Castle Gardens, Salisbury, third.

The Gardeners' Orphan Fund.—The efforts of the promoters of this fund are being vigorously applied to perfecting a scheme to be laid before the horticultural community. Some three weeks ago the provisional committee appointed a sub-committee to draw up rules and regulations under which the fund will be administered; and this committee met on two occasions at the Royal Horticultural Society's Gardens at Chiswick, and framed the same, which were submitted to a meeting of the provisional committee on Tuesday last, held in the conservatory at South Kensington, and unanimously approved. It is intended to convene a public meeting of horticulturists and those interested in the fund at South Kensington, on July 12, when the provisional committee will make a report, and the fund will be established. Due notice will

be given of this meeting. Messrs. James Veitch and Sons have generously promised the sum of £100 to the fund, and Baron Schroeder has, through Mr. H. J. Veitch, promised to become a supporter of the same. So much support has been received, that the success of the movement is now placed beyond doubt, and a list of supporters will appear in due course.

ROYAL BOTANIC SOCIETY'S EXHIBITION.

JUNE 15.

THE second summer show of this society was, on the whole, very fine and favoured with brilliant summer weather. The exhibition was of the usual character, stove and greenhouse plants forming an important feature, though we remark with pleasure that the huge stilted trained specimens have certainly had their day. Hardy flowers were plentiful; also Orchids, and there were many artistically arranged groups in the miscellaneous class.

STOVE AND GREENHOUSE PLANTS IN BLOOM.—Mr. J. Cypher, of Cheltenham, was first in the open class for twelve, the following being well grown and densely flowered: *Erica Cavendishii*, *Clerodendron Balfourii*, *Ixora Pilgrimi*, *Anthurium Scherzerianum*, and *Bougainvillea glabra*; Mr. D. Donald, gardener to Mr. J. G. Barclay, Leyton, second, having a fine specimen of *Azalea Flower of Spring*. Mr. Henry James, Castle Nursery, Norwood, was well to the front in the class for six, one of the best plants being a well-flowered *Azalea Barclayana*; *Anthurium Wardianum* was also in good condition. There was a decided falling off in the amateur classes; in some instances the plants were very indifferently grown. Mr. D. Donald occupied the first place, but the exhibits call for no particular comment.

ORCHIDS were the brightest feature of the show. There were five classes allotted them, Mr. J. Douglas, gardener to Mr. F. Whitbourn, Great Gearys, Ilford, occupying the first place for twelve; the plants exceptionally well grown and flowered, especially *Laelia purpurata* and *Cypripedium Lawrenceanum*; Mr. Hill, gardener to Mr. H. Little, The Barons, Twickenham, a good second; *Cattleya labiata Warneri* and *Cypripedium barbatum grandiflorum* were noteworthy. In the nurserymen's class for twelve, Mr. J. Cypher was first with capital plants; *Cypripedium barbatum* and *Anguloa Clowesi* were especially good; Mr. Henry James second, his *Cattleya Mossiae* and *Epidendrum vitellinum majus* being worthy of mention. The last-mentioned exhibitor was also first in the class for twelve single specimens; the plants were moderately good, including a well-grown *Vanda suavis*. In the amateurs' class for twelve specimens, Mr. J. Douglas was to the fore, his group including a fine specimen of *Cymbidium Lowianum* bearing several spikes of its pale greenish yellow flowers; *Laelia purpurata* was of high merit, also *Saccolabium guttatum*; Mr. F. J. Hill, a close second, the specimens well flowered.

ROSES were in poor condition, the dry weather of the past week or so having affected them considerably. Six classes were devoted to these, the principal one for twenty-four, in which Mr. J. G. Trauter was the only exhibitor; for twelve varieties, Mr. J. Hollingsworth, Turkey Court, Maidstone, occupied the post of honour; and this exhibitor was also successful in the class for six distinct. Mr. A. Gibson, gardener to Mr. F. F. Burnaby-Atkins, Halstead Place, Sevenoaks, exhibited fair flowers of *Niphetos* in the class for twelve trusses, any one colour. For twelve trusses, yellow, Mr. A. Gibson came first with *Maréchal Niel*.

PELARGONIUMS are generally seen to advantage at the Botanic shows, and the present occasion proved no exception to the rule, though the competition was less severe than in the days of yore. The fancy section was well represented. In the nurserymen's class for six Mr. C. Turner, Royal Nurseries, Slough, was deservedly placed first, the specimens densely flowered, especially *Ellen Beck*, *The Shah*, *Princess Teck*, and *East Lynn*. In the corresponding class for amateurs, Mr. D. Phillips, Langley Bloom, Slough, was first. In the first prize lot *Delicatum* and *Princess Teck* were good, and in the latter *Roi des Fantasies* was about the best. In the

other class for *Pelargoniums* the order of things was reversed, Mr. J. Hill coming first and Mr. D. Phillips second; the plants of the former were well grown, especially *Mdme. Favart*, light red; and *Ruth Little*, rosy pink upper petals, the lower blotched with velvety maroon. Mr. C. Turner was first for six show *Pelargoniums*, *Amethyst*, *Gold Mine*, and *Comtesse de Choiseul*, well flowered. The zonal varieties were very good, Mr. H. Eason, gardener to Mr. Noakes, Hope Cottage, Highgate, staging well-flowered examples. Amongst the most effective varieties were *Nelly Thomas*, scarlet; *Constance*, pink; and *Zelia*, showy red. He was closely followed by Mr. Hill, who had plants of unequal size, *Atala* and Mrs. Gordon being the finest, the colour dazzling scarlet.

TUBEROUS BEGONIAS were exhibited in fine condition by Messrs. J. Laing, Forest Hill, who were a long way ahead in the class for twelve, the plants medium-sized, and full of flower; *Queen Victoria*, scarlet, hardy; *Chesterfield*, fine pink; *Ball of Fire*, well named, were the most conspicuous. There are few more effective plants when well grown than tuberous *Begonias*, and the rapidity with which they have been developed is marvellous.

CUT FLOWERS.—These were fresh and good, especially the *Iris*. In the class for a collection of the latter, Messrs. Collins Brothers and Gabriel headed the prize list; the flowers were well grown and nicely put up, Mr. T. S. Ware followed closely. Mr. T. S. Ware was first for twenty-four trusses of hardy herbaceous flowers. Messrs. Paul and Son, The Old Nurseries, Cheshunt, second. Mr. A. Gibson occupied the first place in the class for twenty-four stove and greenhouse flowers; Mr. W. Bates, gardener to Mrs. Meek, Poulett Lodge, Twickenham, second; *Anthurium Dechardi* was noteworthy in the collection of the last-mentioned, both the spathe and spadix being pure white and well developed. An interesting feature was the class for wild flowers; Mr. M. K. Dixon, gardener to Sir T. M. Wilson, Uckfield, being first. Mr. D. Phillips came first for twenty trusses of show *Pelargoniums*, and in the corresponding class for show varieties Mr. C. Turner was to the front.

NEPENTHES AND SARRACENIAS were of average merit. The former were placed on small stands, so as to show off their pitchers; this is far better than placing them on the ground, as we occasionally see them. Mr. H. James was first in the class for twelve *Nepenthes*, the specimens well grown; and the same exhibitor secured the premier prize for *Sarracenias*.

FERNS.—These call for no special mention. Mr. A. Offer was first in the class for six, closely followed by Mr. H. Eason; the former had good specimens of *Cyathea dealbata* and *Adiantum farleyense*; the latter had capital plants of *Davallia Mooreana* and *Gymnogramma chrysophylla Lauchena*.

FINE-FOLLAGED PLANTS were contributed by Mr. J. Cypher and Mr. H. James, who were first and second respectively in the class for six; in the corresponding class for amateurs Mr. D. Donald was to the fore, followed by Mr. A. Offer. Mr. H. James was first for six variegated-leaved plants; *Phormium tenax variegatum* and *Alocasia macrorrhiza variegata* were good; Mr. R. Butler second with specimens neatly grown.

NINETENTH CENTURY PLANTS.—There were four classes for these, but there was little response. In the class for a collection of annuals and hardy herbaceous plants, Messrs. Paul and Son, Cheshunt, were the only competitors. The group was large, and comprised a fair selection of plants introduced during the present century, noteworthy being *Henierocallis Middendorffiana*, certificated at South Kensington last Tuesday, and the showy *Papaver umbrosum*.

Fruit.—This was neither plentiful nor, on the whole, satisfactory, and in most of the classes there was little competition. Mr. R. Parker, gardener to Mr. J. Corbett, was first for a collection—the Black Hamburg and Foster's Seedling Grapes were fine; Mr. T. Hare a close second. Grapes were of average merit. For three bunches of Muscat of Alexandria, Mr. P. Feist, gardener to Mr. R. J. Ashton, first, the

berries large and well coloured. In the other class for white Grapes, Mr. W. H. Ward came to the front; his bunches of Buckland Sweetwater showing careful cultivation. The Black Hamburgs shown by Mr. J. Hollingworth were models of good culture, the bunches well shaped and the berries finely coloured; Mr. T. Osman, who was second, had bunches wanting finish. Mr. W. H. Ward was first in the class for three bunches of black Grapes, Black Hamburgs excepted. Fairly good bunches of Black Prince were staged, a Grape that is now seldom grown. In the class for a basket of white Grapes, Mr. P. Feist occupied first place; and in the corresponding class for black, Mr. J. Hollingworth was the most successful exhibitor. There were also classes for Melons, Nectarines, Peaches, Strawberries, and Pines, Messrs. H. Ward, W. F. Smith, R. Parker, W. H. Diver, J. Worthing, and J. Harris sharing the principal awards.

MISCELLANEOUS COLLECTIONS were numerous and full of interest. Messrs. F. Rivers and Son, Sawbridgeworth, received a small silver medal for a large group of fruit trees in pots, comprising Pears, Apples, Nectarines, Peaches, Cherries, and Plums, all bearing freely, and in the best of health. A small silver medal was also given for an extensive display of Gloxinias from Mr. A. Luff, Hethersett, Streatham; the plants were well grown and arranged, but being placed in a glass corridor in the full sun, the flowers were spoiled by the strong light. Mr. T. S. Ware, Tottenham, had an effective group of hardy perennials and Peonies. Large bronze medal was awarded. Messrs. Barr and Son, Covent Garden, received a like reward for their fine bank of Irises, Ixias, Pyrethrums, and other seasonable subjects. A bronze medal was awarded to Messrs. Hooper and Co., Covent Garden, for a collection of Irises, &c. The same firm were also granted a large silver medal for a tastefully arranged group. Messrs. Collins Brothers and Gabriel showed a small group of Pyrethrums, Lilies, and Ixias; and Messrs. W. Bulchin and Sons exhibited a basket of the brilliant blue *Leschenaultia biloba* major. Messrs. Paul and Son, Chesham, sent *Rhododendron Fortunei* Mrs. Charles Butler, described in our report of the Royal Horticultural Society's meeting. The same firm had several boxes of Pyrethrums. Messrs. Kelway and Sons, Langport, Somerset, exhibited a fine display of double and single Pyrethrums, several of them new varieties. Pansies displaying a striking variety of colours came from Mr. John Forbes, Hawick, N.B. A bronze medal was awarded the *Comte de Paris* Shreen House, Richmond, for hardy Orchids grown in the open air at the Chateau d'Eu, France.

Messrs. J. Laing and Co., Forest Hill, had an effective arrangement in the principal tent, consisting of Begonias, Orchids, and Ferns admirably intermixed, the whole backed with foliage plants. A large silver medal was awarded. Mr. G. Elliott, gardener to Mr. W. F. Parnell, Devonshire House, Stamford Hill, was awarded a silver medal for an interesting group of Orchids, including several fine varieties. Mr. W. May, gardener to Mr. F. C. Jacob, Stamford Hill, was also awarded a small silver medal for an interesting group of Orchids; *Thunia Marshalli* and *Anguloa Ruckeri* were noticeable. A small silver medal was awarded to Mr. H. B. May, Dyson's Lane Nursery, Edmonton, for a collection of Ferns—*Pteris cretica* Mayi, *Pteris cristata* compacta, and *Adiantum Paucoti* being noteworthy. We must not omit to mention the *Calceolarias* from Mr. D. White, gardener to Mrs. Watson, Redlees, Isleworth, which represent a dwarf, compact strain; the flowers are large, and exhibit a great diversity of bright colours. Mr. J. Douglas showed *Primula imperialis*, found near Choombie, Himalayas, at an elevation of 11,000 feet, and growing on the banks of streams.

Mr. Gordon, nurseryman, Twickenham, staged a very interesting group of Japanese Acers and Moutan Peonies, the latter being apparently a distinct race from the Chinese; the flowers were for the most part single or semi-double, and the colours novel. A few of the most notable were Princess Louise, bright carmine; Prince Albert, clear scarlet; Rifleman, deep maroon-purple; Princess Beatrice, large, white flushed with pink; Princess Alexandra, large flower, white, blotched at the base of each

petal with rosy purple; Lady Cordelia, semi-double, creamy white, flushed with flesh colour in the centre.

NEW PLANTS were numerous. Floricultural certificates were awarded as follows: To Messrs. J. Laing and Co. for Begonias Duke of Edinburgh, single, flowers of immense size, crimson; Duchess of Edinburgh, single, orange-scarlet; Princess Louise, white, single; Scarlet Perfection, scarlet, double; Terra Cotta, rosy scarlet, double; Marginata, very double, salmon-pink and white; Alba magna, double, pure white; Mrs. Aphorpe, double, rich pink; and Princess Royal, yellowish tint, double. To Mr. C. Turner for Pelargonium Iona, a beautiful fancy variety, upper petals rosy red, lower suffused with a lighter shade; and P. Ambassadors, a bright rose and white fancy. To Mr. E. B. Foster, Clewer Manor, Windsor, for Pelargonium Duke of Clarence, certificated by the Royal Horticultural Society, and P. Marion, a well-finished show flower, upper petals velvety purple, lower rosy pink. To Messrs. Kelway and Son, Langport, for Pyrethrums Florentine, Magician, Aphrodite, and Figaro, all described in our report of the Royal Horticultural Society, and Meny Hampton, a rich crimson single variety.

Botanical certificates were awarded to Messrs. J. Veitch and Son, Chelsea, for *Rhododendron luteo-roseum*, large trusses of rosy pink flowers; *Adiantum Capillus-veneris* var. *Mairisi*, free grower, fronds elegant, pinnales large; *Diplazium bians*, a graceful Fern, bold, arching fronds; *Abies canadensis argentea*, young growth light green, pleasing; *Juniperus canadensis aurea*, dense habit, yellowish green leaves; *Abies excelsa mutabilis*, a distinct Spruce, light green young growth; *Thuja gigantea aurea*, neat growing, foliage tipped yellow; *Ilex Aquifolium insigne*, leaves long, narrow, distinct; *Sequoia sempervirens alba spica*, young growth almost white, effective, and *Viburnum plicatum*, well known. To Mr. Blair, Treutham, for *Odontoglossum crispum*, Blair's variety, described in our report of the Royal Horticultural Society; to Mr. R. B. White, Gardloch Head, N.B., for *Dendrobium polyplebium*, small rose-coloured flowers; to Messrs. Sander and Co., St. Albans, for *Masdevallia grandis*, a rich crimson variety of Harryana; and *Odontoglossum crispum albanense*, flowers blotched with light brown on yellowish ground; to Mr. Bethell, gardener to the Duke of Marlborough, for *Cattleya Mendeli limbata*, sepals and petals rose colour, lip crimson-purple; to Mr. W. Chitty, Stamford Hill, for *Coleus Jubilee*, leaves large, dark chocolate-brown, midrib and nerves rosy crimson; to Mr. G. Elliott, gardener to Mr. W. Darnell, Devonshire House, Stamford Hill, for *Cattleya Mossiae*, Darnell's variety, sepals and petals pale pink, lip purple.

A prize list will be found in our advertising columns.

We understand that there will be an exhibition of Roses and Carnations at Troyes, France, on July 2 and 3. English horticulturalists are invited to exhibit.

Rating of nurseries.—I find that the Royal Horticultural Society has called a meeting for the 28th inst. at three o'clock. With the view of consulting the convenience of nurserymen and others who are desirous of attending the meeting called by my association, I have arranged to postpone the hour of meeting from four to six o'clock.—F. C. GOODCHILD, Secretary.

The Oxford Carnation and Picotee Union.—The third annual exhibition of Carnations and Picotees held by this flourishing union is announced to take place on Tuesday, August 2, in Mr. E. S. Dodwell's garden in the Stanley Road, Oxford. Carnations and Picotees that are somewhat late are rapidly making up for lost time under the influence of the bright sunny weather we are now enjoying.

Marketing cut flowers.—Messrs. Draper send us an illustration of the ideas people have of marketing flowers—a little box of poor weak *Ranunculus*, not a handful, and of no value whatever. To see, someone thinks worth while to make a market transaction of! People who want to sell flowers should learn some of the simplest conditions of the market.

Destruction of crickets.—"H. G." in THE GARDEN June 4 (p. 521) asks for a means of exterminating crickets. My gardener has recently quite by accident discovered a capital trap. Let "H. G." take a biscuit tin and put some canary seed in it, and so place it that the top is level with the floor (mine is on a step which happens to be just the height of the tin). Into this the crickets throw themselves; their return up the slippery sides is impossible. This trap has been fatal to scores and many mice as well.—G. F.

Corrugated iron for staging.—I find that many market growers are using this material largely for stages. It doubtless possesses many advantages over any other material that is generally used for that purpose. It is, of course, imperishable, and is very easily fixed, requiring merely to be laid on supports, lapping one piece over the other. Slate is too costly where profit is the object, and wooden stages do not in a general way find favour with market growers, both on account of their tendency to decay and the difficulty there is in maintaining moisture round the roots of the plants placed on them. The advantages to be derived from a cool, moist bottom for the pots to stand upon are so great, that many of the best London growers have long adopted the primitive form of standing the plants on the bare earth. Not long since I visited a market garden where enormous quantities of pot plants were in the rudest possible health, and out of about forty houses there were not more than four fitted up with staging. In some instances the stage was formed by digging out the path, but in the greater portion of the houses a brick wall was run down on each side of the path, the beds thus formed being filled up within a few inches of the top with soil, and finished off with ashes. When corrugated iron is used it can be covered with shingle, Cocoa-fibre, or anything that the grower may think will answer the purpose.—J. C. B.

Death of Mr. F. R. Kinghorn.—We regret to announce the death of Mr. F. R. Kinghorn, aged 75, at the Sheen Nurseries, Richmond, of which he had been proprietor since 1855. He was born at Lemoxlove, N.B., in February, 1813, and commenced his gardening career at the nurseries of Messrs. Ballantyne & Son, of Dalkeith, and after filling situations in private gardens, at the age of 21 he came south to Twickenham, as head gardener to Mr. A. Murray, at Orleans House, which was subsequently sold to the Earl of Kilmorey. Mr. Kinghorn retaining his post of gardener. It was while here that he zealously devoted himself to the improvement of some popular flowers, and especially was he successful in obtaining variegated forms of the zonal Pelargonium. One of his earliest seedlings was Countess of Warwick, followed by Flower of the Day, which retained its popularity for many years. The old pink Pelargonium Christine, as also several tricolour varieties, likewise a few *Azaleas* and *Epacris* were raised by Mr. Kinghorn. The *Calceolaria* was greatly improved by him, and he also raised some charming varieties of herbaceous *Lobelias*. In 1855 he established himself in business as a nurseryman at Sheen, and carried it on until failing health necessitated lessened exertion some four years ago. Mr. Kinghorn is succeeded by his only son, Mr. John Kinghorn.

Death of Mr. A. McIntyre.—We also have to announce the death of Mr. McIntyre, in his 59th year. Mr. McIntyre was until lately superintendent of the Victoria and Greenwich Parks—a post he held for about thirteen years, and from which through failing health he was obliged to retire. Mr. McIntyre's work while in this last position was eminently successful.

From a notice received we learn that the Royal Gardens, Kew, will be opened on Jubilee day, June 21, at 10 o'clock.

We understand that the coloured plates issued in "Familiar Wild Flowers," "Familiar Garden Flowers," and "Familiar Trees," are about to be used at the museums at Kew Gardens.

Flowers from Ireland.—We have received a gathering of flowers, consisting of *Veronica Hulkenana*, *Rosa rugosa*, *Malva* sp., &c., from Ireland. They had all been grown in the open air. The spike of *Veronica Hulkenana* was very fine.

Rose Canterbury Bells.—Mr. Christian, Hornwood, Chislehurst, sends flowers of delicate rose-coloured Canterbury Bells, all very nice in colour, and deserving attention from our flower gardeners.

Ornamental fish pond.—I have made an ornamental fish pond 50 feet by 24 feet; average depth 3 feet, well puddled with clay. What are the best means of preventing the water becoming foul from stagnation? Are there any aquatic plants which would tend to keep the water wholesome for fish?—CROYDON.

Names of plants.—J. Kennard.—Cannot name Strawberries from leaves and flowers.—L. K. L.—*Isolobos tataricum*.—J. C. Wheeler.—Specimens too much shrivelled for identification.—R. C.—*Epinidium pinnatum*.—G. Baber.—*Polonium Richardsoni*.—C. L. Hayward.—All varieties of *Scilla nutans*.

WOODS & FORESTS.

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THE AUSTRIAN PINE.

(PINUS AUSTRIACA.)

LIKE the Corsican Pine (*P. Laricio*), this tree has of late years attracted a considerable amount of attention, not only from its perfect hardihood, even when planted under what might be considered unfavourable circumstances, but from its ornamental appearance, and the great amount of shelter it affords to other less hardy kinds. Here it has been planted by the thousand at all altitudes, from a few feet above sea-level up to about 1000 feet, and in all these situations it has done well—in fact, proved itself to be one of the most valuable Pines yet introduced to this country. For planting by the sea it is an invaluable tree, flourishing well down even to high water mark, and that even in situations where, from the violence of the winds, few other trees could succeed; and as it is by no means partial to a rich soil, this gives it a great advantage over many of its fellows for planting in the poverty-stricken districts, such as occur around our coast lines generally. Then for high-lying, wind-swept districts it is very suitable, its strong, hardy nature and stiff-set foliage rendering it peculiarly well adapted for withstanding the climatic influences at such elevations. We have used it largely in the formation of a plantation at 700 feet altitude, principally on the south-western side, from which quarter our worst winds blow, and with perfect success. It acts as a stout wind-barrier and useful protector of other excellent timber trees that would not, without the aid of the Austrians, have attained to anything like their present dimensions at so high and exposed an altitude. For bog-planting, the Austrian Pine is one of the best trees I know of, growing far more freely than others planted on even the best quality of loam. How its timber produced on bog may turn out I know not, but in judging from specimens of hardly a quarter of a century's growth as compared with those grown on loam, the difference was imperceptible.

Limestone districts, in judging from its native Austrian hills, would, no doubt, suit the requirements of this Pine admirably, but I have no statistics of its growth in such soils. As an ornamental tree the Austrian Pine is certainly not behind many of its neighbours, its wealth of dark, glossy, and shaggy foliage, and pleasing contour generally being admired by all. For planting in clumps or masses it is particularly well suited; indeed few of the Pines form a more striking feature of the landscape than does this tree when suitably arranged in irregular clumps. Single specimens when allowed plenty of room on the greensward are highly attractive, and produce in an incredibly short space of time globose masses of the richest green foliage, and which contrast strangely with other Conifers of a light or silvery appearance. The Austrian has, however, one fault, and a bad one, too—it is very apt to get top-heavy, and as its roots spread horizontally, not unlike those of the common Spruce, it soon becomes a victim to the first severe storm. Single trees are most apt, I have noticed, to get overturned, and the evil rarely occurs where this Pine is planted in quantity, and at no great distance apart.

From its close habit of growth this tree makes an excellent screen fence, but to form such in a really satisfactory manner it must be allowed plenty of room, so that the lower branches become perfectly developed, and a marked peculiarity of this Pine is that the lower branches do not, as in many species, die away as the tree advances in age, but remain fresh and green if allowed a free circulation of air. For obstructing the view of any unsightly objects, such as a quarry, old buildings, or objectionable dwelling-houses, this tree may be used with freedom, for few others could serve the purpose so well.

As a timber-producer the Austrian Pine is not without value, and several experiments made with the wood prove that it is very durable, and one of the

few that may be used satisfactorily where it is subject to being wet and dry alternately. Some years ago we cut up two large trees of the Austrian Pine for this purpose, and placed the planks side by side with those of the Scotch and Spruce Firs to hold up the ever-sliding banks of a river, each being marked and noted down for future observations, and on examining these a few days ago the Austrian timber seemed quite sound, but of lighter colour than when placed in position. Sufficient time has, however, not yet elapsed for us to speak with any amount of assurance as to the superiority of the wood of this tree over that of either the Scotch or Spruce Firs, but from the present appearance of gates, stiles, &c., manufactured from the timber some years ago there can be little doubt but that it will, so far as lasting qualities are concerned, be quite equal to either of the other two. The timber of the Austrian Fir grown on this estate is far more resinous than any other British wood that I have seen cut up; it is likewise remarkably strong and tough, although coarse in the grain.

It works well under the tools of the carpenter and takes a nice polish. To produce good and clean timber the Austrian, like all other members of the Pine family, must be grown thick—so thickly together that the lower branches will be killed by Nature's system of pruning. I have had large Austrian Pine trees grown along the outskirts of a wood, where their lower branches were, from having plenty of light and air, allowed to remain in a healthy growing condition, cut up for boarding, but the difference between these and such as were cut from trees grown closely together in a wood would hardly be credited. This has proved—to me at least—that to produce nice, handsome clean specimens feathered to the ground, the Austrian Pine requires plenty of room to extend its strong rambling branches; but where the production of good, saleable timber is the end in view, then grow the Austrian Pine close—so close that the lower branches will be killed outright, and for fully half the length of the main stem.

Judging from the size of many of these Pines in the park here, I should say that they must have been planted shortly after the introduction of the tree in 1835. Several of these have a girth at a yard up of fully 7 feet, and long, clean stems containing a considerable quantity of clean, well-grown timber. The branches are usually long in proportion to the tree's height, stout, and well furnished with dark green, tufted foliage. Two leaves are in each sheath, and usually 5 inches long, while the cones are 1 inch long in the majority of specimens. That this tree is not specifically distinct from *Pinus Laricio* I have been long ago convinced, although the typical *Laricio* differs in many well marked technicalities from the commonly cultivated Austrian Pine. For all this, I can show to any person who may be interested in the matter all gradations in foliage and appearance between the typical *P. austriaca* and *P. Laricio*, and point out specimens whose nomenclature will puzzle even the most learned in these matters. The twist at the base of the leaves of *P. Laricio* goes for nothing, neither do shape of cone nor peculiarity of bud structure, as all these I have carefully studied in connection with the trees. It is, perhaps, enough for the tree-lover to know that, whether for ornament or use, the representatives usually seen of each so-called species are distinct, and sufficiently so for certain ends, so here I will let the matter rest.

As to the nursery management of *Pinus austriaca*, that is simple enough, for by sowing the seeds in a well prepared bed out of doors they germinate quite readily, and the young seedlings are at the age of two years fit to be lined out in the nursery border. Frequent transplanting induces the formation of good roots, and plenty of them, so by all means attend to this point, and the final transplanting will be attended with good results. This, indeed, transplants better than the majority of Pines when of large size, say up to about 6 feet in height, and for this reason it is usually kept as a stock plant in the nursery for filling up gaps in the woodland caused by blown-over trees. Such plants must, however, be well

attended to in the way of frequent transplanting, for if this is neglected the rootlets are few, and consequently the final moving is attended with risk. Here, unfortunately, are rather fond of the Austrian Pine, and we have frequently felt grieved to see plants nibbled, and, in some instances, quite destroyed by their depredations. Davidson's compost or coal tar we have found useful to a certain extent, but to be really efficacious either must be often applied.

A. D. WEBSTER.

SHALLOW V. DEEP PLANTING.

MORE failures occur, in my opinion, through deep planting than from any other cause, and yet it is far wiser to err on the right side and plant too shallow than too deep, for in the former case the plant can assist itself; in the latter it is helpless. The roots of plants, as well as the parts above ground, want air and warmth, and if properly accommodated, will soon adapt themselves to the place in which they are to grow. If the surface soil is naturally dry, the roots will run down after moisture, and if it is wet, they will spread near the top, but in no case can a tree or plant, except such as strike root at every joint, flourish if the collar is much below the surface. In planting small trees or shrubs, over which the wind has no power, there is no excuse for deep planting, not even the plea of saving trouble, yet we often meet with even small shrubs planted far too deep.

Many practise deep planting because they imagine it saves trouble and time in staking the trees, to secure them from the effects of high winds. To remedy this, they plant them down low enough to tread them firm, and while they thus save the trouble of supports, incur risk of failure and the certainty of damage, for when a plant or a tree is not of a nature to strike out roots at a proper distance from the surface, it cannot flourish; it may exist for a time, but will eventually die. On the other hand, if a plant is merely held upright on the surface, and its roots spread round it, and a few inches of soil put over them, they have power to strike down, and this they will do to the necessary distance to afford support.

Of course, all trees over a certain height require to be made firm by staking, or some other method, to secure them from the effects of high winds; otherwise much injury frequently occurs. Hundreds of persons have to complain of the effects of deep planting in the frequent failure of their trees and shrubs. Everything seems to go wrong with them; whilst they remain in ignorance of the real cause, which, in many cases, is deep planting. Now, although we may fearlessly assert that thousands of trees and shrubs are annually sacrificed from this cause, more especially where planting is carried on by large contracts, there are many losses occasioned by gross carelessness of another kind, as, for example, taking up the plants badly, chopping off the extremities of the roots, allowing them to dry after they are taken up and before re-planting, neglecting to tread the earth firm and pressing it in between all the roots, or allowing the wind to move them backwards and forwards till every fibre is disturbed.

Deep planting, however, is the most prolific source of damage; and this is to be seen most conspicuously in fruit trees. In planting I would direct attention to the following: On no account plant anything deeper in the earth than it has been before; let the collar of the root be level with the surface of the ground, or, if in wet situations, above it. If the roots are spreading, loosen the earth, spread the roots round the stem, throw from round the spot enough of the best soil to sustain them, and heap it up round the stem so as to be just even with the collar, which is, in all well-grown nursery plants, the mark which shows the depth at which the tree stood before. Staking, in the case of tall trees and plants, I have referred to above. Be just as particular with small plants, which, if planted at a right depth, instead of having to struggle against disadvantages until the roots accommodate themselves to the ground, will at once start into healthy growth.

E. B.

"This is an Art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—*Shakspeare.*

ROSE GARDEN.

T. W. GIRDLESTONE.

ROSES IN PARIS AND LONDON.

ONE must hardly go to Paris to see Roses. I tried hard to see some of the best near Paris, but the season there as well as here is three weeks or more later, and so there were no Roses in flower in the open in the early part of June. The Roses at the exhibition in the Champs Elysée were not of much note, though forming very effective masses or fringes to other plants. I also missed seeing some of the more choice collections of Roses near Paris through losing my way to Bourg-la-Reine, and there seems a regular scarcity, almost an absence, of Roses in the public parks and boulevards of Paris. This is the more to be wondered at, as there are some capital Roses in the Jardin des Plantes, which is surrounded by streets and houses. The plants were strong and vigorous, and promised a fine flower, neither were aphides, grubs, mildew, nor rust visible. There is an abundant promise of coming beauty, but looking down on these fine Rose borders in the first week of June it seems doubtful if much of this beauty will be revealed till very late in the month. The most popular Roses in France, judging by the markets, are the *Maréchal Niel* and several varieties of the dwarf miniature Provence, probably *Dr. Meaux*, and the dwarf Burgundy. It seems singular, considering how useful white is for contrast, that I did not see a single bunch of the White Burgundy. But these tiny Roses are a puzzle to the Britishers altogether, and it is a mystery to us how a nation can go on growing acres on acres of those tiny Roses when they might grow, say, *Gloire de Dijon* with equal ease and success. These small Roses seem rather earlier on the whole, but then the *Gloire de Dijon* is a long way ahead in size and colour and even fragrance, though the dwarf tiny Roses are pretty for a change, their very smallness commanding a certain amount of admiration. But the growers mostly hasten to destroy their merits on this head as far as they can by bunching the Lilliputian Roses up into huge bouquets from half a foot to a yard in diameter, as if supremely anxious to develop at once their taste and power in forming masses out of small material.

A few Niphetos and other light-coloured Teas were visible in the markets and shops, and a profusion of Cabbage and other Roses, mostly in embryo buds, appeared in the battle of flowers indulged in at the *fête* of flowers held in the Bois du Boulogne on behalf of the victims and sufferers from the Opera Comique. The fully opened Roses used in this battle were, however, grown under glass or brought from the southern parts of France or Italy, as the Roses around Paris were, as already described, in a similar flowerless condition to those in England. Such being the case, and not being able to see the Roses at Manchester or other early English exhibitions this season, it so happened that my first introduction to good Roses this season was at Buffalo Bill's Wild West Show at West Kensington. Amid the almost bewildering variety of exhibits that found a place in this most interesting exhibition, it was quite refreshing to find a tent well furnished with Roses in pots by Mr. W. Paul, of the Waltham Cross Nurseries.

I made a hungry rush for Her Majesty, but she was not in flower, and seemed all unconscious of the beauty and fragrance that was expected of her this year of jubilee. The Bride had been in bloom; The Puritan's time of demonstration and ovation was not yet. However, if The Puritan is in very deed the direct lineal descendant of *Devoniensis* and

Mabel Morrison, with the former preponderating, as the wood seems to indicate; and if, moreover, its flowers are cushioned in leaves, as its habit renders possible, and its perfume is distinct and delicious, more like a Magnolia than a Rose, and it gets rid of all its yellow in the opening, and is as white as snow when fully expanded, then must Niphetos and such popular and now white Roses as *Madame de Watteville* look to their laurels if they are to hold their own before such strong competitors as *The Puritan* and *The Bride*. Experience sustains the character of *The Bride* as neither more nor less than a white sport of *Catherine Mermet*, with all the good qualities of the latter; and more need hardly be said in its praise. *The Meteor* is a Hybrid Tea Rose strongly recommended by this firm as possessing the positive merit of being red without dash or mark of purple, which injures so many of this class or section of Roses. *W. F. Bennett* is another red or crimson Hybrid Tea beautiful and brilliant in bud, and likely to become popular for forcing and marketing. It seems, however, somewhat tender in the open air, as most of our dormant buds were killed this winter, though protected, as other Teas, with *Bracken*. As a satiny rose-coloured Rose with a brighter centre, *Clara Cochet* is a vigorous growing Hybrid Perpetual likely to have a useful future for pot and open-air culture.

The following, among others, were shown by Mr. Wm. Paul at West Brompton: *Alphonse Souper* (H. P.), similar in form to the old and useful *La Reine*, bright rose; *Captain Christy* (H. P.); *Comtesse de Castoja*, said to be a seedling from *Alfred Colomb*, showing most of the good qualities of the latter; deep scarlet, full and imbricated. *Countess of Rosebery* and *Duchess of Bedford*.—These excellent Roses are too well known to need description. *Crown Prince*.—This is a most showy Rose for pots, garden culture, or forcing, though not full enough for showing; large double; colour, a brilliant mixture of purple and crimson. *Eclair*, a bright red Rose in the way of *Charles Lefebvre*. *Emperor*, very dark, small; excellent for button-holes. *Francisque Rive*.—This is specially fragrant, large, bright cerise-rose, shaded with carmine. *Gloire Lyonnaise*.—This fine-formed, fragrant, Tea-looking Hybrid Perpetual must by no means be confounded with the canary-yellow Tea Rose *Belle Lyonnaise*, this being a large, full, almost pure white Perpetual, slightly tinted with yellow. *Lady Sheffield*.—This fine exhibition Rose is also one of the best for pot culture; form of flower almost perfect; large, full, and of great substance, and of a brilliant cerise colour. *La France*, *Lord Macaulay*, *Madame la Baron de Rothschild* (otherwise *Baroness Rothschild*) and *Madame Gabriel Luizet* need no description or commendation, only that the latter is one of the sweetest Roses in existence, and admirably adapted for pot culture on that account, as well as for its perfect cupped form and extremely soft and delicate pink colour. *Magna Charta*, *Marie Baumann*, *Marquise de Castellane*, and *Merveille de Lyon* have only to be named to be appreciated. *Masterpiece* is one of Messrs. William Paul and Son's seedlings from *Beauty of Waltham* of a few years back, and is a brilliant pot Rose, with large flowers of a good shape and a rich rosy crimson colour. *Pride of Waltham*, *Prosper Laugier*, and even *Queen of Queens*, another fine Rose raised by this firm, are too well known to need description, however brief. The latter is said to be almost a new departure, a cross between a Hybrid Perpetual and the old *Maiden's Blush*, retaining much of the soft colouring of the latter in its soft pink edged with blush, and the best qualities of the former in its exceptional floriferousness, every shoot being crowded with flower-buds. *Souvenir de Madame Robert*, a delicate salmon-rose, with a bright centre, is less grown than it deserves; and *Star of Waltham*, *Ulrich Brunner*, *Violette Bouyer*, *William Warden*, &c., added to the beauty and variety of this interesting display of Roses. Among Teas the following were the most conspicuous: *Catherine Mermet*, *Etendard de Jeanne d'Arc* (a creamy white seedling of *Gloire de Dijon*), *Hon. Edith Gifford*, *Lady Mary Fitzwilliam*, *Madame Chedane Guinoisseau* (a pretty canary Rose with a

tremendous tinge), *Madame Lambert*, *Souvenir d'Elise Vardon*, *Sunset* (a deep apricot-coloured sport from *Perle des Jardins*), &c. A few choice *Rhododendrons* and variegated trees and shrubs mixed with the Roses added to the general effect, and altogether the well-furnished tent proved a welcome and refreshing addition to this great exhibition of American life and products.

D. T. F.

AMONGST THE ROSES.

WE gathered the first bunch of Roses from open walls on May 27, which is rather later than usual for this part of the west of England. The choicest flowers were the Tea-scented varieties from a low wall facing south; the sorts were *Marie Van Houtte*, *Shirley Hibberd*, *Madame Willermoz*, and *Madame Lambert*. From *Fortune's Yellow* I picked a nice flower. *Yellow Banksian* and *Gloire de Dijon* were from a wall with an east aspect. In every case the flowers were perfect and the plants in the most promising condition. The following Teas have stood the winter well: *Etoile de Lyon*, *Belle Lyonnaise*, *David Pradel*, and *Catherine Mermet*. While on the subject of Tea Roses I may refer to the pruning of this section, because there is a great difference of opinion on this subject. Some cultivators maintain that they should have but little pruning, while others recommend the growth being cut hard back. My own opinion is that Tea Roses will submit to hard pruning and in time flower freely, but if early flowers are wanted the less pruning the plants have the better. All the cutting back my plants had was just the dead tips of the shoots taken off in the spring. To set them right for the winter, I went over them late in the autumn and cut away here and there a shoot, otherwise they were left almost alone. The flowers I cut on the above date were on the short spray growth, which was left unpruned, while none of the branches which had been shortened back were showing a flower-bud, because they have not had time to make sufficient growth. To give another instance in favour of moderate pruning, I may point to *Gloire de Dijon*. The earliest flowers came from the shoots which were laid in nearly or all their length. On the same principle, I hold that other Tea Roses should be pruned if early flowers are wanted, but where the time of flowering is of no consequence, large plants of this section may be cut back as severely as the Hybrid Perpetuals. To keep the plants from becoming too large, prune them as soon as the first flowers are over. They will then have ample time to become well furnished with wood that will bear flowers early the following year. It will do the plants no harm to shorten back the branches at midsummer.

The condition of Roses in beds and borders at the present time is very satisfactory. There is no mildew and but very few Rose maggots. The foliage is, therefore, clean and bright. Speaking of the foliage of Roses, I have been struck with the remarkably handsome leaves on *Rosa rugosa*. They are of a pleasing green colour, and the plant would be worth growing merely for its leafage. All the varieties are alike in this respect, and large bushes have quite an imposing effect. In the autumn the leaves change to deep yellow and rosy crimson, which, with their dark red berries, give them a very attractive appearance. Another valuable feature in these Japan Roses is that they will thrive where the Hybrid Perpetuals refuse to grow. There is also a great difference in the colour of the leaves of some of the Tea Roses, when they are grown out of doors, as compared to those under glass. The young growth on such varieties as *Etoile de Lyon*, *Shirley Hibberd*, and *Safrano* is very much darker, being of a deep bronzy red.

J. C. C.

Maréchal Niel Rose.—When on warm walls with a southern aspect, this Rose breaks into growth so early that it is often cut back by late frosts. I had an instance of this in the spring. There was a show of fine buds, but the frost killed every one; the plant itself has suffered no material harm. A plant in another situation which did not

commence to grow so early by a month, has several buds at the present time. We used to have a plant on a wall facing east, which made splendid growth and covered a large space. We tried several methods to secure a plentiful display of flowers to stand, but never could. One season we covered the plant until the flowers were a good size; then we had a spell of cold weather, the wind being in the east, and, owing to the exposed situation of the Rose, every bud was killed, although there were upwards of 200. Last season, after trying seven years, we decided to replace it with Gloire de Dijon. When living at Ashton Court upwards of twenty years ago a high north wall, sheltered by shrubs and trees, was covered with this Rose. In the spring the plants were a mass of bloom, the flowers large in size, and of good colour. I remember cutting many basketfuls to take to the house for decoration. Several other Tea Roses have succeeded quite as well. I do not remember if they were protected in winter or not. The plants when dormant do not, in my own case, suffer so much from cold as when growth is commencing; in fact, this applies to many things that are very beautiful, but difficult to manage. No doubt the Maréchal Niel Rose requires shelter, although I am not sure that a south aspect is best for it. I had a plant in this position that did well for several years as regards growth, but in early spring the blooms were all cut off, except where we trained the plants over the end of a vinery at work. These produced grand flowers.—JOHN CROOK, *Hants*.

Maréchal Niel in the open air.—I note at p. 512 that Mr. J. Muir gives a poor estimate of this fine Rose in the open, and one that I can by no means endorse from experience. Of course, a good deal depends on soil and site, and perhaps more on locality as distinct from both. But all three must surely be unfortunate where it can be said of the Maréchal "that the growths fail to develop freely, that the blooms rarely appear in any quantity, and that a good specimen of the Maréchal is seldom seen in the open air." Possibly some of these phrases are used in a special sense, and in contrast with enormous specimens under glass. I would venture to say of the Maréchal that throughout the greater portion of East Anglia and many other districts it grows freely and blossoms most profusely in the open air; hence, instead of its open-air culture ending in disappointment, some of the grandest flowers and most magnificent results have been obtained from Maréchal Niel in the open air. In the matter of colour, for example, the open-air blooms won by many points in a canter. The same may almost be said of substance. Out-of-door blooms have a solidity of substance and a thickness of texture that are seldom equalled under glass. Of course, out of doors as well as in, for that matter, the tenure of life in individual plants is capricious as well as precarious. But as I have had standards on the Brier a dozen years old, and dwarfs on their own roots and otherwise as old or even older, it must be admitted that the Maréchal is at times as long lived in the open as under glass. It is also, as a rule, a perpetual in the sense, at least, of flowering twice in the open air, while it only blooms once under glass, and those who will grow a dozen or a hundred Maréchal Niels in various aspects in the open air will seldom be without one or many blooms of this most magnificent of all golden Roses from May to November, while those who grow it under glass chiefly will concentrate their season of this finest of all golden Roses into the few months included between March and June.—D. T. F.

SHORT NOTES.—ROSES.

Rose The Pet.—An excellent little Rose, the flowers small, double, pure white, and freely produced. Plants in 5-inch pots have a pleasing appearance when in bloom, as the leafage is small and the growth neat. We saw it in fine condition at the Bush Hill Nurseries of Messrs. Low.—C.

Scotch Briars.—Beautiful both indoors and out; large bushes of the white and of its ancestor, the single Burnet Rose, are loaded with flowers. The many kinds—red, pink, and yellow—form a much variety, that it is worth making a little garden in some half-wild place or retired part of a garden for these alone. They have only one fault, namely,

that their blooming time is so short. They delight in poor, sandy soil, such as the Rose aristocracy disdains to grow in.—G. J.

NOTES ON ROSES.

NEW TEA ROSE LADY CASTLEREAGH.—We have received blooms of a beautiful Tea-scented Rose under the above name from the raisers, Messrs. Alexander Dickson, of Newtownards, Ireland. The variety is said to be the result of a cross between President and Marie Van Houtte, and appears to be a valuable acquisition, for the blooms sent are large, very evenly and regularly formed, and of great substance; the colour is a pleasing shade of soft rosy yellow, margined externally with more decided rose colour, and, judging from the magnificent foliage which accompanied the flowers, Lady Castlereagh must make an exceedingly handsome plant. The variety appears thoroughly distinct, and as the blooms sent were cut from a plant out of doors, there is every reason to believe that they are characteristic examples.

HER MAJESTY.—It is satisfactory after all the adverse criticisms from America and elsewhere of the flowering capabilities of this grand Rose to find both maiden and cut-back plants generally throwing strong bloom. Of a good many dozen maidens, both on Manetti and Brier cutting stocks, there is not a shoot which does not carry one or more flower-buds, and the same remark applies to the cutbacks. We expressed the opinion at the time that our American cousins' condemnation of Her Majesty should not be accepted without trial in this country, and we still confidently expect that their verdict will not be endorsed by English growers.

MAX SINGER (Lacharme).—This new cross between Rosa polyantha and General Jacqueminot seems likely to prove a valuable addition to the meagre list of red climbing Roses, for the flowers are larger and better formed than had been gathered from the first description, and instead of being, as there stated, borne singly, are always found in clusters of three or four. The flowers are above medium size, very full, and well formed, of a bright cherry-red colour, and very freely produced; the plant is of a vigorous climbing habit, with good foliage, and perfectly hardy, for several plants budded last June started and made shoots 2 feet or 3 feet long during the autumn, but were nevertheless uninjured by the severe winter, and are now flowering to the tips.

GRACE DARLING has again this year been the first to flower of what may be called the conventional type of Roses, and has been, and is, if possible, more bewitchingly beautiful than ever. Blooms upon plants in the open expanded even before the Teas on the south wall, and the exquisitely tender rose tint of the flowers, contrasted with their dark foliage and their brown-red stems, constitutes one of the most delightful Rose treats of the year.

THE AUSTRIAN BRIERS have been gorgeous during the last few days. The single yellow, and the copper as well as the semi-double Harrison's Yellow, have been literally masses of flowers, and are immensely popular for cutting. *Appropos* of the alleged fugitiveness in the cut state of these charming single Roses, a large dining-table was decked with them on Friday night; the decoration was used throughout the whole of Saturday, and was still bright and attractive at breakfast on Sunday morning. Not less than 150 blossoms were employed, which, thus, without any renewal, lasted upwards of forty hours—a period beyond which few Roses remain in a state of beauty during summer weather. The Scotch Roses are very gay, especially the yellow variety, and the blush Stanwell Perpetual, R. Woodsi, with its large trusses of single pink flowers, is very pretty; and so are the rugosa varieties, the variety called coruscans in particular, with its pale silky rose blossoms; while R. polyantha is solid with bloom.

Some good blooms of Tea-scented Roses are opening now in the sunniest situations, the best being Rubens, Niphotos, and Souvenir d'Elise Vardon; and the pretty hybrid Bourbon, Marie Paré, too seldom seen, is giving very good examples of its

pretty flesh-coloured and gracefully-formed flowers. This Rose is very well worth growing where a few early blooms are wanted out of doors, and it is admirably adapted for cutting. T. W. G.

Rose Lady Mary Fitzwilliam.—Being one of the earliest to endorse the high merits of this Rose, I was pleased to find "North Herts" eulogising its merits in THE GARDEN (p. 512). Our best flowers have been gathered from dwarfs on their own roots on walls, and very fine and chaste they have been. Our dormant buds on standard Briars were mostly killed by the frost, so we have not been able to write of their doings. This and some other circumstances strengthen my belief that this Rose will prove rather tender, but it will probably turn out to be one of the most valuable for forcing and general culture under glass.—HORTUS.

Rose The Bride.—I forward herewith a water-colour painting of the new Tea Rose The Bride, drawn from Nature by my daughter, Eva Beachey. The Bride is a sport from that well-known lovely Rose Catherine Mermet. It originated in America, and was sent out and described as a white Rose by the raiser. The blooms now figured are life size, and were grown on one of the original plants imported last summer. They arrived as very small-rooted cuttings, and though some failed to thrive well, others have prospered and made good plants. I find that cuttings of this Rose strike readily, and that it is as strong a grower as, and I fancy a freer bloomer than, its parent. It will be observed that it can hardly be called a white Rose, though to my mind the beautiful creamy tint towards the centre is no disadvantage, and one may say, without fear of contradiction, that it is "the lovelier daughter of a lovely mother," unsurpassed by any other Tea Rose for size, shape, and delicacy of tint. As a show Rose it is certain to take one of the highest places, owing to its staying powers, which are very great. Altogether, I think I may safely join in the choruses of those delighted rosarians who pronounce it to be "the Rose of the year."—R. W. BEACHEY.

THE DICTIONARY OF ENGLISH PLANT-NAMES.

TO THE EDITOR OF THE GARDEN.

SIR,—Mr. Jas. Britten's defence of his slander is not an honest or straightforward one. He says he never said the names were "inventions of mine," but in a "don't-nail-his-ear-to-the-pump" mode of delivery he simply said they were "inventions."

All plant-names are, of course, the inventions of some one or other. May I ask Mr. Britten what did he mean by asserting that "most of the names" in my "Dictionary of English Names of Plants" "are inventions" if he did not intend it to be distinctly understood that they were inventions *of mine* in order to discredit my book? This is the only idea that can possibly suggest itself to anyone who reads his words, and this assertion of his is, I repeat, "a downright and malignant falsehood." If Mr. Britten looks into Asa Gray's "Botany" or Sweet's "Hortus Britannicus," he will find dozens of such English names as "Michaux's White Alder," "Panicked White Alder," &c. What right has he to condemn my book for quoting such names from these and other standard works?

The local names of British plants which I have taken exclusively from Mr. Britten's book are very few in number, and occur chiefly in the earlier pages of my dictionary, the purpose of which was to bring within the compass of one volume English plant-names which were previously scattered through many books on gardening and botany, so as to form a perhaps useful book of reference for the uninformed public, who of late years have taken so largely to gardening. The "hole-and-corner" names of British wild plants, which are seldom or never heard outside their native parishes, and of which Mr. Britten's dictionary is almost entirely made up, are not very suitable for the object of my book, and it would be no loss to it if I expunged even the few that I have quoted.

I did not notice Mr. Britten's querulous complaint of "plagiarism" in the *Journal of Botany* (the copy of which, however, was not sent to me by him), as I was very busy at the time, and, besides, thought that the general acknowledgment (in my preface) of my obligation to "our standard botanical works," &c., was sufficient to any reasonable mind, the number of publications consulted by me being so great that I could not very well specially mention one to which I was only very slightly indebted.

W. MILLER.

MARKET SALES OF GLASSHOUSE PRODUCE.

THE growers of hothouse fruit will doubtless feel much satisfaction at the intention of Messrs. Draper to sell English-grown hothouse fruit by auction. It has long troubled those who send produce of this description to Covent Garden that they have no means of accurately ascertaining the exact market value of the same, when it is known that the retail price in the Central Avenue is just about double what is returned to the producer. I am not aware of any trade where the retail price is double of what is paid for the article in bulk, but I know that the price asked for many things in Covent Garden represents a profit of 100 per cent. I have seen Strawberries sold in the Centre Row at 20s. per pound, for which I received 10s. per pound. I have known Grapes to be sold at 10s. per pound, for which the grower did not get half that amount, and many similar instances have at various times come under my notice. If you complain, you are told that heavy losses are frequently experienced, that in a time of depression sales have to be forced at prices that do not admit of a margin of profit, and that the high prices asked now and then are simply used as a means of bringing things to a level.

At one time I grew Cyclamens for market rather largely. My plants were very good, and going into the market one morning I was told that they were fetching from 18s. to 30s. per dozen. When I settled up I was returned less than 1s. per plant all round. I found that others had been served just as badly. In very despair I gave up growing any quantity of pot plants for market, as I could not get a fair price, and did not care to go and sell myself.

When goods are sold by auction the grower knows what his stuff realises. If times are dull with correspondingly low prices, he has whatever comfort there may be in knowing that it is "neighbour's fare," and is not tormented by the thought that he may have fallen into bad hands. There is no doubt that in time the public sale of all kinds of market produce will become general. The dissatisfaction at the present state of affairs pervades all classes of market growers. I mentioned to a grower of outdoor stuff what was contemplated being done in the matter of glasshouse produce. "I wish," he said, "that someone would do the same with vegetables." The largest growers of vegetables and fruit in general sell their own stuff, or employ a man to do so. These men grow so much, that it pays them to attend to this matter personally. They, of course, are independent of the middlemen. They, too, form a connection, which, even in a public market like Covent Garden, has its value. The small grower does not enjoy these advantages. He has to depend entirely on others for getting rid of his produce. I observe in Messrs. Draper's instructions that Strawberries are to be packed in shallow boxes without punnets. I venture to assert that this plan will not find favour either with growers or with retailers. In the first place, the fruit never looks so well as when nicely put up in punnets, and the Strawberry is such a soft fruit, that there should be no handling of the berries from the time that they leave the grower until they come into the consumer's possession. I am certain that none of the London Strawberry growers will ever adopt this way of marketing their fruit. I should be very sorry to do so myself. There is also the retailer to be taken into consideration. Many greengrocers have to drive some miles to market; they have to get back and go their round early in the day. The time re-

quired to put up, say, 20 lbs. of Strawberries in half-pound baskets would be a serious item of labour. Some growers I know living in Jersey and Weymouth adopt the box system, but they would not unless compelled to do so. Messrs. Draper probably base their advice in this matter on their experience with the foreign produce, but this is, of course, an entirely different kind of fruit from the luscious handsome samples grown round London. The foreign Strawberries are only consumed by the poorer classes, or in the houses of the rich are used for the commonest purposes. The English-grown fruit has the place of honour, and must go into the consumer's hands without blemish. I cannot see that there is any need to depart from the time-honoured custom of "punning" the fruit. It only requires a little modification to render it suitable for public auction sale. The plan I should recommend is to use boxes which will just contain from four to twelve half-pound baskets. Let them be made so that there is just room to cover each basket with a whole Strawberry leaf or two. When the lid is put on, there will be just enough pressure to keep the fruit in place without in any way damaging it. With ordinary careful handling there can be no danger of the fruit getting injured. We pack our fruit in this way, about twelve pounds in a box, and never have a berry spoilt. There is one thing I should like to allude to, as I am sure that if this detail is not taken into consideration, the whole affair of selling glasshouse produce by public auction will collapse, and that is, there must be a guarantee from risk to goods in transit. No grower would send his produce to Covent Garden if he thinks that the packages are going to get the rough treatment that the foreign goods experience, both in coming to market and when they get there. English-grown hothouse fruit is too valuable for this. If the Messrs. Draper wish to encourage this form of sale they will have to do, as those who specially deal in home-grown glasshouse fruits do—they will have to arrange for meeting it at the railway terminus. I would not send a single parcel of fruit to any salesman if I knew that it was to be jolted over the London stones in a van. In the case of any large quantity it ought to be practicable to convey it without risk. Small lots can be carried in as is now done.

On the other hand, English growers will have to improve their way of marketing their fruit, taking a pattern in some respects from Continental growers. It is a prime consideration in auction sales that lots are to be made up to suit all kinds of buyers. The foreign fruits are generally sent with this object in view. Of soft fruits, such as Cherries, Strawberries, Peaches, Apricots, &c., the best samples at least are put up in packages of moderate size. This suits the purpose of those who only require small quantities. Another thing to bear in mind is honest packing. Continental growers make their samples uniform, so that in many instances purchasers here do not need to see before buying. A great deal might be done in this way with us. Most market growers are specialists, growing more or less large quantities of particular things. Taking Grapes, for instance, instead of putting some 8 lbs. or 12 lbs. in a box, if from 2 lbs. to 6 lbs. were put up, such quantities would be more likely to meet the needs of many greengrocers. To simplify matters, each box should have description and grower's name. Thus, "4 lbs. Alicante—Jones." This would serve as a brand, which in a short time would become known. In selling, it would only be necessary to open one box; the name in time would become a guarantee of quality. Some years ago I used to send Strawberries packed 10 lbs. in light crates. I sent a regular quantity through the busy season, and many of these crates were never opened in the market. The fruiterer knew by invoice the contents; the purchaser was assured of the quality of what he bought. The secret of the Continental grower's success is that he knows what will suit our market, and puts up his goods to suit buyers. He sends large quantities of uniform quality, and so obtains the confidence of the retailer.—J. C. B.

— As a consignor to the sales of Messrs. Draper, permit me to thank these gentlemen for their patience

and courtesy, as well as their well-meant efforts to assist private growers of little experience to realise the best prices for their goods. The private advice already tendered to some of us, which you have permitted them to make public (page 468) is likely to be of the greatest value. Package and packing cases are our greatest difficulties. With the latter uniform in size for the same class of goods, and the former more skilfully performed, matters will be in a fair way of being arranged to the satisfaction of all parties. The plan of selling the boxes with the goods is likely to settle the vexed question of packing boxes. Private growers have been in the habit of obtaining their supplies from the grocers' and confectioners' shops, and hence the diverse character of their packing boxes. As these are no longer returned, the supplies will soon be exhausted and the conveyers of flowers and choice fruit will perform be driven to the box manufacturers for cheap boxes of uniform size and quality for their different classes of goods. Manufacturers of these should advertise them of different sizes for different purposes at per dozen or per gross in your pages. Doubtless, were they to communicate with such experienced salesmen as the Messrs. Draper, these gentlemen could afford the makers valuable hints as to the most useful marketable sizes for Roses, Gardenias, Grapes, Peaches, Strawberries, Figs, &c. Certain it is that uniformity of size in the boxes is one of the greatest aids to perfect packing. Anyone packing fruit or flowers a few times in boxes of the same depth (this is the main point; the length and breadth would vary in proportion to the number of dozens to be sent) would specially learn how to pack perfectly, as each process would be but a repetition of the last. But with the boxes always varying in depth, the art of packing would take a long time to learn.

As unplanned boxes will answer well lined with wadding or paper, the timber merchants and proprietors of sawmills ought to be able to greatly undersell the grocers, who, since the demand for empties has become more urgent, charge 6d. a box for all sorts and conditions of the latter; some no doubt worth more and others little or nothing. They also vary so much in weight as to seriously affect and add to the charge for carriage. The timber merchants' boxes might be made equally strong, while probably weighing about half as much. As any reasonable number may be tied together, this adds considerably to the average strength of each box, though of course each box should be sufficiently strong to travel alone and protect the contents from injury. As to the latter, surely some pressure, official or otherwise, ought to be put on railway servants to induce them to take more care of such perishable goods. Should not the Messrs. Draper and other large salesmen make it a part of their business to sue the companies for damages when they found goods carefully packed seriously lowered in value through obviously reckless handling on the line? It has been my painful lot to stand on many platforms and note how packages of flowers and fruits have been pitched in and out of goods vans on to platforms and from thence into porters' barrows or delivery vans, and the marvel is that anything could pass through such an ordeal and yet be fit for sale, however carefully packed it might be. Were such reckless injuries charged for, as a matter of course, as regularly and constantly as well-packed pictures or glass broken or marred on transit, such reasonable compensation would soon check the reckless handling on train and car, which, I verily believe, does more to deteriorate the market value of cut flowers and fruits than the entire lack of judgment in packing, of which the Messrs. Draper so seriously complain, and which, I venture to think, they somewhat exaggerate, in order probably to emphasise their valuable advice on the matter.

By the way, there is one point in reference to Roses that seems difficult to understand—that is, that coloured Roses command almost double the prices of white. Some years since, when I consigned Roses to a West-end house, Niphotos commanded superior prices to Maréchal Niel or any other Rose. The chief demand seemed then for

such a pure, shell-like white as *Niphetos*; now the latter yield only 1s. a dozen, while the *Maréchal* and others command 2s. This is very disappointing to those who largely grow *Niphetos* and other white varieties; and it would be of service to growers of *Roses* for sale in winter and spring to have the opinion of the Messrs. Draper on the effect of colour on the prices of *Roses*, and whether the present run of the market is likely to prove durable or permanent.

A NOVICE IN MARKETING.

CHRYSANTHEMUMS.

E. MOLYNEUX.

PLANTS of all sections will by this time be in their summer quarters, and will require daily attention. Those intended to produce large blooms will have been made firm in their position by fixing the stakes securely to the trellis previously described, and will now be all in their flowering pots, and will require constant attention as regards tying the leading shoots. Neglect of this quickly results in the loss of some of the most promising branches, as in most instances the growths, having broken naturally away, are brittle, and easily snap off if tied so tight that the shoot is unable to swell. As the plants are now in active growth numerous side branches will form. These should be removed as quickly as they show themselves, thus diverting all the energies of the plant into the leading or main growths. Green fly will attack the points of the branches in some instances, but dustings with tobacco powder in the morning and a vigorous syringing in the evening will speedily clear the plants of this pest. What is commonly known as the Celery fly will now speedily attack the main leaves. If this pest is not destroyed the plants will receive a severe check. The best remedy is hand-picking, and with the point of a knife break the skin of the leaf at the place where the maggot can be seen, and it then may easily be crushed without doing much damage to the leaves. I have seen plants completely denuded of their foliage for about one-third of their length through not stopping the depredations of this insect. In the case of mildew appearing on any of the leaves apply sulphur to the affected parts. Attend carefully to watering the plants; sometimes in hot, dry weather they will require water at the roots twice every day, and at other times perhaps none will be necessary for two or three days; particularly in this case in dull, foggy weather. Again, after a heavy shower, some people imagine the plants will be wet enough, but oftentimes little of this has reached the roots of the plants, as, owing to the direction in which the wind is blowing or the quantity of foliage some varieties carry, the rain is prevented from reaching the pots, and consequently the plants suffer from dryness. *Chrysanthemums* are generally considered gross feeders; therefore some people think that water applied at any time will do them good. This is a mistake, as *Chrysanthemums* may be spoiled as quickly by giving too much water to the roots as by giving too little. I object to plunging the pots in which the plants are growing, as when plunged the attendant cannot ascertain in showery weather whether water is really required or not. From this time the plants will derive much benefit if the foliage is freely syringed in the evening. This should be no light sprinkling, but a thorough wetting on both sides of the leaves. Where the plants are arranged in rows, no better instrument can be used for this purpose than the garden engine, going down one way, taking each row as you proceed, and returning in the opposite direction. By these means all the leaves

receive a thorough drenching, which greatly assists to keep the plants in health by the removal of many insects which quickly find a footing upon the under sides of the leaves and branches. The plants will now probably require re-labelling. Great care should be exercised in naming all the plants correctly, as mistakes in this often cause confusion, and are very misleading both to the cultivator and to the public. Labels made from builders' laths, cut about 6 inches long, answer well, with a little white paint rubbed on the smooth side previous to using them. The names should be written in a clear, bold hand, allowing space for any remarks to be added.

In the case of specimen and bush plants it is a good plan to plunge the pots half their depth in ashes, as it prevents the roots drying so quickly and keeps the plants steady during rough weather. Where so plunged and for the reasons stated, extra care must be exercised in watering the plants. About the middle of this month the plants intended for specimens should receive their final pinching of the shoots. From the middle to the end of July the branches will be sufficiently long for training to commence. Attend to the pinching and tying out of the shoots on those plants intended for bush specimens, and give the same scrupulous care to watering and keeping them free from insects, as recommended for the tall-growing plants. About this time of the year young growths or suckers will push up from the base of some plants. Where the variety is scarce, and it is considered wise to increase the stock, these sucker cuttings may be taken off and inserted in single pots and placed in a cold frame, where, if shaded and kept close for a time, they will quickly form roots. They may then be shifted into larger pots, placed out of doors, and finally be transferred to 5½-inch pots, allowing them to grow with one stem, which will eventually perfect one flower upon each plant. Such plants as these will be found useful for grouping or standing upon the side stages amongst other plants, as they will vary in height according to the variety. These plants as a rule produce the largest number of cuttings in the autumn and early months of the year, particularly when confined to pots of the size named, and are thus most useful.

Plants growing at the foot of walls are now making rapid progress. Heavy waterings at the roots and vigorous syringings overhead will assist to maintain a clean growth and good leafage, this being of much consideration in this particular method of cultivation.

Ornamental fish-pond.—In reply to "Croydon," in THE GARDEN, June 18 (p. 569), he can have hardy aquatics in abundance to plant in his clay-bottomed pond. We have a similar one, and had much trouble in keeping the water clean until we got it well stocked with plants and fish. For some time the water ran through the pond, but as the supply was subject to ebbs and flows, we diverted its course, and fed the pond by a jet fixed in the middle and supplied from a reservoir at a high level. Before this change, the water flowing through the culvert from an adjacent brook had deposited in the pond a good stock of aquatic plants. Amongst these were the Flowering Rush (*Butomus umbellatus*), the Water Plantain (*Alisma Plantago*), common Arrowhead (*Sagittaria sagittifolia*), American Pond Weed (*Anacharis alsinistrum*) came in, but when the running water was done away with, this plant disappeared, and the *Sagittaria* from the same cause became so weak, that it too seems about to disappear. The only plant in the pond which appears to hold its own, or, I should rather say, more than holds its own, against the vigorous ad-

vance of the Flowering Rush is the white Water Lily (*Nymphaea alba*). A few years ago we threw in three of these, which have grown and thriven most vigorously, maintaining open water all round in which to push their leaves and flowers, the latter abundant. Seedlings of these are coming up all over the pond. Common Duckweed (*Lemna minor*) and *Myosotis* also find a place, and about the edges of the pond some varieties of *Juncus* grow. "Croydon" might introduce to the pond a few golden carp. We have in ours perch, tench, roach, and dace. These all agree, but for the peace of these the freshwater shark had better not be introduced. —WM. MILLER, *Combe Abbey*.

NOTES OF THE WEEK.

ALL the carpet bedding is grabbed up at Blenheim.

Royal Botanic Society.—We understand that the annual evening fête will be held on Thursday, July 7. Prizes are offered for floral decorations, groups, bouquets, &c.

Seedling Petunia.—We have received from Mr. Patrick McKie, Teddington, flowers of a new seedling *Petunia* raised by him. They are of large size and bright rosy pink. It is a variety better adapted for pots than the open border.

Primula Sieboldi is in fine condition at Kew, making a vigorous growth in a sheltered bay on the rockery. There are also sturdy clumps on the mound near the Cumberland Gate entrance, and it is interesting to note the variation in the colouring of the flowers, which ranges from light purplish to the richest crimson.—C.

Aster Stracheyi is a gem for the rock garden. In a ramble round Kew recently we saw a thriving piece on the rockery. It was found on the Himalayas at an altitude of 13,000 feet. It is dwarf, rising but a few inches, and at this season presents a mass of violet flowers as large as those of *Aster Amellus*. It is well adapted for planting between stones.

Royal Horticultural Society's Gardens, Chiswick.—A Strawberry fête, with band and promenade, will be held early in July, date of which will be duly announced. Admission on ordinary days to Fellows and their orders, season ticket holders, and subscribers to the Chiswick Horticultural Society, or bearers of their tickets.

Ornithogalum arabicum.—I have an *Ornithogalum* now in bloom which is new to me, and is most beautiful. It was sent to me in the autumn by Mr. Ware, of Tottenham, as *O. arabicum*. I know very little about this genus of Lilies, and wish to have some information regarding them. —FREDK. CAPEN.

White Pæony and Day Lilies.—We have received flowers of these from Mr. Ware, of Tottenham. The White Pæony (*Pæonia albiflora*) is a single pure white variety, and is described as one of the finest of all the Pæonies. The best of the Day Lilies sent is *Hemerocallis Middendorffiana*, which has large orange-yellow flowers of great beauty.

Blushing Bride Chrysanthemum.—We have received flowers of this excellent summer-blooming variety from Mr. W. Piercy, Forest Hill, S.E., the colour being rosy purple and white. When grown under glass the flowers are larger and of a paler hue. It appears to be a very useful variety, and is well worthy of cultivation for its early blooming qualities.

Jacobæa Lily (*Amaryllis formosissima*).—This is in bloom now, the flowers of bold form and deep red colour. It cannot be accounted thoroughly hardy, but will survive ordinary winters when lightly covered and provided with a warm position. It will do well in a border against a sunny greenhouse wall.—T. W.

Plantain Lilies (*Funkias*) claim attention now by reason of the beauty of their foliage. That of *F. Sieboldi* is very beautiful, and the variegated variety makes a telling feature on the rockery, the leaves being almost white. This may be also grown with advantage as a pot plant, and as such proves useful for the adornment of the greenhouse.—E.

Double and single Pæonies from Messrs. Kelway and Son, Langport, Somerset, are very beautiful in form. We like the singles very much, and are happy to hear that Messrs. Kelway are making a really noble Pæony garden. The purples we do not care much about, but the whites, pale yellow, and pale rose varieties are exquisite. Among the loveliest that have come to us are Afterglow, Pelgams, Josephine, Macella, Iope, Guiding Star, Empress Queen, and Pearl, the last-named a very beautiful pure white.

Allium giganteum.—I send you a bloom of an *Allium*, which I received from Messrs. Ant. Roozeu and Sons, of Haarlem, under the name of *giganteum*. I do not see it in the catalogues, nor in Nicholson's "Dictionary of Gardening." The flower-stem is from 3 feet to 4 feet high.—DELTA.

* A very beautiful thing, with dense heads of small flowers of a pretty lilac colour; the head quite 4 inches in diameter.—ELI.

Dictamnus Fraxinella.—This is the most handsome herbaceous plant now in flower in our rock garden. Its stately spikes stand erect, and are furnished with either pure white flowers or flowers of a pale purplish colour, marked with purplish lines. The hot, dry weather does not in the least affect either flower or leaf. Moreover, the plants do not grow to a great size, which is an advantage to amateurs, as it saves the labour of getting rid of surplus stock.—J. DOUGLAS.

FORT HOUSE, FIFE.

WE like to show views of pretty aspects of country seats in which the beauty results from the simple dignity of trees and Grass, and not unfitting or fussing buildings. We have not the pleasure of knowing this garden, and do not know anyone who knows it, so we put the view in without comment as one of those that reminds us least of the stone-cutter's front garden in the New Road, N.W.

FRUIT GARDEN.

W. COLEMAN.

BLISTER OR CURL IN PEACHES.

MANY fruit growers, those belonging to the old school of hard pruners especially, think there is no remedy for this troublesome disease, but this, I venture to say, is a mistake, for, taking the past twenty

rates; but so long as one or more of these causes remain the disease will be there, the tree will suffer and die or become useless. The north and east winds, no doubt, are enemies which must be guarded against, but badly ripened roots and shoots are at the bottom of the mischief. Twice in my life I have taken to sets of trees badly affected by blister - the last time when I first came to Eastnor. The trees here had been planted in deep, rich borders full of manure; the roots had gone down, gross watery shoots had gone up, and some of the trees were past recovery. My first move, I need not tell those who know me, was lifting, root-pruning, and relaying in pure loam corrected with old lime rubble. The best of them recovered, others were destroyed and replaced with young ones. I then commenced a system of extension training, laying in just enough wood for the succeeding year, and my progress at the end of the first season was satisfactory. All my trees from that time to this (27 years) have been pruned in the autumn, unnailed and washed in January, and kept away from the walls until the swelling buds rendered re-nailing

and spring coping completely cured them. It is now too late for a correspondent, "C. B." (p. 539), who does not give a single clue to his mode of management, to do more than pick off the blistered leaves as they appear, but he may keep the wood thin, the strongest shoots pinched to secure an even distribution of the sap, and point up the borders to let in solar heat. Then, provided these remarks meet his case, experience warrants my saying he may stop the disease by continuing the treatment I have briefly penned for his guidance. For my system in detail I must refer him to back numbers of THE GARDEN, where, under the head "Hardy Fruits," he will find every particular.

MADRESFIELD COURT GRAPE.

BUT for one or two failings, this remarkably handsome Grape would have gradually ousted out the ever popular Black Hamburgh. As it is, we rarely meet with it in quantity, or say to the extent of from six to eight rods in any garden, but nearly



View of the south front, Fort House, Fife. Engraved for THE GARDEN from a photograph.

years, favourable seasons have been few, and yet blister is on the decline. The late Mr. R. Thomson, a hard pruner, thought hand-picking a portion of the affected leaves and protection from cold the best, if not the only remedy, but since his time a great change has been wrought in the management of the roots and branches of Peach trees, and it is to this change, in my opinion, that the improvement is due. Blistering or curling being seldom met with under glass, we have convincing proof its appearance on open walls is produced by cutting draughts, by cold inert borders, into which the badly tended, sluggish roots are allowed to descend, and the injudicious use of the knife, which destroys the balance of the tree by laying the foundation of a few gross watery shoots which never ripen. It is always most troublesome in trying changeable springs when the heat of the wall fluctuates to a great extent, and the roots continue in a slowly changing cold medium. Later on, when the weather becomes settled and the borders warmer, it mode-

necessary. To one wall in a low damp part of the garden I apply glass copings, to another on a higher level broad boards for checking the draught. The roots of every tree are examined, shortened, and relayed in pure loam every year in October, and blister, through good seasons and bad, from that time has disappeared. The copings, I ought to say, are temporary, and are taken away, to let in summer rain and dew, as soon as danger from spring frosts has passed away. For protection two or three thicknesses of herring netting are suspended from the boards, and I water copiously throughout the summer. This season, although the spring has been swallowed up by the winter, I have not seen a single curled or blistered leaf, and the fruit on every tree has required endless thinning. Seven years previous to my coming to Eastnor, I took to a smaller collection of trees in a humid part of Ireland. Their condition was equally unsatisfactory, but complete lifting and replanting in well-drained shallow borders composed of pure loam, extension training,

every cultivator finds a place for one or two Vines, and does his best to bring the fruit to perfection. In some instances the only difficulty experienced is in colouring the berries properly. Others succeed in this respect, but fail to prevent a great proportion of the berries from cracking, which, it is almost needless to add, is one of the worst of all misfortunes connected with Grape growing. If the variety was of comparatively little value, there would be no need to discuss the various methods of culture adopted with more or less success, but as it happens to be both a distinct and, when in good condition, much appreciated variety, no apology is necessary for what I am about to mention. Up to a certain stage no variety of Grape is more easily grown. It is fairly vigorous, but not much inclined to grossness; the wood ripens well, and plenty of bunches are always produced—at least, such is my experience. The berries set as readily as those of Black Hamburgs, swell off a great size, the bunches generally being of good shape, loose, ugly

shoulders rarely forming. If the Vines are rooting in a border formed principally of rather strong loam, the berries are usually extra large and colour readily, sometimes nearly quite up to the footstalk; but in lighter soils a much greater difficulty is experienced in colouring them at all satisfactorily. Unless I am very much mistaken, the failing to colour properly must in most cases be connected with the measures taken to prevent cracking. As a rule, the latter evil is anticipated, or the attempt is made to prevent wholesale cracking by withholding water from the roots, under the impression it is an excess of moisture that causes it. A drier atmosphere and a good circulation of air are also kept up as far as practicable, and the success sometimes attending this treatment naturally leads others to attribute their failure entirely to the neglect of these precautionary measures. What further tends to strengthen growers in the belief that this line of treatment is the only reliable one is the fact that the Madresfield Court, of all Grapes, appears to be least affected by the dryness of the borders. Others besides myself may have seen it perfectly happy in a border so dry as to most injuriously affect Foster's Seedling, Buckland Sweetwater, and other varieties contiguous, these flagging badly on very bright days. I do not say many growers go to the extreme length of long withholding water from the borders of a mixed house of Grapes in order to unduly favour Madresfield Court, but it is done occasionally. The wiser plan to be adopted by the believers in the drying-off theory would be to completely isolate this variety, either by planting at one end of the house and dividing the border, or, better still, by devoting a small house to it. The borders should also be inside if possible, those outside being more at the mercy of the elements, cold and rain. As, however, the majority of the Vines are mixed in with other varieties, very few either dare or care to risk spoiling the latter in order to favour Madresfield Court, and any other successful method of growing would be welcomed accordingly.

In Dorsetshire, more especially in the neighbourhood of Dorchester, there are several good Grape growers, and I have seen both Mrs. Pince and Madresfield Court very fine in that district. At Hsington House, Dorchester, and Froome, Whitfield, the bunches of the latter are invariably very large, plenty of them being from 4 lbs. to 6 lbs. in weight. The Vines are grown in mixed houses, and are found to colour and keep as well as those of Black Hamburgh and Foster's Seedling. On making inquiries as to the liability of the berries to crack, I was assured the percentage requiring timely removal was no larger than in the case of the other sorts. Mr. Powell, the gardener at Hsington House, stated he only had to cut out about six berries, and Mr. Biggs, at Froome, was equally fortunate in this respect. Naturally, I at once attributed their success to the drying-off process, only to find that the very reverse is the case. Instead of this variety requiring less, they hold that it ought to receive much more moisture at the roots than most other sorts, and they act accordingly. When given all they need in the shape of water and liquid manure, the borders never being allowed to become at all dry, the Vines swell off and finish their crops without experiencing a check of any kind, and, as a consequence, the berries are less liable to be suddenly affected by any change in the weather. Those prematurely dried off are bound to receive a check, the skins losing their elasticity, the pulp also becoming somewhat solidified. Then if the border is watered, or a change from clear and dry to sunless and wet weather takes place, a fresh rush of sap to the berries causes them to burst wholesale. This may not be quite the correct solution of the difficulty, but if my physiology is at fault, there is no disputing the fact that those who adopt the plan of drying off very frequently lose a great number of berries, while my Dorchester friends can point to very different results. This being so, it behoves others besides myself to give their plan a fair trial, and if it does not prevent cracking of the berries, it is very certain it will not greatly injure the Vines of other sorts rooting in the same border. In addition, there is a better prospect of the berries being well coloured right up to the footstalks, drying off at the roots

being almost a sure preventive of perfect finish. Madresfield Court forces readily, and can be had nearly or quite as early as Black Hamburgh, but unless it is allowed plenty of time to ripen, it will not often colour well. Give it plenty of time and air, and it will ripen much more satisfactorily than many think possible. W. I.

OUTDOOR FIGS.

"D. T. F.," in THE GARDEN (p. 506), evidently has not honoured me by reading my general remarks upon the management of outdoor Figs; if he has, the thread has slipped his memory, and I venture to think he is hardly in a position to condemn my method or uphold it. Readers who have followed me now for some years will endorse the statement that I am not a coddler, neither do I neglect my trees; consequently his remarks upon a civil inquiry for information which he has converted into a challenge fall short of the mark and are harmless. In reply to his question, I have pleasure in being able to say my trees (Brown Turkey) so far are satisfactory, and as yet the figlets have not fallen to the ground, but shortly some of them will, as they require thinning. But then the weather from the 20th of April down to the end of May was extremely dry, and, although cold, we had nothing like a killing frost to touch the old wood. The figlets were safe enough, for, as usual, I had taken the precaution to remove the winter covering before the sap got into motion. Then even I did not trust to chance or look on with folded hands, for I must remind "D. T. F." that I sometimes fuss about my walls with coping boards and sheets of canvas, which I do not confine to Peaches and Nectarines, but ply wherever they are likely to be of use to me. But, protection. What is it? where does its use end and abuse begin? Protection, I venture to tell "D. T. F." at the onset, with me is not coddling. If he, in his youth, coddled and called it protection, his leap from a prudent course to a let-alone system is by no means surprising. Unnailing the shoots, tying them in bundles, and packing them up like mummies in wheaten straw or air-excluding matting is not protection. Lighter covering, even, put on in the autumn and allowed to remain until the sap is in motion and the young fruit is swelling, is not protection; it is murder; and, as "D. T. F." justly remarks, the mischief follows not the putting on, but the taking off again. My idea of protection is this: The materials should be light, durable, open to a free circulation of air, and capable of drying quickly after snow or rain. They should be fixed firmly, but lightly, not so much to prevent severe frost from entering into the dormant wood at the death of winter as to prevent sudden changes when a thaw sets in and it is coming out again. Many people use Spruce or Yew branches, and very well they answer, but the best material, where it can be obtained, is dry Bracken, to which "D. T. F." I believe, does not object for protecting Tea Roses. This I have used for a great number of years, and when it is borne in mind that a frost which will kill a Tea Rose may cripple a Fig tree, I fail to catch the consistency of protecting the one and neglecting the other. Protection, where is it useful? Figs from the time they were introduced down to the present day have been liable to be killed to the ground, frequently in the midlands, occasionally on the seaboard. Growers in any of the maritime counties, also south of London, may adopt the let-alone system, as Nature, in nine out of ten places, manages better without than with the aid of man. In some few spots away from sea influence trees that have never been pestered with shelter do well, but these isolated cases do not justify the writer of a calendar in saying the Fig is perfectly hardy: all the grower has to do is to put in a tree and leave it to take care of itself. His duty, in my opinion, is to remind growers living in unfavourable localities of their danger. Those who are safe may pass on, as they do not need the warning. Inland, then, the cautious man should use Fern fronds, not to prevent winter frost from getting in, for that is as impossible as it is unnecessary, but to ensure a dry, even temperature when it is

coming out again. Then, for keeping the covering dry, broad coping boards are a host in themselves, as they throw off much snow and rain, and carry the sheets of canvas or fishing nets, which I use and recommend, from the time the dormant figlets are unfurled until danger from spring frosts has passed away. I do not request anyone to follow in my footsteps. I do not ridicule those who differ with me. I merely preach what I practise, and having been fairly successful with Figs, as well as other fruit, I leave readers of THE GARDEN to accept or reject matter which may or may not suit them. W. COLEMAN.

Strawberry plants as biennials.—Generally, forced Strawberry plants are so treated because of the large number of plants grown, but a small number are planted out to form permanent beds. On the other hand, we invariably treat outdoor Strawberries as perennials, and although they are assumed to have a limit to useful endurance, yet they will endure if left indefinitely. But there is no good reason why we may not treat outdoor Strawberries as biennials, planting them thickly, as advised by others. I have in past years taken fine crops from plants so treated, and then have dug them in to make room for something else. Several hundreds of stout, early runners dibbled into 4-foot beds thickly will give, the following spring, a remarkably fine lot of fruit with the least possible trouble, for mulching is not desirable and top-dressings are not required. An arrangement of this kind would be very acceptable for small gardens, and if the plants were dug in as soon as the fruit was gathered, Broccoli would follow admirably as an after crop. One hundred plants in a row specially planted, and having the flowers pinched out, would suffice to give runners for the ensuing season. I recently saw a lot of plants lifted from a bed of this description in the month of March, and planted a foot apart each way in frames moderately close to the glass, which had produced so much bloom, that one-half of it had been thinned out. A really fine crop of fruit was taken from the plants in succession to those in pots.—A. D.

Strawberry beds.—It is now being realised how much hardier and more prolific young Strawberry plants are than old ones. We have, for several years, grown beds of runners on two different systems, a few remarks upon which may prove serviceable. It is customary here to plant a row on each side of a bed 5 feet wide, and from the space between the rows runners are taken. Those layered after the first two or three batches have been removed are allowed to remain, care being taken that they are not crowded, and a most prolific crop will result the following summer. There are, however, some disadvantages in this system. The first is the uselessness of the bed after the fruit has been gathered, for if left until another year the growth of the plants blocks out the light and air necessary for the ripening of a second crop. When layered close even the first crop will be greatly deficient in colour and flavour. Dry seasons will likewise do much mischief to a bed, the ground being so thickly matted with roots, and watering in such cases has a tendency to draw the leaves and destroy the quality of the fruit. Great exhaustion, too, of the soil follows a bed of this description, which makes it all the more necessary that the bed should be destroyed after the first year. However, judgment exercised in the layering, followed by good cultivation, will seldom fail to yield one magnificent crop. The other method is simply a transplanting of the runners to a 3-foot, 4-foot, or 5-foot bed in rows from 1 foot to 1½ feet apart, the plants being placed 6 inches from each other. The outsides of the bed must be well littered with straw; the trusses inside will be held up by the foliage. A light mulch, however, previous to blooming is helpful, more especially in the wide rows. In the second year every alternate row should be removed and the space dug and mulched. It may be also better with the more vigorous kinds to remove every alternate plant, and so give ample room for the development of the crowns. We have

had some of the finest fruits, and also some of the earliest, from beds treated in this manner. J. LOVELL, *Driffield*.

THINNING APPLES.

ALTHOUGH the thinning of Apples is not generally practised, there is no doubt that they are just as much benefited by the operation as any other crop, and will repay the extra labour involved, just as well as Grapes, Peaches, or any of what are termed choice fruits. I do not suppose that the thinning by hand of large orchard trees will ever be generally practised, but I consider it advisable to go over all dwarf or trained trees just after the flowers fade, and thin out the bunches to one, two, or three of the best fruits, according to strength of tree or the size the variety attains, as half the number of Warner's King will tax the energies of the tree to swell them out to full size more than double the number of Golden Pippins, or any of the small dessert kinds. In addition to this there is a great advantage in removing the old blossoms, as they harbour grubs that eat into the young fruits, which, once blighted, never grow into fine clear specimens. There is generally plenty of small common Apples to be had at low prices, but what growers want to obtain is a fine sample that is fit to be sold at so much each or per dozen. The demand is for large culinary Apples for baking whole and various other purposes. One of the kinds that is in great request is Lord Suffield. It is such a fine cropper that it needs thinning out early, and then it attains a large size, and no Apple that I know of pays better as an early variety. Then there are such varieties as Winter Hawthornden, Warner's King, Lord Derby, Blenheim Orange, Ribston Pippin, Cox's Orange, and many other popular sorts that are grown in quantity for market that pay far better than Grapes do now-a-days for any attention that may be bestowed on them. Anyone making a speciality of some of these leading kinds would never regret any outlay to produce the best samples that could be had. They must be grown on some kind of dwarf tree, and the finest I have ever met with have been grown on cordons, and many Peach, Plum, and other fruit trees that do not yield satisfactory returns would, if rooted up and replaced with good Apple trees trained and carefully attended to, yield not only regular, but far more profitable crops. It is thought by many useless to plant Apples on walls because they can be grown in the extreme north of these islands; but if the question is profit, it matters little what the crop is. And in the extreme south I have seen Apple trees on walls, year after year, never fail to yield a crop that for value was equal to that of any other wall trees in the garden; and if one cannot devote walls to their cultivation, he can at least give the requisite culture to ensure fine crops. J. GROOM.

Gosport.

SEASONABLE WORK AMONG FRUITS.

CHERRIES.

EARLY houses in which ripe fruit is still hanging cannot be kept too cool and airy; also they must be kept dry, but not to an extent that will conduce to premature shrivelling. When the trellis is completely furnished with foliage, the best of all shading, and the floors are kept cool and moist by daily sprinkling, the most tender varieties will keep for a long time; but where the leaves are thinly placed, a sheet of canvas drawn over the roof will now be found necessary. Some Cherry forcers allow this shade to remain night and day, but, provided each end of the house can be reached, shade when the sun is not shining should be removed, otherwise the foliage becomes tender and often ripens prematurely. Birds, of course, must be kept at a respectable distance by means of strong netting; the roots must be kept evenly moist beneath the mulching, and the foliage as the trees are cleared free from insects by a vigorous use of the syringe. As early-forced trees are more likely to get too forward than otherwise, it is not necessary to keep the glass over them after the latest sorts are gathered; therefore, provided the lights are portable, their removal will

tend to the preservation of the foliage by the aid of rain and dew through the most trying part of the summer. On the same grounds, pot trees, unless they require a shift, when retention for a time may be necessary, will do best plunged to their rims and well mulched on an open border. The pots being very full of roots, they will take liberal supplies of water, as the heaviest summer rains rarely pass through the leaf-shaded balls, and the garden engine, after a hot day, will cleanse and refresh the foliage.

Late houses, containing the best of the Bigarreaus, need not be closed through the night, neither need much, if any, shade be used, as this valuable section cannot be properly coloured without the assistance of sun-heat and an abundance of light. When properly finished, the damping, as recommended for the early house, must be repeated on a more liberal scale, and more air, if possible, will be found a telling factor, always provided the rain does not enter through the open roof-ventilators. This family of Cherries are a host in themselves, but unfortunately, in this part of the country, they are rarely met with in perfection on open walls, and when they do ripen, wet, sudden changes, birds and insects rapidly destroy or reduce their numbers. In low, cold, and damp districts their culture is more trying and precarious than that of Peaches, and for this reason it is to be regretted that more glass is not devoted to them. A light, airy house, of the plainest build, is all that is needed, and although a handful of fuel is a saving agent when the trees are in flower, not so much from frost as from damp, excellent fruit can be grown in eight seasons out of ten without it.

PLUMS.

Trees in pots now swelling off full crops of fruit will take frequent supplies of diluted liquid and good top-dressings of a rich calcareous nature. Well rotted manure, freed from worms by a dash of soot, forces a vigorous growth of wood and foliage, but the finest and best fruit is produced by stiff loam, fine lime rubble, and bone-dust. This we lay loosely on the surface, wash in with liquid, and replenish as soon as the roots appear on the surface. In course of time the dressing rises above the rims of the pots, but this difficulty is met by the introduction of narrow hoops of zinc or lead, some 3 inches in depth, to facilitate our giving abundant supplies of water. The sudden change from winter to summer will necessitate a most vigorous use of the syringe—the first time, as soon as the doors are opened, the second, after the trees have been watered, and the ventilators closed for the evening. The Plum, like the Peach, being so easily marred by impure water, constant attention to the selection of this element is imperative. That which falls from the clouds, of course, is best for the trees and the fruit, as it can be used until the Plums begin to colour. This stage reached, an abundance of atmospheric moisture, produced by damping the floors, walls, and stems, will ensure perfect bloom, and keep the foliage free from spider. If any of the earliest trees have missed fruiting, they will now be sufficiently advanced to admit of being passed through the cold house to the open air, where they will set and ripen their buds in time for next year's forcing, whilst those left will get more light and air—important factors in Plum forcing.

Late sorts, including Golden Drop, the Impéatrices, and Rivers' Late, a variety not half enough grown, in succession houses will now be forward enough for the final thinning. Quality being preferable to quantity, the Grape scissors must be freely used, also the finger and thumb, as full size cannot be obtained where the trees are allowed to run into strong laterals. Once thinned and swelling freely, the latest sorts do not require fire or hard forcing with solar heat, but thrive best under a liberal circulation of fresh air from early morning until the time arrives for the evening syringing.

MELONS.

Plants in all situations and stages with a minimum of fire-heat are now making a maximum of growth, and show, by their deep green, leathery foliage and highly coloured fruit how they revel in

bright unclouded sunshine. Where the fruit is passing through the setting stage, an abundance of air and plenty of atmospheric moisture will produce safe and favourable conditions, always provided the bottom heat is satisfactory. Good Melons, no doubt, are often grown upon a low bottom heat; but time is money, and one bright period does not make a brilliant summer; therefore, a root temperature corresponding with that of the air must be maintained by the renovation of the fermenting material in preference to dry and more costly fire-heat. Where the pot system is still in favour, fresh, free, and vigorous plants should always be coming on for filling up the compartments as they become vacant. A two-light frame resting on a manure bed is the best of all nurseries, as clean, stocky plants in these can be raised in endless quantity. A few seeds sown every week singly in pots, or, better still, on small squares of turf, is the best safeguard against the disappointment which follows the use of plants that are drawn, pot-bound, or touched with spider. Extension training is a system well worth the attention of Melon growers who have good-sized houses. I once saw the Melons grown in this way at Longleat, and certainly they were magnificent. Mr. Pratt, I gather, follows in his predecessor's footsteps, and worthily he wears his mantle.

Frames.—It is not yet too late to put out strong plants in pits and frames where the grower is solely dependent upon manure for top and bottom-heat. Indeed, there are many gardens in which frame culture is not attempted until after forced vegetables and bedding plants are disposed of. Old beds containing some latent heat may be revived by turning and the addition of a little fresh fermenting material both inside and to the external linings. The soil for frame Melons should be sound, mellow, calcareous loam that will grow good Strawberries or Roses—not too rich, but good enough to produce healthy plants without the aid of manure. Lime rubble or burnt earth, however, may be added; the first to all soils; the latter to stiff or poorer loam of a clayey nature. If the compost at this season is spread out in the sun for a few hours, the hills or ridges may be made and planted almost immediately, but this will depend upon the condition of the plants, which should grow from the seed to the fruit without undergoing a single check. It is well to raise the stems a little above the general level of the hills; and whilst keeping the plants well up to the glass, they should have room for the full development of the foliage without touching it. When stopped, and the young vines (two to four from each plant) are growing freely, airing should keep the temperature at or about 85° under bright sun, which cannot be too hot for Melons; and nights being cold, early closing with the tepid bath should be finished in time for the afternoon heat to range from 95° to 90°. When growing plants are shut up with a frame well filled with vapour, there is no fear of scalding, although the temperature touch 100°, but under this high pressure night chills must be guarded against by early covering. The small volume of heated air passes quickly away after the sun leaves the glass, but the days being very hot, this important operation of early covering is often neglected. When new beds are made up for late Melons, it is a good plan to economise material by building upon a double row of fagots, as there is then less danger of delay or burning; whilst the hollow nature of the base is favourable to an under-current of heat when the linings are renovated.

CUCUMBERS.

These in frames, like Melons, require a free, but not over-rich soil, a steady bottom-heat, plenty of tepid water, and the early afternoon bath with strong sun to ensure a quick growth during the hours of declining daylight. Frame Cucumbers require stopping and regulating three times a week and keeping evenly balanced with foliage. The best time to dress the plants is the half hour preceding closing, as one exposure will then suffice for this work and the overhead watering. In course of time it may be necessary to cut over a few lights of plants, and peg down at the joints a few of the leading shoots to induce the formation of fresh rootlets. When trimmed and pegged, a light top-

dressing of fresh maiden soil, leaf-mould, and lim rubble will give them a new lease, and the plant will go on bearing until the remainder, so treated in their turn, come into bearing.

Cucumbers in heated houses just now are growing and fruiting freely under the influence of solar heat by day, and a gentle circulation on the pipes through the night. Of tepid water the roots will take an enormous quantity, and if one so wills it, the Vines will luxuriate in a close house filled with vapour and fully exposed to the brightest sunshine. I do not, however, adopt this plan, and although I never shade, I ventilate moderately through the early part of the day and close about 3 p.m. with moisture on the hottest afternoons. By adopting this method and pinching at the joint beyond the show, the growth does not become lanky and untidy, insects do not make headway, and the fruit is straight and never bitter. A very common mistake in house culture is close planting and crowded training; the plants go on well for a time, but soon become debilitated by the knife and get out of health and order. If anyone doubts this, let him turn out a single plant where it can have an unlimited leaf-run and he will soon find how fruitful it is, and, comparatively speaking, easily managed. To those who are suffering from overcrowding, I venture to say, cut out every alternate plant, when those left will give less trouble, produce finer fruit, and more of it. Extension-trained Cucumbers require a liberal root-run, not in a rich, declining bed of leaf-mould, but in sound, well-drained loam, through which the liquid passes quickly. Of this the roots take large quantities and follow it through the drainage, always provided it cannot remain to become stagnant. Top-dressing, little and often, in like manner must be liberal. The best material I have used is rough, turfy loam and old lime rubble; indeed, the latter, I believe alone, well fed with warm liquid, would grow the plants for an indefinite time, and worms—the great bane where manure is used—would never enter it.

PEACHES.

By this time many early houses will have been cleared of the fruit, and having the hottest part of the summer before them, the most careful management must be devoted to the trees. When with the hose or garden engine the trees have been thoroughly cleansed and the roots properly moistened, all shoots that have performed their allotted work must be cut out to let in light and air, without which the foliage will ripen prematurely, and the hard, brown wood studded with bright flower-buds will be represented by pale green shoots sparsely furnished and greatly elongated. The worst enemy is red spider, which attacks the upper as well as the under sides of the leaves during the time the fruit is ripening, but a few thorough washings with pure water will break up its stronghold, and continuous syringing late in the evening whilst keeping the foliage cool will prevent its reappearance. Old trees from which heavy crops have been gathered will most likely require gentle stimulants in the form of manure mulches and diluted liquid, but feeding must not be carried to excess, otherwise a persistent growth of lateral will be found troublesome, if not injurious, when they should be resting. Although all early Peach houses should have movable roofs, the old-fashioned system of stripping should not be thought of until the wood is thoroughly ripe; then, provided the latter part of the summer is hot and dry, the lights may be taken in for repairs and painting. Meantime, the lights must be run up and down to their fullest extent, not only to ensure a full current of air, but also to give the foliage the benefit of dew and rain.

Succession houses.—The weather since June set in has been almost too hot and forcing, but where ventilation is on a liberal scale the fruit has coloured perfectly, and fire-heat, of which they have had more than enough, has been dispensed with. Plenty of water above and below and a free circulation of air are the principal elements, as size and flavour cannot be secured without their aid, and colour depends upon the elevation of the fruit to the light. Lately we have thrown the lights completely off our colouring Peaches for a few hours

during the hottest part of the day, and then the thermometer beneath the foliage has stood above 80°. Nights, however, have been cold, often showing a fall of 40°; therefore, the better to dispense with fires and ensure full size, we have closed pretty early with sun-heat and moisture. If young trees are still growing freely, they should be tied in as the shoots extend, stopping only being resorted to where the strongest are taking the lead or have reached the extremity of the trellis. If likely to become crowded, many of the minor shoots which will be cut out when the fruit is gathered may be pinched a few inches in advance, for the two-fold purpose of increasing its size and letting in light and air.

Late houses may now receive the final thinning, the crop being regulated by the vigour of the trees. The strongest, however, should not be over-loaded, as the ordeal of stoning is still before them, and it is better to secure a moderate crop every year than to enervate the trees with inferior quality and suffer for it in the future. Growth being unusually rapid, the tying and regulating of the shoots, especially of the strongest, must receive frequent attention. The trees having been freely disbudded to a sufficient number of shoots, tying in is a simple operation, as there is no difficulty in finding a place for every growth, but when young hands have to follow an inexperienced disbudder, the work becomes tedious and the trees suffer. If this hot, dry weather continues, more mulching followed by copious watering will tell in the right direction upon external borders, and those inside will take a flooding every ten days. Where very late fruit from this structure is wanted, now is the best time to retard by abundant ventilation, which in many ways answers better than shading later on. In the first place, the free admission of light and air lays the foundation of a short-jointed set of shoots, which invariably ripen well. In the second, high colour and flavour are ensured by full exposure to sun and air when solar heat is declining; and last, but not least important, a glut of shaded overripe fruit is avoided.

W. C.

FLOWER GARDEN.

BEAR'S-EAR SANICLE.

(*CORTUSA MATTHIOLI*)

FROM the old garden type, well represented in the annexed cut, to the larger Himalayan variety of this plant, the improvement is very won-



Bear's ear Sanicle (*Cortusa Matthioli*).

derful. There are several intermediate forms which we have seen in cultivation lately. *C. M. grandiflora* is a large-flowered form sent out a few years ago, we believe, by Herr Max Leichtlin, of Baden-Baden, and is now a general favourite; it is really a most handsome flower at this season when well grown; the leaves resemble the old form, as also do the flowers in colour, but they are twice the size, and very pretty when seen in a mass. Another form from the Himalayas has flowers even larger and paler than those of *C. M. grandiflora*, and the leaves, in-

stead of being shiny and almost devoid of hairs, are quite soft and velvety. A very dwarf form also comes from the above locality, with numerous flowers on a short stalk, almost identical in colour with the old double Peony. It seems to be the rarest of all. As seed ripens freely, I find the best way to treat these plants is as biennials.

K.

Double Wallflowers.—I have now in flower three forms of the old-fashioned double Wallflowers—not the large, ungainly double German varieties—two of these are yellow and one dark. Of the yellows, one, the earliest to flower, is quite pure in colour, buds and flowers alike being destitute of any dark stains whatever. The other yellow is later in flowering; the buds are dark until the flowers expand fully. They are bright yellow, large and full, and form massive spikes. Of this I have a dark counterpart, the same in all respects, but the flowers are dark, and not so black as they are in the case of the old double black, which is a counterpart of the early pure yellow, only varying in colour. The old dark I have unfortunately lost. How many varieties of the old type of double Wallflower are there? I mean, of course, the free-flowering forms that are met with in old-fashioned gardens. They possess one excellent quality—they last a long time in flower. I shall be glad to exchange cuttings of either of these for the old double black which I have lost.—R. D.

Brompton and other Stocks.—In spite of the severity of the winter, a few of the winter Stocks here and there have stood very well, and notably the robust, bushy Queens, the hardiest strain of Stocks we have. I meet with plants here and there in cottage gardens of the white and purple kinds, but the scarlet seems to be rarer, perhaps because more tender, or perhaps the Stock is less common in this locality. These bushy branching Stocks are very sweet, very free flowering, and furnish ample material for cutting, if it is desired. The only Brompton Stocks I have now were kept in pots in a cool house during the winter. The plan gives much trouble, and can hardly pay, as the plants must be kept in 1½-in. pots at least, and in these they get somewhat root-bound before it is safe to turn them out. I had sent me a small packet of seed, said to be of a very fine strain, and through that, out of the couple of dozen or so of plants I had, was enabled to find that there is an inferior strain of so-called Brompton Stocks in commerce; hence the appellation of Giant to the large-flowered strains. The inferior strain produces flowers pale of hue, and are chiefly produced on side stems, there being no really good spike. I rather think it is the Emperor of the Continent which is thus sold for the scarlet Brompton, and a very poor substitute it is. I hope we may have some milder winters, that we can again enjoy in all their grand beauty fine scarlet and white Brompton Stocks.—A. D.

Verbenas and Calceolarias.—To judge from the instructions on the summer preparation of beds for the above flowers occasionally given in the weekly papers, the idea still seems to prevail that they require plenty of manure. Is the poor appearance and gradual decline in public favour of both Verbena and Calceolaria, that have come about within the last few years, to be attributed to the fact that the above instructions still find favour with cultivators? There is not the slightest doubt that anything in the shape of raw manure dug into the beds immediately before planting is highly injurious to them, and I can well remember repeated failures with the Calceolaria in an otherwise perfect garden, where the manure and firm planting were essential features in its management. So far as Verbenas are concerned, I have always found them do best in a sandy loam, and where this is not natural to the flower garden the desired end can be attained by working into the beds at planting time a good dressing, say 2 inches or 3 inches in thickness, of road scrapings, obtained from a heap that has been turned once or twice, and if good sturdy plants are turned out in this compost the beds will be quickly covered and

bright with colour. One particular point to be observed in the spring management of Verbenas is that they should be kept growing until wanted for the flower garden. If struck early and allowed to stand in cutting pots until the end of May the plants are crippled, and will not establish themselves in their summer quarters until the season is well advanced. I generally strike them about the last week in March, shift the pots into a cool frame for a week as soon as the cuttings are rooted, and then plant them out in pits that have been used for forcing Potatoes. With this treatment they make nice plants by the end of May, come up with good balls of earth, and do not feel the removal. With respect to Calceolarias, I have found a mixture of leaf-soil and road sand in the proportion of two to one a capital compost to work into any beds that are to be occupied with these flowers, the natural soil being removed either in large or small quantities as may be deemed necessary. They may be planted firmly in this compost, and a slight treading given to the beds when the planting is finished.—E. BURRELL.

RAISING ALPINE RANUNCULI FROM SEED.

THESE may be raised from seed, and strong specimens obtained in a short time by a most simple, though perhaps a little unusual process. I am now referring to such kinds as *Ranunculus anemonioides*, *parnassifolius*, *amplexicaulis*, *glacialis*, *montanus*, *magellensis*, *alpestris*, *Trautffelleri*, and *gramineus*. It is just a year since I sowed the seeds, and the plants are now neat little tufts, some of which for further increase I have just been dividing. The plan is to take the whole head of seeds just as the neck of the flower-stalk begins to turn brown; about this time many will be nearly ready. The seeds may appear rather green, but if they are otherwise good, no matter. Set the whole heads just as you cut them from the stalks, and in the same position as when on the plant. Cover to the depth of half an inch in grit, peat, and loam; plunge the seed pots to half their depth in ashes in the full sun, and do not water them. The results, according to my experience, have been that in one year I have crowded clusters of seedlings, which as regards the smaller species might almost be taken for old plants, and in all cases they can be readily divided. My practice has long been to grow Ranunculi in nearly single crowns, in order to obtain fine flowers, but I have not yet found a means nearly so handy for raising them as by perfectly fresh seeds in the clustered heads. I took the hint from noticing that the seed heads often left the plant by the old flower-stalk decaying, and from seeing that seedlings came up in corresponding tufts in the autumn. So much for the facts; and one may fairly suppose that the condition of the soil at this season is more suitable for the seeds of this genus, wherein at the same time they can ripen, keep plump, and conveniently get rid of their husks at the right time. I wonder if the seeds of R. Lyalli were cut off the plants in a corresponding fashion, and sent without being dressed at all, we should manage to get them to germinate better than hitherto. I should be most happy to try them if procurable. I have never yet, by the ordinary plan, got a seed to vegetate out of all the packets I have bought. J. WOOD.

Woodville, Kirkstall.

Libertia ixioides.—This plant, with its tuft of Iris-like leaves and profusion of small white blossoms crowded together on spikes about a foot high, not only does well in an open sheltered position, but may also be grown in pots, and if wintered in a frame will be by now bristling with flower-spikes. In this condition it is very useful for the decoration of the greenhouse, and is also very distinct from the plants usually grown for that purpose.—H. P.

Hoop-petticoat Daffodil (*Narcissus Bulbocodium*).—This is a lovely gem, valuable both for pots and the open ground. It is as a border plant that I wish to recommend it, as it is of easy culture, thriving in almost any soil and situation. It in-

creases fast, and some clumps here have produced upwards of 100 flowers. As a plant to cut from, it stands in the foremost rank, and its simple, elegant appearance merits attention. This and the Pheasant's-eye Narciss mingled with the old double white make a pleasing combination, and give as much pleasure as many other things grown at double the cost.—J. CROOK, *Hants.*

POPPIES.

THE Poppy, in some of its various forms, has long been grown in gardens, and, in our opinion, no really good collection of hardy flowers is replete without a selection from this charming genus. From the dwarf Alpine Poppy (*P. alpinum*) to the majestic Opium Poppy (*P. somniferum*), with its gorgeous colours, the range of form, &c., is very great. The latter Poppy is only an annual, but of such a nature as to require very little attention in the way of sowing, &c., in our climate, unless in very severe seasons. It displays an almost endless variety in the shape, colour, and form of the flowers, some of them more resembling the individual blooms of a Hollyhock than anything else. The type, *P. Rhæas*, is a native of



A Japanese Poppy (*Papaver Rhæas* var. *japonicum*).

our own country, and grows wild in cornfields, &c. The variety *japonicum* (represented in the annexed cut) and the variety *Hookeri* show what may be done by cultivating our native plants in foreign countries. The variety *japonicum* is cultivated in gardens in China and Japan, and forms one of the most charming and striking plants that can well be seen in any garden. The variety *Hookeri*, cultivated in gardens in Cashmere, on its first introduction appeared distinct, though after cultivation it showed a decided tendency to revert to the type. Many of the French varieties are also very handsome, and all are allied to this species. The form *umbrosum* is very distinct, as also is *Danebrog* and many others without distinctive names. The Iceland Poppies (*P. nudicaule*), so easily raised from seed, should be largely grown in every garden. When grown in a rich soil, the yellow and rich orange-white and streaked flowers give one of the most gorgeous displays that can well be conceived. K.

Veronica Hulkeana in Ireland.—The editor (p. 527) asks me for a note as to how this grows in Ireland. So far as I can learn, it is whimsical. Here it grows freely, and as the specimen sent, I think,

shows, blooms well; plants against a wall and growing in a gravel walk are sheets of blossom every year. It also flowers well in the open, but growth is less compact. Elsewhere, I am informed, it is found difficult to grow. I believe neither Miss Owen nor Mr. Gumbleton have been successful with it. It does well in the Trinity College Garden, but, I think, is almost better here. Perhaps soil may in part account for the variations. Mine is a heavy tenacious clay, baking in summer as hard as a road. Miss Owen's is light and sandy; Mr. Gumbleton's I do not know. V. Lyalli also does well with me.—GREENWOOD PIM, *Monkstown, Dublin.*

TULIPS.*

THE Tulip derives its name from the Persian word *Thoulyban*, turban, the eastern headdress much worn in Turkey, Persia, and other eastern countries. In Turkey the Tulip is named *Tahilant*, also because of its resemblance in shape to the headdress there in use. From a book published in the Dutch language, printed in Antwerp in the year 1614 by Rembertus Dodonius, a botanist at that time, it is mentioned that the Tulip in former ages was known by the name of Pythion, and at that time the wild Tulip was eaten and was used for thickening the milk. Theophrastes, another author of past ages, declares the Tulip to be very good food, while two other authors, Hesperidius and Gesner, in their botanical works, mention that the old name was *Satyrium Erythronium*, which was considered at that time a very good eatable bulb.

HISTORY.—Mr. Corn. Gesner, called the Linnaeus of the 16th century, met with the first Tulip at Augsburg (Germany), in a garden of which the Councillor Johan Heinrich Herwart was the proprietor. It further appears that the first Tulips were imported into Holland in the year 1522 by M. Augerius Gislennius, of Busbeec, born at Commines, in French Flanders, and died at St. Germain, near Rouen, on October 28, 1592, which gentleman had been sent out by the Emperor Frederick the First to Soliman the Second to Constantinople. This gentleman, having travelled through a good portion of Asia, brought the Tulip to Holland, having collected it in Persia. The first Tulip was seen in bloom in Amsterdam, where it was greatly admired by the public, but Carolus Clusius, a botanist at Utrecht, was the first who occupied himself with the growing and distributing of the Tulips. This gentleman distributed the Tulips all over Holland, and created a taste for them among the public, which led at the time to the neglect of all other flowers. At that time the Tulips were sold at pretty high prices, although not equal to the prices in the speculative days later on. *Tulipa Gesneriana*, brilliant scarlet with black centre, is probably the mother Tulip from which all the many hundreds of different varieties have originated in almost every shade of colour, from pure white to the darkest crimson. This sort is an importation from Asia Minor, the Caucasus, Calabria, and Central Italy. M. Conrad Gesner, a Swiss naturalist in whose honour it was named, mentioned this Tulip first, and published a description of the same, accompanied by a drawing, in 1559. He obtained it first in a garden at Augsburg, where it had been grown from seed brought there from Constantinople. It was first flowered in England by Mr. James Garres, an apothecary, in 1577.

The character of a good Tulip consists in the novelty of the sort and in its peculiar markings, either feathered or blotched, with a pureness at its interior base. The ground colour should be clear and distinct, whether white or yellow. The petals should be of firm substance, not withering soon by the action of the sun, but keeping their true colouring for at least ten to fourteen days. These late or fancy Tulips, which have been so much admired by many generations, have been grown from seed by thousands, and the result of this has been the acqui-

* Abridgement of a paper read by Mr. Polman Mooy, of Haarlem, Holland, at a meeting of the Horticultural Club June 14, 1887.

sition of many superb varieties, at first in Holland and Belgium and later on also in England. The seedlings generally, when they first bloom, produce flowers without any stripes or markings, but with a yellow base, the upright portion of the petals being self-coloured brown, red, purple, scarlet, or rose. In this state, when they have been grown for years without variation, they are called breeders or mother Tulips. These are planted every year until they break into stripes, when, if the markings are fine or different from any one known, they receive names, and are added to the collection. It is often so many years before they break, and the multiplication in the breeder state is so rapid, that the border soon becomes filled with this self-coloured variety. Each Tulip grower who has broken seedlings claims, and has a perfect right, to give each flower a name; but some confusion is naturally brought on, because of the fact that different names have been given to those that have broken almost exactly alike. In a bed of 100 seedlings it is improbable that any two will be very nearly alike in their markings, which uncertainty adds greatly to the charms of Tulip cultivation. Another singular feature in the Tulip is that after it breaks it ever remains the same, and never returns to its self-colour again.

SHOW OR FANCY TULIPS are divided into three classes: 1st. Byblomen or violets, such as have a white ground variegated with purple or violet, the edges well feathered, the leaflets erect, and the whole forming a perfect cup. 2nd. Bizarres having a yellow ground variegated with rose, scarlet, purple, or violet. 3rd. Roses with white ground colour variegated with rosy red, pink, or soft rose.

THE PARROT TULIPS are well worth our attention. We cannot say for certain where they originated, but I am of opinion that they were derived from a monstrous sport out of the late or fancy Tulips, among which they are occasionally found. They may be ignored by those florists who claim the right to say what is and what is not beautiful, but I prize this class very highly on account of their singular picturesque appearance, and their large and exceedingly brilliant colours; while it is a fact that the demand for them from all quarters is very considerable, and has been increasing of late. They are unequalled for groups in mixed borders or conspicuous places in front of shrubs, and they also prove very ornamental if planted in hanging baskets or other hanging ornaments. The variety in this class is very limited, their colours ranging between deep red and pure yellow, but they are, nevertheless, beautiful and attractive, and more particularly so those of decided colours, such as rubro major, luteo major, &c. Besides these classes of Tulips which I have mentioned and described, there are some sorts which are grown and sold under the name of botanical Tulips, because they do not quite belong to the classes I have spoken of, but which are desirable for their particular property and beauty. *Tulipa Clusiana*, a small miniature Tulip; very beautiful. *T. florentina*, yellow, and very sweet-scented. *T. Oculus solis*, crimson, with dark bottom. *T. persica* or *Breyiana*, fragrant yellow; small flower, and very dwarf and neat. *T. Eichleri*, orange; of recent introduction. *T. Greigi*, light orange, with blotched foliage; also of recent introduction. *T. Haageri*, red. In the botanical works are found several more names of Tulips which are not in general cultivation, probably because they do not attract the eyes of florists by their beauty or other properties.

CULTURE OF THE TULIP.—The best soil is a rich, rather light, well-drained sandy loam. A bed of sufficient size for planting the bulbs should be dug at least 12 inches or 14 inches deep. The Tulips should then be planted 4 inches apart each way, pressed deep enough to keep them in their places and covered to the depth of 3 inches on the sides of the bed and 5 inches in the centre. This precaution is necessary so that water may not stand on the bed during the winter. When the bed is planted and covered, it may be left to the weather until the Tulips come up, or about March 1. A slight protection of litter is then required, as the frost, if severe, has a tendency to check the bloom. Our climate is so variable that it will be well to cover at night and remove in the morning; but if

the foliage is left for a long time covered up it has a tendency to become drawn, and thus weaken the plant.

When the flowers are protected from the sun by a light canvas, the period of bloom may be kept up for three or four weeks. The colours are generally better if not shaded at all, but in that case the bloom, particularly in hot weather, would soon be over. Sometimes a single day's hot sun will completely spoil them. When the flowers begin to fade they should be cut away. Never plant Tulips in the same bed, or rather in the very same soil, for two or three consecutive seasons, or if such cannot be avoided, take at least 2 feet of the old soil out of the bed and replace by fresh material. If this is not done the Tulips will bloom less satisfactorily every year, and at last not bloom at all. I know that very often this has been the cause of great disappointment to buyers, who blame, although erroneously, the seedsmen or the grower who has supplied them.

HERBACEOUS PÆONIES.

IN THE GARDEN, June 1 (pp. 512, 513), "D. K." describes certain herbaceous Pæonies. With several of his remarks and classification I do not agree. I will first deal with his classification. *Pæonia officinalis lobata*, so called by Mr. Baker in his able and much-needed monograph, "D. K." sets up as a species, and says it is perfectly distinct as a garden plant. It is certainly distinct enough, and is also one of the most beautiful of Pæonies, but still it is only, in my opinion, a variety of *officinalis*, as all well acquainted with it will admit. Now, as regards "D. K.'s" remarks, he gives *P. officinalis*, the type, and *P. o. anemonæflora* as if they were two constantly distinct forms. At one time this I should have considered correct, but latterly I find that the flowers of the typical *officinalis*, when the plants are grown well, assume more of a double form (hence the name *anemonæflora*), but as soon as the soil in which the plants are growing gets exhausted, the flowers gradually appear in their normal characters. *P. o. albicans*, the type, "D. K." says, is not so free as *P. officinalis fl.-pl.* With me it grows quite as freely, but the flowers are scarcely so large. *P. o. blanda*, "D. K." says, "flower-stems reddish." This is rather misleading to individuals who wish to identify their own plants. *P. o. blanda*, as far as I am acquainted with it, has a perfectly light green stem, as "D. K." will find on again looking at his specimen—at any rate if his plant is in a thoroughly healthy state. *P. o. carnescens fl.-pl.* "D. K." speaks of as having been first recorded by Morrison about 1699; this I know nothing to the contrary about, but under the above name and also the following five, viz., double pink, double rose, both from one source, *incarnata fl.-pl.*, *mutabilis*, and *rosea fl.-pl.* Under all these names I find this one form, which corresponds in colour to one in the Botanic Gardens, Oxford, under the name of *P. officinalis rosea fl.-pl.* *P. officinalis Sabini*, "D. K." says, differs but slightly from *officinalis* type, but in this I disagree. *P. o. Sabini*, received from the Oxford Botanic Gardens, and still in my charge, differs from *officinalis* type botanically more than any other form of *officinalis* that "D. K." mentions, and I will even go so far as to say that it is not merely a form of *officinalis*, but a hybrid—a hybrid which I prefer to class along with the forms of *officinalis* for horticultural purposes, but which, from the character of the growth and root structure, may have been a cross between *P. officinalis* type and a red form of the *albiflora* section. "D. K." says it blooms earlier, and that the shade of the flowers exactly corresponds with that of the double red. This, I admit as far as *P. officinalis* type and *P. o. fl.-pl.* are concerned, but *P. o. Sabini* flowers a few days later and has blooms of a lighter crimson shade, bolder and finely incurved petals, and is superior to *officinalis* in its normal character.

E. APPLETON.

St. John's, Worcester.

Clematis montana and Red Hawthorn.—Here a piece planted some years ago has nearly monopolised a large red Hawthorn, whose rosy

flowers appear along with and through the Clematis and make a lovely picture. The Clematis now covers a space of about 20 square yards, and is rapidly increasing.—GREENWOOD PIM.

Spiræa palmata alba.—This *Spiræa*, the counterpart, except in colour, of the well-known *S. palmata*, proves itself to be a worthy companion to the typical kind, and under glass flowers equally well. Here, in Surrey, the situation is too dry to admit of this *Spiræa* showing its charms to the best advantage when in the open ground, but in pots and just brought on in a cool greenhouse they are magnificent. As soon as the roots are in active operation copious supplies of water must be given, and at no time should they be allowed to suffer for want of moisture. This white-flowered variety is so beautiful when in flower, that in time, no doubt, it will be as extensively grown as the typical form.—T.

Saxifrages.—Amongst the Aizoon group none are at present equal to the charming *S. Macnabiana*, said to be a hybrid between *S. cotyledon* and *S. Hosti*, though on close and microscopical examination I fail to see any resemblance to the former. The typical *S. Hosti* resembles it both in leaf and flower characters, the only difference being in the number and intensity of the spots. When we consider the rapidity with which plants are improved now-a-days, it will not be hard to believe that *S. Macnabiana* is nothing but a very fine form of *S. Hosti*. Be this as it may, it does not in the least detract from the value of this plant. The large purple-spotted flowers are charming, and their profuseness, together with the ease with which it can be propagated by offsets, add greatly to its value. It does well in the ordinary border, with the simple precaution of a few stones round the collars of the rosettes. We have also found it flower well in pots, and in this way it will be a most useful addition in the greenhouse and conservatory, simply wintering the plants in cold airy frames during the winter and the spring. *S. cochlearis*, *S. lingulata*, and its varieties *lantoscana* and *superba* are very showy, as well as the rather rare *S. Kolenatiana*, with pinkish flowers.—K.

Early-flowering Gladioli.—Growers of these are so confining themselves to the pretty white form of *Gladiolus Colvillei* as to overlook the fact that there are others quite as worthy of cultivation, and presenting charming hues of colour. I saw early-flowering varieties in bloom at Reading a short time ago. The following were extremely pretty and very free, as three bulbs in a small pot had produced between them five and six spikes of bloom, and had they been in larger pots and afforded more root room, there is no doubt they would have flowered more freely. The best method of culture appears to be to put three bulbs in a pot in September. Keep them in a cold frame during autumn and winter, and then allow them to flower naturally. They can also be forced in the same way as the white variety. The collection includes *Fire King*, brilliant scarlet with pink and magenta flakes, showy and distinct; *Delicatissima*, white, delicately suffused with satiny pink; *Blushing Bride*, white ground, with crimson markings on the lower segments; *Rosy Gem*, clear bright rose, very free; and *The Bride*, the well-known pure white form. The first three being new varieties are not yet cheap in price, but once obtained they can soon be increased. One caution is necessary—fresh potted bulbs, if potting is not done until late in the year, should not be exposed to the action of sharp frost, or they are in danger of being destroyed. Perhaps the safest thing to do would be to plunge the pots in *Coccol fibre* if they are wintered in a cold frame.—R. D.

Wild gardening in Derbyshire.—I wish to note that the Belvoir Castle yellow Polyanthus is the most vigorous of its race, and can take care of itself almost anywhere. That American Wood Lilies can have too much shade (mine have no sun at all). It makes them lanky and drawn up. That *Hepaticas* thrive admirably on banks in a wood. *Cyclamen Coum* and *hederaefolium* will stand much shade if the drainage is good. That London Pride will

drive almost any weed before it in a wood. The same is almost true of the native Pulmonaria. Fine varieties of the common Columbine, good in wood, but far finer in kitchen garden. Campanula glomerata holds its own in a wood, with not much shade. Peonies, properly planted, master the coarsest woods. Lupines and Oriental Poppies thrive vigorously, or, rather, the former do, among weeds; therefore, if the weeds are removed, and wood Forget-me-not planted as a carpet, the effect should be good. Sidalceas, especially candida, thrive well in woods; weeds have no chance with them. Spiraea Aruncus in damp spots in woods very graceful, though scarcely as bulky as in borders. Monarda didyma does well in woods; Heuchera sanguinea I have not tried in the wild garden, but believe it will thrive anywhere. I have not yet found a position where it will not grow. Czar Violets grow in the woods more satisfactorily than in the borders, where frequent division is required. They have to fight with coarse Grass here. I have not room for more. But the destruction of Crowfoot and another weed that smells abominably requires great patience and assiduity in places where they are indigenous. — G. H. C.

The sun and the Poppies.—Certainly the flowers that love a grilling are having a "good time." But the high temperature and burning sun (rarely veiled by cloud) of the last week or more has shown how few flowers can bear it without showing some signs of distress. The Oriental Poppies seem least of all able to withstand it. The flowers that open in the morning are burnt white for half the depth of the petal by midday, and the next day nothing is to be seen but a little blackened rag. The variety bracteatum stands better, perhaps from the greater thickness of the petal. The early-flowering Clematises are much burnt; Tea Roses are bleached after their first hour or two—Fortune's Yellow turned to a washy pale buff, and all flowers go off as if in a hurry to get out of a world much hotter than they expected. — G. J.

SHORT NOTES.—FLOWER.

Antirrhinum asurgens—A good plant for dry walls. I notice that the bees are very fond of it.—W. B. H.

The Columbines are now in great beauty, and standards of yellow Austrian Brier crowded with blooms resembling those of Vase d'Or Potentilla.—W. B. HARTLAND, Cork.

Tufted Pansy, from Mr. Christison, Homewood, (this is the best, is of a pleasing colour, fine white, with purple-striped centre. It might be called Homewood if a better name cannot be found for it.

Double Pyret'rum Mont Blanc. This is one of the best of the double varieties, the flowers of rose shade, perfectly double, and pure white. It is largely grown for cutting.—E.

Alpine Pink (Dianthus alpinus).—This now brightens the rockery at Kew with its beautiful rosy pink flowers. When planted between Moss-covered stones, the effect is very pleasing.—E.

Armeria Lauchiana.—We noticed a tuft of this rare Thrift on the rockery at Kew. It is of the same character as our common Thrift, but the flowers are of a very bright rosy pink, and produced in a smallish head on stems from 4 inches to 6 inches high.—T. W.

Bletia hyacinthina.—This is flowering now, and when provided with a sheltered nook where the soil is of a moist, peaty character, it will live during ordinary winters. It makes a pleasing subject for the greenhouse; the flowers purple and produced with moderate freedom.—T. W.

Mont Blanc Pyrethrum.—A line of this over 300 feet in length is very beautifully backed with tall Delphiniums, oriental Poppies, white Rockets, and dark Peonies, &c.; grand to cut from. Is there a better form of double white? —W. B. HARTLAND, Cork.

White Fraxinella.—One of the noblest of border flowers; of long endurance, both cut and growing, and of clean, vigorous, and yet compact habit. Though beautiful in a border, and mixing well with any plants, it is perhaps best in a quiet corner by itself, where its dignified beauty may be enjoyed without distraction.—G. J.

Codonopsis ovata.—A pretty and interesting relation of the Bellflowers, with neat habit, and numbers of modest-looking, grey-lilac flowers, curiously ornamented inside with strong orange colour and black, and purple veining. The plant has one drawback—a strong smell, that may be pleasing to fox-hunters, but that the rest of the world would probably agree in calling nasty.—G. J.

Rock Pinks.—Most useful for covering spaces of bare ground are sheets of these neat little Pinks, presumably hybrids of cæsius and superbus; in great variety, but all pretty and sweet-scented. Among them this year has appeared a good double, of a pink colour, approaching the

common white garden kind in general growth, but with the edges of the petals in rather large, distinct blunt notches, that give the flower a look of some importance.—G. J.

Tufted Pansies.—These are used with excellent effect in Mr. Samuel Barlow's gardens, at Stakehill, Manchester, where they are employed to form single lines to beds and borders of Rhododendrons and other hardy plants. In the cool moist soil of the Stakehill district they root deeply, grow strongly, and flower freely all the summer, and scarcely a single plant is lost. A few fine and distinct fancy varieties, some of the best of the English show varieties, and a few of the most distinct of the Violas are most effectively employed. Some of Mr. Barlow's large clumps of Rhododendrons are raised above the level of the Grass plot, and under the shade of the outside branches, Mr. Barlow plants choice seedlings of gold-faced Polyanthus. The situation being cool and shaded, the plants make free growth and bloom in the best form, when the most promising varieties are marked and lowered the following season in order to test their value against named varieties.—R. D.

Indian Primulas—In THE GARDEN, June 18 (p. 552), the letter of Mr. Douglas on the Himalayan Primroses is, to me, most interesting and instructive, interesting because I, too, sowed in January, 1886, about twenty packets of seeds from India, each labelled with the name of some Primula or Androsace, and with nearly the same result as Mr. Douglas. The instruction I get is that the yellow Primula japonica, of which the seed came amongst that labelled elongata, is really P. prolifera (Wallich) syn. imperialis. I have only one plant, and now I have compared the characters in Hooker's "Flora" I stand corrected. I much fear that I weeded out other seedlings supposing them to be P. japonica, of the seed of which my soil is full. P. geraniifolia I flowered and discarded; it is too like the shabby P. mollis, and both resemble inferior forms of P. cortusoides; at least, they will never make good outdoor plants, and are not worth house room. P. bellidifolia, which a friend has now sent me, did not come up amongst my two forms of P. capitata, both of which are distinct from three or four varieties of that species I had before; one has a small dark purple, half-closed corolla and narrow upright leaves, and flowers in spring; the other has broad pro-cumbent leaves and a large truss of paler open flowers, and flowers in autumn. P. glabra, P. pusilla, P. sapphirina, poor things at the best, died in winter. Two or three unknown species are now growing, and I hope will flower next year. I find one, P. reticulata (true to character), which had tried to flower, but the slugs had eaten off the corolla. I did not succeed in finding any P. Kingi. The seed produced only P. sikkimensis.—C. WOLLEY Dod, Edge Hill.

Hardy Azaleas in bloom.—These Azaleas under suitable conditions may be relied on to furnish a wealth of flowers which will not be surpassed, if equalled, at this season by any other class of shrubs. There is among them a great wealth of colour, the blooms varying from white to bright crimson. One character in particular that places them ahead of their gorgeous allies, the Rhododendrons, is the pleasing fragrance of their blossoms. It is by no means strong, yet when there are several specimens together, especially early in the morning, the scent is most agreeable. For some reason they are not planted so largely as one would suppose, for it is commonly believed that peat soil is absolutely necessary for their well-doing; but such is by no means the case, as they will grow very well in loam, especially if it be lightened by an admixture of leaf-mould. The principal consideration is that they are so situated that the soil is always moist, even during the heat of summer, for without this they will not thrive. There have been of late years some valuable acquisitions to this beautiful class of plants, yet for all this many of the old kinds are magnificent, such, for instance, as those that used to yield such a grand display at the once prominent Fulham Nursery, and those that are still the principal attraction at Kew during their flowering season. Besides their beauty as outdoor shrubs, these Azaleas are among the most useful of any for

forcing into bloom, as from their dense mass of roots they can be readily lifted without injury, and after flowering again planted out. The flowering season of these Azaleas is spread over a considerable period, commencing with A. rhombicum and a near ally, Rhodora canadensis, both with purplish flowers, that are among the first to expand of any hardy shrubs; then, after the bulk is over, comes A. occidentalis and the many late-flowering hybrids raised from this.—T.

Eremurus Korolkowi.—I forward you one of two spikes of the above. The flowers have faded almost as fast as they have opened in the bright sunshine we have had. They seem more curious than pretty. The stamens are very conspicuous and keep bright for days after the flowers fade. I believe it has been stated that this plant has not been known to flower in England. There should be no difficulty about its flowering from the appearance of the plant here, which is growing in ordinary garden soil, and gets no shelter except from some shrubs at the back of it.—JOHN C. TALLACK, Livermere.

* * We quite agree not a pretty species, so far as we can judge. Some of the kinds are particularly beautiful, such as Eremurus Bungei.—Ed.

Motions of plants.—If written by an intelligent observer, an essay relating to the diverse motions of plants under various conditions would be exceedingly interesting. One of the most noticeable is the tendency of foliage to contract or gather together at night. I have remarked that feature particularly both in Potato and Tomato plants, and whilst hard to find any special reason for the motion in this country, yet the plant may have had excellent reason for it in its native habitat. Just now, for instance, Potato plants, when the leafage is gathered up at night, look 6 inches taller than in the day, when the foliage is fully expanded. Flowers also show many varied peculiarities of motion, not the least noticeable of which is their tendency to follow the sun in its diurnal course; that, however, seems to be dependent upon the sun's power of attraction. The closing up at night of many flowers is not so explicable, and is due either to absence of light, or to a power to exclude humidity or moisture. I have elsewhere mentioned Chrysanthemum multicaule, the flowers of which entirely close up at night, and their stems even bend somewhat so that the flowers become almost pendulous. On the other hand, the flowers of Chrysanthemum coronarium Sunbeam, a hybrid from that species, crossed with segetum, all droop their petals at night so much that the broad disc seems to shelter them entirely. On the other hand, the flowers of C. segetum with me remain expanded at night.—A. D.

Orchids v. hardy plants.—The resolution recorded in THE GARDEN (p. 476) by Mr. G. F. Wilson, of Weybridge, "that as his hardy and half hardy plants now take up all his available time, therefore his collection of Orchids will be sold at Stevens's on June 2," is, to my mind, a very significant example of the tendency of the time in flower gardening. Mr. Wilson gives the preference to the less pretentious, but equally beautiful, and in many ways more interesting hardy plants. I have often thought how different our gardens and pleasure grounds might have looked by this time if only the money that has been spent on Orchids had been expended on hardy plants. Imagine what displays we might have had if only Daffodils, Lilies, Primroses, and the like had been planted in sufficient masses everywhere, and which have now to be done piecemeal. The most folk can do at present is to indulge in small patches of things for the price of the really good things and the cost of remodelling our gardens to suit have rendered greater efforts unpracticable. A good many proprietors are following Mr. Wilson's example as regards the abandonment of the Orchids at least.—J. S.

* * The expenditure on gardens now is enormous, and all "J. S." desires may be secured by turning it in a more healthy direction. The outdoor garden deserves by far the most attention, but it would be a mistake to suppose that Orchids are not of high importance. It is true that many country gentle-

men are giving up their collections, but many more are adding to them, as the sales in London testify. Orchids are increasing in favour every day, and beautiful hardy plants in a far greater degree. It is also well known that beautiful Orchids once sold at very high prices are now frequently sold for less than one shilling apiece. On the other hand, there has been such a run on hardy flowers, that weak, wretched specimens are often sold at half-a-crown. We believe that the wonderful change in the price of Orchids is destined to make them extremely popular. In a climate like ours in winter the growth of beautiful things in houses rightly charms many people, and the thing is only to be regretted when everything else is pushed on one side, as if the world was meant to be covered with glass sheds.—Ed.

PROPAGATING.

HARDY SHRUBS.—A great many of our hardy shrubs can now be struck from cuttings, provided there are suitable appliances at hand for the purpose. The cuttings are formed of the current season's shoots, and as they are naturally very delicate they will require to be placed in a frame, and carefully attended to in the matter of shading, watering, &c. The shrubs that can be struck in this way include among their number Weigelas, Lilacs, Philadelphus, Deutzias, Hydrangeas, *Andromeda japonica*, *Choisya ternata*, *Hypericum*, and a host of others. A good time to take the cuttings is just as the young shoots lose somewhat their succulent character, but before they become really woody. In taking the cuttings it should be borne in mind that, in common with most other subjects, the weaker shoots will strike in a more satisfactory manner than the very strong ones. Unless a large number of any one kind is required the better way is to put the cuttings in pots, as by these means, when any particular kind is rooted sufficiently, it can be removed to more airy quarters; whereas if simply dibbled in the ground and covered by a frame some will strike quicker than others and need exposure, while others will not be rooted. By putting them in pots this inconvenience is entirely prevented. About 4 inches is a good length for most cuttings, and generally it is better to cut them off clean at a joint, removing just sufficient leaves for the purpose of insertion. A very convenient sized pot for the purpose is one 5 inches in diameter, and it should be drained with broken crocks for about one-third of its height, the remaining space being filled with soil, leaving, however, just space enough for a thin layer of sand on the top. A very good compost for the cuttings is equal parts loam, peat or leaf-mould, and silver sand, the whole to be passed through a moderately fine sieve. The soil will need to be pressed down firmly, being finished off by placing sand on the top; it is better if lightly watered through a fine-rosed pot, as then it is much easier to dibble in the cuttings. In putting in the cuttings, overcrowding must be guarded against, and as the pots are filled a thorough watering must be given, when they can be placed in a frame prepared for their reception. In choosing a frame for the purpose care should be taken to see that the lights fit closely, and if so situated that it is slightly shaded from the full rays of the sun, so much the better. If the frame is at all exposed to the sun, it must be shaded by means of mats, and at the same time kept quite close. The lights may be taken off every morning for a little time, when the state of the soil can be ascertained, and any cuttings that require it may then be watered. At the same time this affords a good opportunity to remove any signs of decay that present themselves, for in such a close atmosphere it rapidly spreads, and will soon carry off great numbers of cuttings. In speaking of a shady spot for the frame it should be borne in mind that at the same time a light position must be chosen, and, if shaded by trees, where it will be quite clear of the drip from them. From a month to six weeks will suffice for most of the different subjects to root, and the best way then is to pot them in small pots, and if a frame is available, replace them there for a week or two till root action

recommences, when they may be plunged out of doors in as sheltered a position as possible, and the following spring planted out. With regard to the soil, it may be noted that for most Ericaceous plants sandy peat is preferable to the compost above mentioned. A great many shrubs will not be sufficiently advanced yet to furnish cuttings, but some will be, especially those growing in sheltered spots, so that attention must first be directed to such as these, for when once the shoots are in a suitable condition, they soon (should the weather be hot and dry) become too hard. Besides the subjects above mentioned, the different evergreen kinds of *Euonymus* all root well in this way, and so does that ever popular climber, *Veitch's Ampelopsis*. In the case of this last it will root in less than a month, but to succeed well the young plants should be wintered in a cold frame, as if they stand outdoors during the first winter the weaker growth is often killed back for some distance. Another shrub that does very well with me treated in this way is that grand variety of the *Pyracantha Thorn*, known as *Lelandi*, for, being in want of a quantity, I last year put in a number of cuttings, and had the satisfaction of seeing them nearly all rooted before winter. They were allowed to remain in the store pots till early in the spring, when they were potted off, and last month planted out. A great many of these hardy shrubs can be struck in the open border without any glass appliances whatever, but by summer striking the greater part of a season is gained, and, what is often of much importance is, that under glass the cuttings can be made a great deal smaller, and in the case of a new or slow-growing shrub this is a great consideration.

HARDY HEATHS.—The majority of these beautiful low-growing shrubs can be propagated to a limited extent by division, especially where a specimen has been planted rather deep; but the Tree Heath does not admit of increase in this way, so that it is necessary to strike them from cuttings, and that is the principal method available for the propagation of any of them where considerable numbers are required. The treatment needed is much the same as that for the greenhouse varieties—viz., select as cuttings the tops of young shoots, and after stripping off the bottom leaves dibble them into pots of sandy peat. A length of 1½ inches to 2 inches is very suitable for the cuttings, and the leaves should be stripped from nearly one-half of that length. The leaves must be cut off carefully, so as not to bruise or injure the bark in any way, and the cuttings dibbled in quickly. To allow this the pots must be prepared beforehand, by filling them to within a couple of inches from the top with crocks, then over this place fine sandy peat pressed down very firmly, with some pure sand on the top. The cuttings succeed best if covered with bell-glasses, but where there are none at hand a very close frame must be chosen for their reception. From the delicate nature of the young shoots, the better way is to cover them with a bell-glass, and after that place them in a frame, as by the double covering a more regular state of moisture is maintained. Seeds of many hardy Heaths are often available, and of course young plants can be raised in this way. From the minute character of the seeds, they should be sown in well-drained pans of sandy peat, the covering consisting of a slight sprinkling of silver sand. If a pane of glass is laid over the pan, the soil is always kept moist and the germination of the seeds therefore much assisted. When the young plants are large enough to handle they may be pricked off into other pans, using much the same soil as before. By sheltering them with a frame during their earlier stages, they make much more rapid progress than if placed out of doors so soon.

BRAMBLES.—The beautiful double-flowered Brambles form such conspicuous objects during the latter half of the summer, that a note as to their ready propagation may be of interest. They can be easily increased by pegging the points of the young growing shoots to the ground, when they will soon root and form a base from whence other shoots will be pushed up. This mode is available for all the rambling-growing kinds of Bramble, which, strange

to say, hardly ever root except at the points of the branches.

TECOMA RADICANS.—As an illustration of the readiness with which this climber can be propagated by root cuttings, I may mention that last autumn, having occasion to remove a specimen against a wall, some of the roots were broken during the operation, and already a number of young plants are making their appearance, some of which have their origin from a piece of root not more than an inch long and no thicker than a straw. Though well known that this *Tecoma* can be readily increased by root cuttings, treated as they usually are, I never before noticed such rough-and-ready treatment of the roots to yield such good results. T.

GARDEN FLORA.

PLATE 602.

AUTUMN OR WINTER DAFFODILS.

(WITH COLOURED PLATE OF *STERNBERGIA LUTEA* AND *S. ANGUSTIFOLJA*.)

The accompanying plate represents a class of bulbs to which far too little attention is given at the present time, and for this lack of interest the uncertain character of our late autumn and winter months has, no doubt, much to do. The yellow Crocuses help at present to carry us through the dull months, but the flowers of the *Sternbergias* are of much firmer texture, and thereby are able to withstand a far greater amount of bad weather than the Crocuses, and in consequence are better adapted for our climate.

One great source of failure with these bulbs, and with many others of a like nature, is the fact of their being frequently grown in such positions as to necessitate their being disturbed at the wrong time or before growth has fully developed. In one or two gardens we have seen these grown in flower borders and lifted early to make room for bedding plants, and the wonder was that they never flowered. What these *Sternbergias* want chiefly is, thorough ripening in summer, and a slight protection, such as dry litter, &c., during the winter. It will depend upon the nature of the soil, as well as the position in which they are grown, whether they will have to be lifted or not. If the soil is heavy and clayey, the best plan will be to lift them when the leaves have died down and let the bulbs ripen, in the same way as *Anemone fulgens*, &c. In light sandy soil and fully exposed to the sun's rays they will in all probability get the necessary ripening without being lifted, and in this case the only plan will be to leave them undisturbed until the bulbs attain flowering size.

The species, as described and arranged by Mr. Baker, are as follows:—

S. COLCHICIFLORA.—This is one of the old garden plants, having been cultivated long ago by Clusius and Parkinson—by the first as *Narcissus persicus*, and by the latter under the name of the lesser autumn or winter Daffodill (*Narcissus autumnalis minor*). Parkinson in his "Paradise," says "that Clusius setteth down that the manner of the flowering of the lesser Daffodill is more like unto the Persian Daffodill than unto the great autumn kind." This has since been confirmed by Mr. Baker, including them both under the above species. M. Bieberstein, who was well acquainted with the locality of this species, describes it as possessing the most delicious fragrance, and perfuming, with its Jessamine-scented flowers, the fields of the Crimea, especially about the Bosphorus. The leaves are narrow, linear, and produced along with the fruit in spring. The flowers appear in autumn at about the same time as those of *S. lutea*, perianth segments

* Drawn for THE GARDEN in Mr. Geo. Paul's nursery, at Broxbourne, November 20, 1886, by H. G. Moon, and printed by G. Severeys.



nearly 1½ inches long, and of a very pleasing pale or sulphur yellow. It is found on dry exposed positions on the Caucasian Mountains, Crimea, &c., and is perfectly hardy in this country, treated in the same way as *S. lutea*. *S. dalmatica* and *S. pulchella* are varieties.

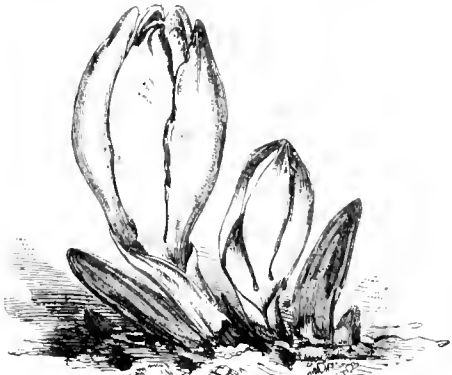
S. CLUSIANA (Ker, not Boissier).—*Narcissus persicus* (Clusius), *Amaryllis citrina*, *A. colchiciflora*, *S. atnensis*, and *S. Schuberti* are synonyms.

S. FISCHERIANA is nearly allied, and has the habit of *S. lutea*, from which it differs chiefly in flowering in spring instead of autumn, and by its stalked ovary and capsule. It is a native of the Caucasus, perfectly hardy in this country, and is the *Sporanthus Fischerianus* of Herbert's "Amaryllidaceæ," 46.

S. LUTEA.—This is the great autumn or winter Daffodil (*Narcissus autumnalis major*) of Parkinson, and of which he says:—

The great autumn Daffodil riseth up with three or four fair broad and short leaves at first, but afterwards grows larger of a very deep or dark green colour, in the middle of which riseth up a short, stiff round footstalk, bearing one fair yellow flower on the head thereof (inclosed at the first in a thin skin or husk), and consisteth of six leaves, as the former with certain chives in the middle as all or most other Daffodils have, which passeth away without show of any seed or head for seed; although under the head there is a little green knot which peradventure would bear seed if our sharp winter did not hinder it. The root is great and round and covered over with a blackish skin or coat.

The absence of seed on this bulb in a cultivated state is rather remarkable, seeing how plentiful it is and also how profusely it flowers in many parts of the country. The only seed we have yet seen has been obtained from dried specimens collected in the neighbourhood of Palestine. The same ex-



Mount Etna Lily (*Sternbergia etnensis*).

perience has been recorded by Dean Herbert in his "Amaryllidaceæ," where he says:—

It is strange that no writer has described the seed of this plant, which is much cultivated, nor have I ever seen it. Hill speaks of sowing the seeds in beds as if he had readily obtained it, and asserts that the seedlings vary much in the shade of yellow, and he gives a figure of a double variety, which is probably lost. The only variation which I have seen is a narrow and a broad leaf, hardy, but the bulbs often rot with me in the open ground if the summer is wet; probably they should be taken up and dried when the leaf decays.

From the above it will be observed that Parkinson and Herbert agree with regard to these plants; difficulties of climate, &c., have had to be overcome then, as now, before success in any form could be attained. Our experience leads us to the conclusion that the bulbs must be large before they will yield flowers freely, and, as is usually the case with imported bulbs, they are generally small and will take a year or two to attain flowering size. *S. lutea*, well represented in the accompanying plate, has five or six leaves, about half an inch broad, about a foot long, and produced at the same time as the flowers in autumn and winter. It is the *Amaryllis lutea* of the *Botanical Magazine* (290), *Oporanthus luteus* of Herbert's "Amaryllidaceæ," and is supposed by some writers to be the Lily of Scripture, as it grows abundantly in the vales around Palestine, &c.

S. ANGUSTIFOLIA (see coloured drawing to the right of *S. lutea*) appears to be merely a narrow leaved form of the type; it is very free-flowering,

and grows rather more freely than *S. lutea*. *S. graeca*, from the mountains of Greece, has very narrow leaves and broad perianth segments. *S. sicula* is a form with narrower leaves and segments than the type, while the Cretan variety has considerably larger flowers. Native of the Mediterranean regions.

S. MACRANTHA.—This is a really handsome species, though comparatively rare in cultivation as yet. The leaves are blunt and slightly glaucous, about an inch broad when fully developed about midsummer, flowers bright yellow, produced in autumn, the tubes somewhat cylindrical, 2 inches long, segments oblong, 1 inch to 1½ inches broad, with stamens about half their length. A native of Palestine, Syria, Western Persia, Asia Minor, &c. It has also been known under the names of *S. latifolia*, *stipitata*, and *Clusiana* (Boissier, not Ker).

D. K.

STOVE AND GREENHOUSE.

T. BAINES.

LILIUM UMBELLATUM.

THE Lily season commences with the flowering of the different forms of this Lily known either as *L. umbellatum*, *L. bulbiferum* or *L. davuricum*. They are all characterised by large heads of upright, mostly cup-shaped flowers, varying in colour from reddish orange to deep velvety crimson. This Lily is of very easy culture, and large numbers are imported into this country from Holland at a very cheap rate, and are readily sold either for pot culture or for planting in borders. It may be relied on to flower the first season after planting, which is by no means the case with all, a noticeable example of which is *L. monadelphum*, which I have never yet succeeded in flowering satisfactorily the first year it was planted. Some eighteen months ago I planted a clump of this Lily, and all I saw of it last season was a few leaves, that just pushed through the soil and then died down again. This year, however, all the bulbs here pushed up strong spikes, and have several flower-buds. *L. umbellatum* differs widely from this; for even if bulbs had not been potted or planted till the early months of the new year, they will be now in full bloom. They are better, however, if potted before Christmas, as then the roots have plenty of time to take a good hold of the soil; consequently, the stems are stouter, and the flowers better developed than if the potting was delayed later. If the soil is at all light, the bulbs should be planted 6 inches below the surface, but in stiff loam or in pots they need not be buried quite so deeply. A very good plan either in potting or planting is to surround the bulbs with sand, in order to carry off any accumulation of moisture around them. These Lilies do best when treated as Hyacinths or Tulips, viz., potted in good soil, placed on a drained spot, and covered with ashes till the tops push through the soil, when the covering must be removed. As the pots get full of roots an occasional watering with liquid manure will be of service. Sometimes aphides will attack the young buds when about half grown, but that seldom happens, though should it occur, the pests must be at once removed by dipping in tobacco water. T.

Cereus C. M. Hovey.—A great many Cacti merit more extended cultivation, from the beauty of their flowers as well as from their easy cultivation. None of them are more showy than *C. speciosissimus* and its varieties, of which *C. M. Hovey* is one. Of this I obtained a plant six years ago through seeing a coloured plate which at that time appeared in THE GARDEN, and since then it proved that the distinction was thoroughly merited. The blooms are much like those of *C. speciosissimus*, except in colour, which in this variety is a kind of vivid scarlet, flushed with violet-purple. No description could do justice to the peculiar satiny sheen that overspreads the flower, and the brilliancy of its colouring seems to be further enhanced by the cluster of stamens in the centre of the flower. Besides this, we have in bloom *Phyllocactus crenatus*, with large, sulphur-coloured blossoms, which, from their distinct tint, are very noticeable among their brighter-coloured asso-

ciates. Plants of these flowering Cacti, and more especially *C. speciosissimus*, may often be seen in cottage windows in rude health and bristling with flower-buds. Where glass structures exist, a shelf near the roof, or in some such spot where few plants would thrive, is just the place for this class of plants; and they do well in a mixture of good loam, broken brick rubble, and sand, with a little dry cow manure. When in full growth they must be fairly supplied with water, but afterwards they may be kept somewhat drier in order to thoroughly ripen the young growth. In winter they may be kept almost without water, giving them just enough to prevent shrivelling. Pieces of the branches, taken off at any season except in the depth of winter, potted in the soil above recommended (but less rough than for established plants), and stood on a shelf, will soon root.—H. P.

MIGNONETTE CULTURE.

THOSE who require fine plants of Mignonette for autumn and early winter flowering ought to make two sowings of seed, the first one about the middle of June, and the second about the middle of July. For several years I have adopted the following method, and have always found it answer satisfactorily: Take as many 6-inch pots as there are specimens required, and after draining them well fill to within an inch of the top with a mixture of loam and rotten manure well broken up; press it down rather firmly and sow the seed thinly, and cover lightly with finely sifted soil. Place them in a shady place, either in a frame or under hand-lights. After the seedlings are up give more air night and day. The plants will soon become strong enough for the first thinning to take place, which should consist of the weakest plants. In a short time a second thinning will be required, leaving from nine to eleven of the strongest plants at regular distances over the surface of the pot. These may be allowed to grow until they have rooted well, but at the same time they must not be allowed to get pot-bound, as if so, the stems become hard; they will attempt to bloom, and their future growth will be checked in consequence. At this stage they will be fit to put into the pots in which they are intended to flower. This large shift is necessary, because Mignonette does not thrive well when frequently shifted. I use 11-inch or 12-inch pots, inside measurement. They should be perfectly drained and quite clean. As to soil, I have tried several mixtures, but have found none to equal turfy loam twelve months cut and decayed, and which has been frequently soaked with farmyard liquid manure. This will, without any addition, grow the plants well. Pot them firmly and water at once, keep the sun from them, and stand the plants outdoors on a cool bottom of ashes and protected from strong winds. Stake each plant firmly at first, and when they have grown an inch or two take out the top of every shoot; this will cause them to break 2 inches or 3 inches down the stem. These shoots in due time will need stopping and tying as the plants advance, until they have formed the outline of good specimens, when they may be allowed to flower. At the latter part of the summer, when the plants are taken under cover, they should have a light airy place in a greenhouse temperature. A caterpillar very similar in colour to the foliage and at first very small will commit sad havoc if not watched and destroyed. When the plants are well set with bloom a top-dressing of rotten manure should be given to them, and when the surface roots find their way into this, weak liquid manure should be applied twice a week, which will assist the plants when flowering, and give a good return for the labour bestowed upon them.

Folkington Manor.

THOMAS RECORD.

Greenhouse Rhododendrons.—In the list of greenhouse Rhododendrons given in THE GARDEN (p. 514) there is an important omission, for no notice of these beautiful plants would be complete without the bright-coloured perpetual-flowering *R. Duchess of Edinburgh*, as it is one of the finest of all the tube-flowered section, and of more bushy habit,

besides being more free-flowering than R. Davis' which, last, however, is well worth a place, but not to the exclusion of the other. As far as my experience extends, R. Duchess of Edinburgh and R. Princess Alexandra (blush) are the most continuous blooming of all the many varieties.—H. P.

Hoya bella.—The best position for this is, when treated as a basket plant, in the stove, as then the slender, drooping stems reach for some distance, and just now it forms a most beautiful object, for the whole plant is thickly studded with clusters of blossoms that nestle among the neat, dark green foliage. The individual flowers are star-like, and of a waxy texture, and remain in beauty a long time. Like the other members of the genus, this *Hoya* needs a good, open soil, and but limited root-room. Several of the *Hoys* are very desirable flowering plants, the good old climbing *H. carnosa* standing in the front rank, but for hanging baskets *H. bella* is the most useful.—H. P.

Sollya linearis.—Flowers of such an intense blue as this are by no means common among greenhouse plants, and on this account alone it deserves a passing notice. It is a medium growing climbing plant with slender wiry stems, narrow deep green leaves, and small drooping bell-shaped flowers of a beautiful clear blue colour. This plant, in common with the other natives of New Holland, needs the protection of a greenhouse, and there it may be employed for furnishing the smaller rafters as a screen plant, or trained around a few sticks and allowed to flower as pot specimens. By this last method nice little plants may be obtained in pots 5 inches or 6 inches in diameter, and when not larger than this, they will flower profusely, especially if struck from cuttings, for plants raised in this way flower in a young state more readily than seedlings.—T.

Pyramidal Rockfoil (*Saxifraga Cotyledon*). When well grown, this will push up a flower-spike 18 in. to 2 ft. high, and form a pyramid of pretty white blossoms. It is only within the last few years that it has been extensively cultivated, yet it has now become one of the standard plants among the London market growers. It is a plant of easy culture, but in order to obtain the best results the plants should be wintered in a frame free from drip, and when the flower-stems commence to push up be removed to a greenhouse. Loam, with a little sand and leaf-mould, will suit it well, and good specimens may be obtained in pots 5 inches in diameter. The plant, especially after flowering, produces in quantity offsets, by which it can be readily increased. Water during the winter months must be sparingly applied, and at the same time care must be taken that it does not lodge in the centre of the crown, as, if so, the future flower will be destroyed.—T.

SHORT NOTES.—STOVE AND GREENHOUSE.

Habrothamnus elegans.—This elegant climber is flowering profusely in the conservatory at Gunnersbury House. The specimen is in the most vigorous health, and, associated with clusters of the same graceful character, presents a pleasing picture.—C.

Fuchsia Monarch.—This *Fuchsia* is in bloom now in the greenhouse at Kew. Though an uncommon variety, it is well adapted for pillars and rafters in comparatively small houses, and *Fuchsias* might be more often used in this way than is at present the case. The flowers of this variety are large and well coloured.—E.

Canna iridiflora Ehemanni.—This is a most useful plant for the conservatory or greenhouse, its leafage being handsome and the flowers of a rich crimson. Those who have not yet grown it in pots should do so, as not only are the plants of noble appearance, but the individual flowers can be used with advantage in bouquets and epergnes.—E.

Diseased Marguerites.—I enclose you a few leaves of the above affected with some disease. It is since the plants have been put out that it has shown itself. Is there any cure for it, or would it be best to destroy the plants?—W. H.

Your plants are affected with the Marguerite Daisy fly (*Phytomyza affinis*), and the only way to get rid of the pest is to destroy the plants when they are badly infested.—Ed.

Ivy-leaved Pelargonium Madame Crousse. Although an old variety, still remains one of the best. We saw a fine batch at the Bush Hill Park Nursery of Messrs. Low. The plant grows freely, and produces a profusion of large trusses of rosy pink flowers, the colour bright and

telling. These double Ivy-leaved varieties will be found very useful for hanging baskets, and also do well when used for the decoration of window boxes.—G.

Terminalia elegans.—As Mr. Baines has drawn attention to this plant, cultivated under this name, I wish to know whether it has been flowered by him or anyone else. It is not a *Terminalia*, nor does it belong to the Order Combretaceae. It is, I believe, an *Aralia*, and this is shown by the fact that it may be grafted on plants of that genus. I have not yet been able to flower it, and I should be greatly obliged for a flowering specimen.—R. IRWIN LYON, *Botanic Gardens, Cambridge.*

Scarlet-flowered Skull-cap (*Scutellaria Mocciniana*).—We saw this recently making a brilliant display in the greenhouse at Kew. The flowers are rich scarlet and the leaves handsome. When the plants are judiciously used, they produce an agreeable effect; but flowers of quieter colouring should be intermixed with them, so as to tone down the vivid scarlet. It needs stove treatment, but plants, when in bloom, may be brought to the greenhouse without harm.—T.

ADENANDRA.

A GENUS of the Rue-wort family, nearly allied to *Diosma* and *Barosma*; the leaves of all these genera have a peculiar Rue-like smell, due to the strong volatile oil which they contain, and are used largely by the Hottentots to perfume their bodies; they are also used medicinally under the name of "Bauck." *Adenandras* are compact-growing shrubs, producing in profusion their handsome flowers. Pot in good fibrous peat and light loam in the proportion of three parts of the former to one of the latter, making the whole very sandy; drain well, and ventilate freely the structure in which they are growing. All are natives of South Africa.

A. FRAGRANS.—A much-branched, twiggy shrub, attaining a height of 1 foot to 3 feet, easily grown into a handsome specimen. Flowers terminal, but the young shoot usually starts into growth with the buds, and extends beyond them when open, which adds materially to the effect. Flowers showy, deep rose colour, and very fragrant. It blooms during May, June, and July.

A. SPECIOSA.—This species is also known as *A. umbellata*, *Diosma speciosa*, and *D. umbellata*. It is not so robust in habit as the previously described plant, and seldom exceeds 18 inches to 24 inches in height; stems reddish brown; leaves scattered (but closer together than is the case with *A. fragrans*), and fragrant when bruised. Flowers arranged in terminal umbels (destitute of the protruding young shoot) usually six to eight together; the buds reddish crimson, changing in the expanded flower to a delicate pink, the centre of each petal being streaked with red. It blooms during May and June.

A. UNIFLORA is a most desirable plant for greenhouse decoration. It is undoubtedly nearly allied to the preceding; the leaves of *A. uniflora* are similar to those of *A. speciosa*, but are smaller. Flowers solitary, nearly terminal, white, the reverse side pink. It blooms from April to July.

Rhodanthe Manglesi.—At one time this was considered to be a very difficult plant to cultivate in a satisfactory manner; but of late years it has been taken up by some of the growers for Covent Garden Market, the result being those beautiful little specimens that are such common features in London at the present time. The principal points to bear in mind in the cultivation of this *Rhodanthe* are, first, that plenty of fresh air is essential to its well-doing; and, secondly, it is very impatient of being disturbed at the roots. The specimens usually met with are in 5-inch pots, and generally the seeds are sown in the same pot as that in which they flower. This does away with the necessity of disturbing the roots, and as a further preventive, care must be taken, if they are on a stage in which there is any material they can root into, to see that this does not take place, otherwise when moved the plants will be greatly checked. In sowing it should be borne in mind that the young plants are to remain in the same pots, and consequently more space must be left for water than if the seedlings were to be potted off. The seed may be sown in the greenhouse about the end of February, and when the young plants are above ground plenty of air must be given—indeed, they may then be placed in a frame, but it must be one in which there is a gentle heat

for a time. If kept too close, or the atmosphere is too moist, mildew is very liable to attack the foliage, the best preventive for this being plenty of fresh air. As the plants progress, and consequently the pots become full of roots, weak liquid manure twice a week will be of great advantage. In addition to this mode of culture, the *Rhodanthe* may be sown at this time of the year in the open ground, and under favourable conditions it will flower beautifully towards the end of the summer.—H. P., in *Field*.

WORK IN PLANT HOUSES.

ACALYPHAS.—These variegated plants can be effectively used in several ways, especially *A. tricolor*; this looks well both associated with large-leaved plants, such as *Alocasias*, *Caladiums*, *Anthuriums*, *Cyanophyllums*, and also with flowering subjects. The *Acalyphas* are of free growth, and when kept in a warm stove attain a fair size in little time. It is not advisable to grow large specimens, as half a dozen of moderate size look much better than one single example. It is when the plants are in 4-inch or 5-inch pots that they are most useful; in some places they are largely employed for table decoration and for placing about in rooms, halls, &c., during the summer months. The little time required for striking cuttings and growing the plants large enough for the purpose last named renders these *Acalyphas* equally as useful as *Coleus*. To keep up a stock for use in this way the cuttings should be struck at different times. If some are put in now made of the points of the shoots, consisting of three or four joints with two or three leaves, they will root quickly, and be ready for use later on.

CALADIUM ARGYRITES.—This when in a small state is the best of all the *Caladiums* for rooms. Most of the large-leaved varieties are too vigorous, and they are not so well able to bear a lower temperature than that of the house in which they are grown. Suckers of *C. argyrites* that were taken off in spring and have since become established should be put in 4-inch or 5-inch pots. *Caladiums* will succeed in either peat or loam with sufficient sand to keep the compost porous, but when the plants are to be used for decoration or the leaves are required for cutting it is better to pot them in loam, as then the foliage acquires a little more strength and substance. When tender plants are required to be used in places where the temperature is considerably lower and the atmosphere drier than that of the house where they are grown, it is necessary to treat them in a way that will impart the most strength and solidity to them. It is essential that the plants be kept near the glass, and have as much light and air as possible consistent with their growth. When they are stood close to the glass they require more shade in bright sunny weather. Where cut flowers are much in demand a good stock of this *Caladium* should be grown; when treated as here recommended the leaves will keep fresh for a week or ten days, and there are few things that have a prettier effect when arranged with flowers of suitable colours. When required for cutting care must be taken not to remove too many of the leaves from the plants; one-half may be cut without the bulbs feeling much of the effect, but if more are taken it will do harm. When any of the larger-leaved sorts of these plants are used in summer in conservatories, sorts that have the most green colour in the leaves, such, for instance, as the old variety, *C. Wightii*, should be chosen, managing them in the way advised for *C. argyrites*.

CUPANIA FILICIFOLIA.—In this we have one of the most beautiful of all the hard-wooded plants that are grown for the beauty of their leaves, yet it is rarely met with. Now and then a large specimen may be seen staged in a competing group of fine foliage plants, but small or medium sized examples for the decoration of warm plant houses and for temporary use in living rooms are rarely met with. Its elegant Fern-like foliage is seen to the best advantage when the plants are confined to single stems, in which form this and other things of a like character should always be grown. When the plants get bare of leaves at the bottom they should be headed down; the best time for this is

early in spring before growth commences, as then there is time for the production of a crop of young shoots that can be struck and grown into nice little examples before autumn. Plants that were headed down will by now have pushed several shoots, which may be all taken off and struck, retaining the stools to admit of their producing a second lot, or, if some large specimens are wanted, a single shoot may be retained to each, which, if the roots are in good condition, will soon make handsome heads. The cuttings should be put singly in small pots half filled with sand and sifted loam, the rest all sand. Treated in the usual way, with heat, shade, and moisture, in a confined atmosphere they will form roots. When the cuttings have rooted sufficiently put them in 6-inch or 7-inch pots; these will not be too large, as this *Cupania* grows very freely. Place them where they will get ordinary stove heat, with plenty of light to give strength and substance to the growth, as if the leaves are wanting in this they will be proportionately shorter-lived. Shade from the sun, and syringe freely every afternoon until the autumn, when it may be discontinued, giving more air and keeping the atmosphere somewhat drier. After sufficient cuttings have been obtained the old stools may be discarded or partially shaken out, repotted in new material, and grown on. Loam with some sand added is the best for the plant, as it gives more solidity to the leaves.

SMALL CROTONS.—Amongst the different kinds of plants with variegated leaves that are adapted for house decoration there are few, if any, so effective as the Crotons, especially the varieties with narrow leaves that droop more or less, such as *C. Weismanni*, *C. Warreni*, *C. majesticus*, and the old *C. angustifolius*; the last-named is the best for the purpose, provided the yellow colour is well brought out. Those who have had much to do with the cultivation of Crotons cannot but have observed that there is generally much difference in the colour of the leaves on the different shoots on the same plant; in selecting shoots for cuttings, none but those that have well marked leaves should be chosen, as plants raised from cuttings that have too much green in the leaves generally continue to be deficient in colour. Now when the spring growth has been made, so as to show the colour of the foliage, is a good time for striking a stock; the cuttings will root in two or three weeks if kept in a brisk heat, close, moist, and shaded. They are best struck singly in small pots, as then there is no disturbance of the roots when the time comes for giving a shift. Little, or no shade is required by Crotons further than may be found necessary to prevent the leaves getting scorched, as the more they are exposed to light and sun the more colour the foliage will usually get. They are not particular as to soil; they will thrive in either peat or loam, but in loam the plants generally have the most colour. Being warm stove subjects it follows that it is only in the summer and autumn that they will keep in presentable condition in a living room. Plants struck now and kept moving until the end of the growing season will be in right condition for use next summer, and when to be employed in this way they should be confined to a single stem.

PANDANUS.—Several of the Pandanus, both the green and the variegated sorts, do very well in rooms during the warmer part of the year, keeping in good condition a much longer time than most things that require heat. The green-leaved species suitable for use in this way are *P. elegantissimus* and *P. graminifolius*. The variegated sorts are *P. Veitchi* and *P. javanicus variegatus*. With the two last named, as in the case of the Crotons, it is important that the suckers chosen should have their leaves well coloured, as the green ones often produced seldom show much disposition to become variegated. Suckers in suitable condition for striking may usually be had at this time. In severing them from the old plants, care must be taken not to bruise the base; strip off a few of the bottom leaves, and put them singly in pots large enough to hold them. A mixture of loam and sand in equal parts will be best to strike them in, and

bottom-heat, if available, will assist them to root. Shade slightly from the sun. As soon as they are well rooted, stand them as near the glass as possible. A good deal depends on this in the ability of the leaves to bear the treatment to which the plants will ultimately be subjected. When they require a shift no larger pots should be used than are necessary, as in all cases when to be employed in the manner under notice, the smaller the pots the better the plants look.

CYPERUS.—Before growth commences is a good time to propagate these plants, but if there is any deficiency of stock the work may be successfully carried out now. Stock propagated now should be large enough to use next summer. In dividing established plants it is not well to reduce the pieces too small, as if this is done, it takes a long time to grow them to a useful size. Care should also be taken not to mutilate the roots more than necessary. Loam is preferable to peat for these plants especially the variegated sorts, as they generally come better coloured in it than in peat. Give pots large enough to hold the roots without unduly compressing them. Kept warm and a little close, with shade, they will soon get established; afterwards give abundance of light so as to keep the foliage stout and to give colour to the variegated varieties. The green forms of *C. alternifolius* and *C. latus* are both useful plants, but the variegated varieties of each are most prized. *P. latus variegatus* is a desirable sort, not so well known as it deserves to be.

T. B.

WATERING.

WHEN in a large market plant-growing establishment recently, I observed men engaged watering the plants in the houses and frames with the greatest impartiality by means of small hose attached to the water company's mains. It is a rough-and-ready method of doing work, which the great heat then prevailing rendered absolutely needful, but which still treated all plants alike, or possibly, in the effort to do so, left some indifferently moistened. However, there was this to be said in regard to the plants, all seemed to thrive under this mode of watering. The market grower, who has perhaps 100,000 or 200,000 plants to water, can hardly be very particular. The work must be done quickly, and there is little time for discernment. But then in many cases market plants are of a quick-growing, rapidly-absorbing kind, and are not too nice about their root dosings. They may find all the best elements of growth in light, airy houses, good soil, and small pots, and are indifferent to coddling; whilst private gardeners will make a fuss and bother about a few score of plants, and in the end, with all their fuss and bother, half-kill their plants; in fact, half-killing them with excess of kindness. The inference seems to be that kindness ill-placed is more destructive to plants than is rough-and-ready cultivation. It is certain that in no private places are plants produced so well, and so well, too, under such apparently disadvantageous conditions, as they are in market plant nurseries, and that seems evidence in favour of a free hand in watering. But whilst we are discussing methods of recouping to plants the root-moisture lost, the heat prevailing is rendering the labour of watering onerous and almost incessant. Really there is no work in plant houses during hot, dry weather which is so wearying, monotonous, and apparently profitless, as constant watering; whereas, in the large place I referred to, watering can be done direct from the mains; the labour is trifling if the time occupied is still excessive. But in most gardens all the water has to be brought from considerable distances, and the filling of small cans constantly promotes great waste and dirt. The work is hardly accomplished throughout before it is found needful to start again, and the constant repetition seems to lead to the inference that the labour is profitless after all. Of course it is not, for moisture is absolutely needful to the life and growth of the plants, but we know too well that far more of the water so freely given is not absorbed by the plants, but is lost by speedy evaporation; hence we water largely to give the

plants something to do as well as to keep the plants alive. Water in a state of purity furnishes little that is nutritive, but it serves to liberate solid compounds, and enables the roots to feed upon them. Still, repeated waterings, which are found speedily to evaporate or drain away, must rapidly diminish the nutritive properties of the soil in the pots, and it is most probable that far more exhaustion takes place in that way than through plant absorption. Then, constant waterings naturally promote the formation of small channels in the soil, through which the water passes rapidly, leaving much of the ball of earth untouched and too free air space after the water has passed away. No doubt the best summary of watering, as we have to practise it at this time of the year, is found in the expression that it is a necessary evil. The liberal employment of manure water enables us to recoup plants to some extent that loss of nutritive matter in the soil which such a long spell of pure waterings previously has produced, and there can be no doubt but that such waterings are wondrously beneficial. Liquid manures include considerable solids in a state of semi-solution, and these doubtless gradually block up the water passages and charge the exhausted soil with nutritive matter; hence we see plants even in small pots thriving wonderfully upon a course of liquid manure. These liquid mixtures, though usually called stimulants, are really foods, though given in a weak form, but are easily absorbed, and therein lies one of the chief values of liquid manures to plants, which, whilst making rapid growth, are yet root-bound in a very limited area. The need for constant waterings of plants in hot weather is greatly aggravated when the pots have narrow tops, or are somewhat tubular shaped. It is a fact, which I have proved after long experience, that whilst a pot may be too broad or spreading to be economical, it may also be too narrow or superficially restricted. Deep, upright pots are so far useful for small plants that they enable large numbers to be stood in smaller space; but, on the other hand, the gain in that direction does not compensate for the lack of power to retain sufficient moisture on the top, when watering takes place, to fully saturate the soil beneath when once it is dry. Ordinary shaped pots seem so far constructed that they enable the needful amount of water to be held on the surface of the soil to thoroughly saturate the whole of the root-ball. On the other hand, pans, for instance, need great care, as flooding them with water too often saturates the soil in them to a condition of sourness; indeed, almost of mud. After all, and in spite of the market-growers' rough methods, there is some intelligence and discrimination needed in watering. One difficulty is, however, that the work has to be done with a rush, under pressure of time, and with the best of will there is unfortunately little time for efforts to discriminate between the wants of one plant and those of another. An intelligent mechanic, who is also an amateur gardener, recently sent me some pots fashioned with double rims, the outer one being about 1 inch, or a little more, in depth, and having an interval of perhaps the fourth of an inch between it and the proper sides of the pots, which was intended to form a water reservoir, the belief entertained being that evaporation would in that way largely be arrested. Of course, such pots are cumbersome and heavy, and I found, after patient trial, that the result did not justify the designer's anticipations. The plants did not absorb the water through the porous sides of the pots, and the outer casing was not deep enough to save the whole of the pots from external heat, whilst the root absorption was as great as ever. A. D.

Nurserymen's practices.—There is, I am sorry to say, good cause for the complaints that have recently been made on this subject. Not long since I sent for some Anemone seed of a particular strain. In due course I received a packet of another sort, with the assurance that I should "be sure to like it." For a Daffodil that I ordered in the autumn, I got another kind of which I had plenty. I do not know of anything more

disappointing than, having written for one particular plant, to get another in its place. Another bad practice is that of sending a greater number to compensate for want of size. The "seven for six" often means that the plants are so small and weakly that they can never thrive as they should do.—
J. C. B.

FERNS.

W. H. GOWER.

GLEICHENIA (MERTENSIA GROUP).

THIS group of plants is exceedingly beautiful, and presents quite a different aspect to the true *Gleichenias*. They have long, wiry, creeping rhizomes, which render them difficult subjects to import in a living state, so that, although numerous species abound in tropical countries, few at present are to be found in our ferneries. Amongst the most beautiful kinds is *G. dichotoma*, which is widely distributed over the tropical and sub-tropical regions of both hemispheres, and naturally varies considerably in appearance from such widely separated localities. Many of these, when brought into cultivation, will doubtless prove distinct plants, although in a dried state their distinguishing characters are not readily discernible. The form of *G. dichotoma* to be found in cultivation is that received from Jamaica; the fronds are many times dichotomously divided, the pinnae being pinnatifid and the ultimate segments upwards of an inch in length, with a plain surface; the margins not revolute, as in the other group of the genus; bright lively green on the upper side, glaucous beneath.

G. PUBESCENS.—This plant, although abundant in Tropical America, is exceedingly rare in cultivation, and one that has hitherto proved somewhat difficult to manage; the pinnae are large, coriaceous in texture, the undersides and the midrib on both sides being clothed with a reddish brown tomentum, which is so dense that when the young segments are unfolding they have the appearance of being crested at the points. The upper surface of the pinnules is deep green.

G. FURCATA is a similar plant to the preceding, but differs in being destitute of the ferruginous tomentum so conspicuous in *pubescens*, but the underside of the segments is sparingly clothed with short, ashy grey hairs. All the above kinds require the temperature of a stove.

G. CUNNINGHAMI.—This species is peculiar to New Zealand; it is erect in growth, branched, and bears one or two whorls of flabellate fronds, the stems and midribs more or less clothed with reddish brown scales; the segments are deep green above, glaucous beneath.

G. FLABELLATA is perhaps the best known kind belonging to this group of the *Gleichenias*; it is widely distributed in Australia, and is also found in Tasmania, New Zealand, and New Caledonia. The stems rise erect to the height of 6 feet or more, bearing several tiers of large, smooth, fan-shaped fronds, which are bright green above, slightly paler beneath. When grown into a large specimen this species assumes the appearance and proportions of an elegant upright shrub. *G. flabellata* and *Cunninghami* are usually described as greenhouse Ferns, but they thrive best in the temperature of an intermediate house. Other forms belonging to this group, which are said by some to be varieties only, and which will be found well deserving of introduction, are *G. Bancrofti*, *gigantea*, *cryptocarpa*, *glauca*, *bifurcata*, *Klotzschii*, *Morrisii*, &c. The treatment these plants require and the soil necessary for their culture is the same as that recommended for the true *Gleichenias* in THE

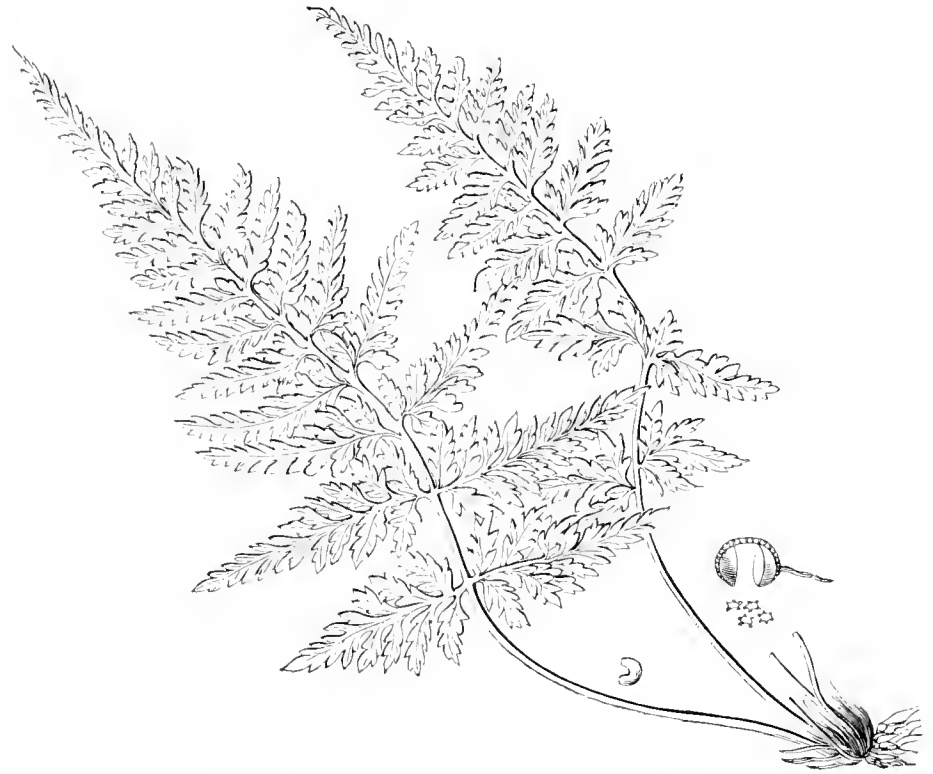
GARDEN (p. 516), saying that the majority of them require a higher temperature.

OUR NATIVE FERNS.

THE SPLEENWORTS.

THE *Aspleniums*, or, as they are popularly called, the Spleenworts, form a most interesting genus among the British Ferns, and are particularly useful on account of the evergreen character which they all possess. The coriaceous texture of the foliage which distinguishes most of the ten species which are found wild in the various parts of the British Isles also greatly adds to their value as decorative plants, while the ease with which the strongest-growing kinds may be cultivated also tends to make these species particularly popular. Some of the very dwarf-growing sorts are somewhat difficult to preserve, especially in smoky localities; but these, besides succeeding fairly well in Fern cases, are rendered specially attractive through their constitution and mode of growth, and they may safely be termed the gems of our native Ferns.

shine, and when growing thus is very dwarf. It is also very useful for pot culture, as it thrives under glass in the cool house, even better than in the out-of-doors rockery. The soil in which it grows most luxuriantly is a mixture of leaf-mould, sandy loam, lime rubbish, and fibrous peat in about equal parts. Its propagation may be effected by means of seedlings, the spores being ripe about September, or by the division of the crowns in early spring, during March and April. This useful species has produced several variations, of which the most distinct are: *Asplenium A.-n. acutum* (see cut), with tripinnate fronds, about 12 inches long, and showing pinnules very narrow and divided into acute linear-lanceolate lobes decompositum, which occurs in Devonshire, differs from *acutum* in having the segments of the pinnules less pointed, also less rigid, and in being nearly quadripinnate. *A. A.-n. grandiceps* is a variety as handsome as it is remarkable on account of its fronds, which average about 9 inches in height, being terminated by a finely divided crest, while the smaller tassels at the ends of the pinnae render



The Lance-leaved Spleenwort (*Asplenium Adiantum-nigrum acutum*).

THE BLACK MAIDEN-HAIR SPLEENWORT (*Asplenium Adiantum-nigrum*), which is one of the common Ferns found all over the British Islands, has, on account of the lasting qualities of its foliage, within these last few years taken a prominent position, which it most likely will retain for a long time to come, as its dark shining fronds, when cut and mixed with flowers, retain their freshness for an almost unlimited time. As shown by our illustration, these are of an elegant shape, and are also produced in great abundance. Fronds of this have been lately very extensively sold under the name of French Fern, which name has no doubt been erroneously given to it on account of the enormous quantities brought weekly to market from the western part of France, principally from Brittany, where it grows abundantly. It is also found in Cornwall, Devonshire, Somerset, Hampshire, and in some other counties in shady places at the foot of trees and shrubs, as also in the hedges, in fields, on old walls, and in disused quarries. These are the positions in which the fronds of the Black Maiden-hair Spleenwort attain their greatest length, but it will also bear continued exposure to sun-

it very effective. In the variety *oblongum*, found in the Channel Islands, the fronds are oblong in shape, while those of *fissum*, originally found in Devonshire, are irregularly lacinate. The Argyleshire variety *oxyphyllum* is a small-growing kind, with very spiny-looking, toothed, and oval lance-shaped fronds. Finally, we have in *Asplenium A.-n. variegatum* a very rare sport, whose fronds are irregularly streaked and blotched with white, which variegation must not be confounded with the discolouration produced by the ravages of a green insect much resembling a small grasshopper, which frequently attacks hardy Ferns even in their wild state.

The Alternate-leaved Spleenwort (*Asplenium germanicum*) is in many ways the exact counterpart of the species above described, for it is a somewhat difficult plant to manage, specially in localities where the atmosphere is not pure and the air not bracing. It also produces its curious fronds sparingly, and these, as may be seen by our illustration, are hardly adapted for use in decorations. This variety is indispensable in a collection of hardy Ferns. As regards its native habitat, the

Alternate-leaved Spleenwort is also vastly different from the Black Maiden-hair Spleenwort, as it is exceedingly local, and has been found in England at Borrowdale and Scawfell, in Cumberland, on the Hylce Crags, in Northumberland, in Wales, near Llanrwst, and in the Pass of Llanberis. In Scotland, where it appears to be somewhat more abundant, though in no wise plentiful, it has been found on rocks in the Tweed, near Kelso, in Roxburghshire; near Dunfermline, in Fifeshire, and on the Stenton Rocks, near Dunkeld, in Perthshire. The name of germanicum, which was originally applied to this singular plant, and which it has retained to this day, does not in any way denote its origin, as it is found only very sparingly in Germany as it is also in Switzerland, and in some parts of France and Sweden. Its first discovery in this country dates from about 1792, when Mr. Dickson found it on some rocks in the south of Scotland, and published his discovery in the second volume of the Linnean

no relationship whatever. Its fronds, which are proliferous and of a dark green colour, are linear, and measure from 6 inches to 8 inches in length; their pinnae, short and oblong-obtuse, are refracted or thrown back, and have a peculiar and pleasing appearance. It is remarkable that although most of the exotic *Aspleniums* are proliferous, this is the only one of the British kinds possessing this character, and its inclusion among British species, though admitted by the late Mr. Thos. Moore, rests on very slight grounds. It is best cultivated under glass protection.

As a glance at our illustration will show, the Smooth Rock Spleenwort (*Asplenium fontanum*), whose lovely fronds seldom exceed 6 inches in length, is one of the gems among our native Ferns. But whence the specific name of *fontanum* is derived from it is difficult to say, as this pretty plant is found exclusively growing on old walls and dry rocks. Its habitats are of such a very local character, that its being a British Fern has frequently been questioned, but its rarity is easily accounted for and understood when we remember that, except in sheltered and thoroughly suitable situations, it is unable to withstand our climate. The question

situations. It is only in the second edition of Ray's "Synopsis Stirpium Britannicum," which was published in 1696, that we find this interesting plant given as a native of the British Isles, for it is stated there that Dr. Sherard had found it "on the rocks on the north side of the isle of Jersey." Some thirty years later, in the third edition of the same work, its discovery in England was first noticed, "Mr. Bobart having found it in the north porch of the church at Adderbury, in Oxfordshire. Dr. Woodward found it also in England." In the crevices of rocks and old walls in the south and west of England, about St. Ives, in Cornwall, it appears to be found freely. It has also been met with in Devon, Somerset, Sussex,



Black Spleenwort (*Asplenium Adiantum nigrum*).

Society's Transactions. In growing the Alternate-leaved Spleenwort in the cold greenhouse, in a shady place of which, provided that it be well ventilated, it thrives best, it is well that the soil, which should be of a very light nature, such as a mixture in equal parts of sharp silver sand, sandy peat, and lime rubbish, should rise to a conical point, on the summit of which the Fern should be planted with its crown well above the surface, so as to prevent all water settling around it. The pots must be particularly well drained, with about one-third of their depth filled with crocks or broken bricks, as an excess of water is at all times fatal to it. The safest way to propagate this curious species which has not produced any variety is by division of the crowns in the early spring. The Reflexed Spleenwort, or *Asplenium refractum*, is an entirely distinct and beautiful form, a native of Scotland, from whence it has been distributed as a supposed form of *Asplenium viride*, a species to which, however, it bears

concerning its nationality may, however, be set at rest by the fact that Mr. Hudson, in the first edition of his "Flora Anglica," published during the year 1762, states that it grew then upon rocky places near Wybourn, in Westmoreland, and also that in his "Filices Britanniae," or "History of British Proper Ferns," Mr. Bolton says that this same Smooth Rock Spleenwort was found on the walls of Amersham Church, in Buckinghamshire. It has more recently been found on rocks in Wharnciffe Woods, Yorkshire; at Matlock, in Derbyshire; on a wall at Ashford, near Petersfield, in Hampshire, and on rocks near Stonehaven, in Kincardineshire. Although a British species, the Smooth Rock Spleenwort is a plant which, to be grown in perfection, requires, in common with a few others, to be cultivated as a pot plant under glass all the year round. It will be found beneficial to the plants, when potting them, to keep their crowns well above the material employed, which should be a mixture of sandy peat and broken bricks and old mortar, in which the plants should be potted firmly, with a thorough good drainage made of freshly broken bricks, into which material the roots of all Ferns, but particularly those of the small-growing kinds, appear to delight in running. Like most Ferns belonging to this section, the Smooth Rock Spleenwort is readily propagated by the division of the plants in early spring. It should be sparingly watered.

THE LANCEOLATE OR SPEAR-SHAPED SPLEENWORT (*Asplenium lanceolatum*) is another of the small-growing, but exceedingly interesting varieties of our Ferns whose distribution is particularly local, and although undoubtedly a British Fern, it is of a comparatively delicate habit, growing naturally only in peculiarly sheltered, well-drained, yet moist



Alternate Spleenwort (*Asplenium germanicum*).

Gloucestershire, in Oldbury Court Woods, and in the lanes in the neighbourhood of Stapleton, where Mr. Sweet, in his "Bristol Flora," says that "the area of this plant is no more than half a mile, occurring on the old red sandstone." It has also been found in Carnarvonshire, Denbighshire, Glamorgan-shire, Merionethshire, and Pembrokeshire, but always in small quantities compared to most other Ferns. Like a few more of its congeners of small dimensions, this interesting little plant grows well in a greenhouse shaded from the hot sun. Under such treat-



Rock Spleenwort (*Asplenium fontanum*).

ment, and provided that it be kept moderately moist, the stature of the plant is much increased and its fronds, which then attain a length of 8 inches to 10 inches, are of a beautiful dark green. The soil which suits the Lanceolate Spleenwort best is a mixture of peat, lime rubbish, bricks broken small, and leaf-mould in about equal proportions. In planting or

potting, the crown requires to be well kept above the surface of the soil. It is propagated by division in early spring, but it is a delicate operation, which requires a little more attention than it is usual to bestow on British Ferns. S. G.

Maltese way of growing Ferns.—The Maltese have a somewhat novel way of growing Ferns, that we might advantageously adopt in England. The practice is to fill a large, porous earthenware bottle with water. Place carefully all round the sides Sphagnum Moss mixed with a small amount of peaty soil, and then bind the whole with wire to the bottle. When this is done, insert small pieces of Maiden-hair Fern at regular distances apart. Then hang the bottle in a warm house, and sprinkle frequently with water to keep the Ferns in health. It is also essential to keep the bottle nearly full of water. Ornaments of this kind look well in conservatories or in rooms.—T. W.

Doryopteris ludens.—This is a very handsome and desirable warm house Fern, recently introduced by Mr. W. Bull, Chelsea. It is said to be a native of Barmah, the Philippine Islands, and also of the hills about Chittagong. The fronds are produced from a creeping, scaly rootstock, and are borne upon ebony black polished stems. The infertile fronds are the smallest, triangular or hastate in outline, the basal lobes being more or less deflexed. The foot-stalk of the fertile frond is much longer, and the frond itself is entirely different in shape, being some 6 inches across, pedately divided into long lanceolate lobes; these are thick and leathery in texture, and deep shining green in colour. The fronds are very persistent, and the effect of the two forms upon the one plant is very charming.—W. H. G.

Platzozoma microphylla.—I have received specimens of a plant (of which I enclose a portion) from my brother, who has been travelling in the north of Queensland; shall be glad if you can tell me the name of it. It is not in good condition for naming, as it appears to have neither flowers nor leaves, but all the stems are clothed with seeds as in the specimen sent. Do you think the seeds would grow? and if so, how should I sow them?—MARIAN GORDON.

* Your specimen received is a frond of a Fern which we believe is peculiar to Northern Australia. It is not in cultivation in this country, and would not appear to be a common plant in its native habitat. If the little pouched leaves contain spores, they would probably grow; at any rate, the species is so beautiful and so rare, that the attempt should be made. The leaves should be rubbed in the hand in order to disengage the spores, and the latter sown upon light yellow loam, which should be covered with a pane of glass or a small bell-glass until germination takes place, keeping the soil moist and shaded. ED.

SHORT NOTES.—FERNS.

Dicksonia antarctica (T. W. B.).—Your greenhouse is quite warm enough for the above plant; when kept in a stove, it is very subject to be attacked by thrips, which soon disfigure the fronds.—ED.

Pteris serrulata cristata compacta.—This is of a similar character to the type, but the habit is far denser, yet it is neither stiff nor formal. It grows freely, and the young fronds are of a light colour, in some instances almost white. We saw several specimens in the nursery of Mr. May, at Upper Edmonton.—T. W.

Death to slugs and other pests.—Mr. Samuel Barlow, Stakehill, near Manchester, writing to one of the agricultural journals, strongly recommends the use of superphosphate of lime as a destroyer of the Turnip fly, slugs, &c. He states that he had a field of Turnips badly infested with the fly, and he tried the experiment of dusting a few of the plants with superphosphate of lime, and found it destroyed the pest entirely. He then enlarged the area of the experiment, and had the whole field dusted with it, the result being the entire annihilation of the fly. He was also led to try the effect on some large clumps of Pansies, where slugs gathered in large numbers. The tufts were

lifted and the soil beneath them dusted with superphosphate, and thus the slugs were destroyed. Woodlice succumbed to its influence also. Mr. Barlow recommends the application of superphosphate of lime to all garden crops and plants attacked by slugs, &c., and, he remarks, the application is sure to be much more effective than dusting with powdered quicklime, which changes to carbonate of lime on exposure to the atmosphere for a few moments, and is thus rendered harmless to slugs. I found by experiment that after the superphosphate had been rained upon for ten hours, it was still able to destroy slugs. The superphosphate I employed was the ordinary 26 to 28 soluble.—R. D.

KITCHEN GARDEN.

W. WILDSMITH.

KITCHEN GARDEN NOTES.

HOEING AND WEEDING.—Now that the thinning of the various crops is completed, additional attention can be given to hoeing and weeding. To all crops not mulched, hoeing—stirring the soil—even if there are no weeds, is essential to secure the best results, and particularly so in dry, hot weather. In kitchen gardening, hand-weeding ought only to be practised where the hoe cannot be used, or in showery weather when the hoe would be worse than labour lost. By losing no opportunity of hoeing when the weather is dry, there need be no occasion to hand-weed other than in the seed rows.

WATERING.—Scarcity of labour will not admit of our doing much of this, and therefore, by deep cultivation and mulching, we strive to render the operation unnecessary. Except for such crops as Celery and Cauliflower, watering is seldom resorted to, and it is only given to these until the plants are well established; and, perhaps, to Cauliflowers and Brussels Sprouts in the form of liquid manure, when the plants are about half grown. Ridge Cucumbers, Vegetable Marrows, Tomatoes, and other ridge or frame crops are, of course, exempt from this category, as artificial watering must always be considered a necessary part of their cultivation.

EARLY BROCCOLI, SAVOYS, AND COLEWORTS.—Our first plantings of these had to be made between the rows of Potatoes, and now, to avoid damage to either Potatoes or the intermediate crops, we find it desirable to go over the ground twice a week, and throw back the haulm to prevent it smothering the winter greens. The Potatoes are early varieties, so that they will very shortly be ready for harvesting; but meanwhile no pains will be spared to keep the plants from injury. At last Peas are plentiful, and our earliest will soon be over, when the ground will at once be cleared. No digging will be done, and the ground will at once be re-cropped with early Broccoli and Savoys. The plants are quite ready for transplanting, though being on a cool north border and thin on the ground, they are not suffering from the unavoidable delay of removal to permanent quarters.

SOWING SEEDS, VARIOUS.—In prospect of an abundant supply of summer vegetables, all further sowings of summer Spinach that so quickly run to seed in dry weather, can now be dispensed with, and the ground utilised for crops of Lettuce and late supplies of dwarf French Beans and Peas. The former we have sown between rows of Celery, and the latter on recently dug ground, that was last cropped with sprouting Broccoli—perhaps the most profitable of all hardy greens. We have been gathering sprouts of this for fully three months, and we have noted it as one of our staple crops for next winter. This, together with Cottager's Kale and Brussels Sprouts, having best stood the late severe winter, will this year be grown more largely, and uncertain and tender kinds of Broccoli will be discarded. We have just made the main sowing of Endive on ground where it is to mature, and the two former sowings have been thinned to about 10 inches apart. Small Beetroot being in request,

we have sown now, and as soon as we can get early Peas off the ground, a sowing of early Nantes Carrots will be made for early winter use, to be drawn as wanted. By covering the bed with Bracken to keep out frost, it is possible to continue the supply of young Carrots all through the winter.

GENERAL WORK.—Mulch and stake Peas and runner Beans. Pinch out the tops of Broad Beans if black fly has infested them; this fly has a preference for the tops, hence pinching generally effects a clearance. If there is no black fly, topping is unnecessary, though it is sometimes done with a view to hasten the ripening of the crop. Earth up tall-haulmed kinds of Potatoes; dwarf-haulmed sorts do not need earthing unless they have been planted so near to the surface that the tubers will be exposed to light unless they are earthed up. Finish trimming up Box edgings.

MANAGEMENT OF GARDEN MEN.

EVERY gardener in England knows, or ought to know, how to manage those who are under his superintendence. To open the subject, I think a gardener should know what jobs each one of his men can do in the best style, and that job put him to, for by so doing, the work becomes a pleasure to the man rather than a toil, and ends in satisfaction to the gardener. To make my subject more clear, I will give an outline of how I manage my kitchen garden men at Burgley. Take digging for the first job under notice. I make it the practice to place say half-a-dozen men the first thing in the morning upon a plot, and it is astonishing what a large piece of ground these six will turn over before breakfast. Breakfast being over, you select the man who can hoe the best for hoeing Onions, small seeds, &c.; we use the draw hoe here, and to see the methodical way the man puts the corner of the hoe among the crops is wonderful; not a foot-print is left. The next job I call attention to is taking out Celery ridges and patting up the sides of the trenches. For this I select two men who I know will do the work to my entire satisfaction, and upon visiting them I find such is the case. Again, there is the important job of pricking out various kinds of greens, and above all the Jubilee Sprouts to be potted (never be too late). The man I select for this work is just as proud of a dozen or two two-light frames filled with early Celery, Carrots, Potatoes, Turnips, Brussels Sprouts, and Cauliflowers as the greatest foreman of the age could be over his Orchids.

Perhaps the most useful of my men is the handy man, who does the painting, glazing, and 500 other jobs, such as mending water-pots, pumps, engines, and syringes; making packing crates, boxes for cut flowers, mending wheel-barrow and garden tools. He sometimes meets with a difficulty, but I encourage him, saying, "If you cannot do the job, Jim, no man can." We (I mean Jim and I) inspect the job, and I always manage to settle the case and Jim accomplishes it. I thus manage, as it were, to surmount the difficulty—I hate difficulties. The next man under notice is the wall man, who ever since last October has on every available day been painting and nailing. We do not nail when the weather is piercingly cold; but for such weather find more pleasant work. I say the wall man, but I have two, the assistant being a stout lad. I have now five walls, all facing south, 1000 feet run, occupied with Peaches alone, the backs being well covered with Morello Cherries; these alone take up a considerable time. I may here mention that I have never seen fly so scarce and less blister upon the trees, both Peaches and Cherries looking pictures of good health; the Peach trees are young, the set is not heavy, but I can say ample.

In closing my subject, I never ask my men, either professionals or labourers, to do one pennyworth of work unless they are duly paid for the same. I know it is done more or less in many places, but to ask or expect young men (both men) to thin Grapes after working hours, unless paid for it, is an unworthy act to do. If a gardener has got more Grapes to thin than he can get done with the ordinary staff, he should either grow less or put on more hands. The rule I endeavour to carry out is to find

a smile and good word for all, and not rule with a rod of iron, but to rule as ye should wish to be ruled by. R. GILBERT.

SHORT NOTE.—KITCHEN.

Gilbert's Late White Victoria Broccoli—I have just received a fine example of the above. On unpacking, I could not say at first whether it was a Cabbage or a Broccoli—no signs of the flower—truly a late self-protecting variety. It was cooked, some preferring the green leaves to the flower: both were good, and the latter of excellent colour. The green leaves were very tender, marrow-like eating. This is well worthy of note, especially when greens run short, as too often I know happens in large families with limited kitchen gardens, or from other causes. Those who have not tried this superior Broccoli ought to do so.—STEPHEN CASTLE, West Lynn.

TREES AND SHRUBS.

W. GOLDRING.

THE ROSE ACACIA.

(ROBINIA BISPIDA.)

THE most beautiful flower of the week among trees is undoubtedly the Rose Acacia, a tree not half enough planted in this country, and, in fact, is comparatively unknown, although it is one of the oldest of cultivated trees. It possesses all the grace and elegance of the Laburnum, is as picturesque in growth, while its bloom is of a most charming rosy pink colour, which very few, if any other, trees possess. How surprising it is, then, that one may visit twenty gardens at this season and not find in one a Rose Acacia. In ordinary seasons it flowers after the Laburnums and Thorns are past, but this year it mingles with these and other earlier flowering trees. It is quite a midsummer flower, and usually it has few or no companions in bloom. It is a tree of small growth, seldom more than 10 feet or 12 feet high, and generally only about the height of a man. It has a wide-spreading head, never very densely crowded with branches, and from its bright green leafleted foliage has a light appearance. The flowers are as large as those of the garden Pea, of similar shape, and of a delicate rosy pink usually, but varying in tint from very pale to a very dark rose. The flower clusters droop like a Laburnum, but not being so long they do not hang so gracefully. There is not a more beautiful sight among trees or shrubs than a group of old Rose Acacias of various sizes, all with umbrella-like heads hung profusely with bloom. One drawback to this tree is its liability to injury by winds. The stems are naturally brittle, and, as a rule, standard plants are grafted high on stocks of the False Acacia (*R. Pseudacacia*), so that the trees are commonly broken off at the point of union.

Pernettyas in bloom.—The *Pernettyas* are worthy of notice for the beauty of their berries during the winter months. This, however, is not their only claim to recognition, as at the present time several specimens, not only of the newer varieties, but of the typical *P. mucronata*, are laden with their small Lily-of-the-Valley-like flowers. From the waxy texture of the blossoms they remain a long time in beauty, and if gathered in the shape of small sprays just as the blooms are on the point of expanding they will, if placed in water, retain their freshness for weeks. The purity of the blossoms is still further intensified by the reddish colour of the bark and the deep green of the mature foliage. There seems to be little if any difference among the many varieties from a floral point of view, yet it would be worth while for future raisers to consider this side of the question. In any case the common *P. mucronata* must be allowed to occupy a place among select flowering shrubs. Peat is by no means essential to the well-doing of these *Pernettyas*, as they will succeed in

almost any soil, provided it is free from lime and does not get baked up during the summer.—H. P.

The Chinese Crab (*Pyrus spectabilis*).—This is a highly ornamental member of the Crab family, forming a medium-sized tree, the branches of which have, when young, rather an upright tendency, but become more spreading when old. The flowers are semi-double, pale pink when fully expanded, but deep red in the bud. They are borne in great profusion, and being rather later than many other kinds in opening, generally escape any harm from late spring frosts. Another now well-known kind, by some considered a variety of the last, is the Coral-flowered Apple (*Malus floribunda*), a slender-growing tree, whose long flexible branches are now completely wreathed with pretty pink flowers. The most effective stage, however, is perhaps before the blooms expand, at which time the coral-red buds are very showy. Both of these are well worth a place in any garden, as they are very beautiful and quite distinct from each other. T.

The Laburnum.—I have a tree of the common Laburnum in my forecourt on a north aspect, that only gets the sun early in the morning and late in the evening. It is as full of bloom as can well be, and the pendent spikes are of wonderful size and colour. In these respects it contrasts in a remarkable manner with the trees, on the opposite side of the roadway, that are in the full blaze of the sun for the greater part of the day. The hotter position appears to cause the flowers to come not only smaller, but they are soon burnt by the sun, and so quickly lose their beauty. My tree also blooms later. It will be in bloom in a few days, while the trees in the full sun are almost out of flower. That the tree is an ungraceful grower there can be no doubt, and Mr. A. Mongredien states that "the tree bears the same relation to its pride of beauty during the short time it is in blossom as the peacock's serech does to its blossom." I keep the straggling branches of my specimen—which is probably twenty-five to thirty years old—cut back, and thus the tree is maintained in fairly good form.—R. D.

The Guelder Rose as a market flower.—Calling upon a Middlesex market gardener a few days ago, I found him very busy bunching sprays of the Guelder Rose, or Snowball, as they are termed in the market. The trees are subjected to a very rough-and-ready treatment; the sprays are picked off with a few blossoms to each, and one would think that the act of doing so in this rough way would prevent the tree from flowering another year, but my informant says, no. He stated that fresh growths break out just below the point where the sprays are severed from the branches, and they produce a good crop of flowers next season. He was also making up in bunches crimson and pink Peonies, and also *Scilla campanulata*, but he informed me that the Snowballs could be sold more readily than the other two. One can quite understand the French name for the Guelder Rose, *Boule de Neige*; but to how many is it known that this is a variety of a common hedge plant, whose chief beauty lies in the bright red berries with which it is adorned in autumn. The modest inflorescence of the common *Viburnum Opulus* of the hedgerows is in marked contrast to the large snowy white balls produced by its offspring; but it produces no berries, and so the price paid for its ephemeral splendour is sterility; hence it is known as *V. Opulus* var. *sterile*. It is said the species of which it is a variety was introduced from Guelders; hence its common name—the Guelder Rose.—R. D.

Sikkim Rhododendrons.—I notice in THE GARDEN June 11 (p. 527) that Mr. Bateman says he is not aware of R. Edgeworthi having flowered out of doors in England before. We have flowered it here for several years in succession, but have always found it most unsatisfactory in its growth, which is of such a straggling character, and the plant gradually becomes so very weak, that it eventually dies. One severe shock from frost seems to paralyse it to such an extent, that it has not strength to recover itself by starting from the bottom as many of the others will. It is truly a grand flower when seen in perfection, and the fragrance is most pleasant;

still I would not recommend anyone to plant it out. It is worthy of house protection, and the flowers are much finer indoors. We have tried it in all sorts of situations with like results. *R. Dalhousiae* is another good thing when on its own roots, but the buds will not stand more than about 10° of frost. We have here one plant grafted on *R. ponticum* that has never shed its buds, so far as I remember, and it has been fully exposed for twenty years, but I am sorry to say that it is declining now. It has bloomed most profusely again this year, while several plants in different situations on their own roots have had all their buds killed. Another peculiarity in grafted plants is that the flowers are much whiter than on plants on their own roots, although that may be accounted for by the variety. I should like to know if any of your correspondents have tried grafted plants elsewhere out of doors. *R. Aucklandi* has proved itself quite hardy here; no collection should be without it. I would have sent you flowers, but they are too far gone for their beauty to be seen.—R. GILL, *The Gardens, Tremough, Cornwall*.

The double Thorns.—These highly ornamental trees are among those that are flowering with great freedom this season. They are objects of great beauty in forecourt gardens in the suburbs of London just now. It is gratifying to note that in these later days a better class of tree and shrub is being planted in these gardens; and where the Mountain Ash, Acacia, large-leaved Poplars, &c., used to be found, one can now see the finer forms of *Crateagus*, Almond, double-flowered Peach, and some useful variegated trees also. Near to where I reside there are some trees of the double pink Thorn that are so full of flower, that the foliage is hidden by the density of the blossoms. Paul's double crimson is being planted, but the trees require to become good-sized specimens before they bear flowers profusely. The single crimson makes a lovely tree when covered with its bright-coloured flowers. But how cruelly it is treated in some gardens. Opposite to where I live there are two fine young specimens, but instead of being covered with blossoms just now, very few trusses of flowers are to be seen. The reason is not far to seek. At the end of the summer a jobbing gardener goes over them with a pair of shears and clips them in as close as he would a hedge of Privet. Away goes the best part of the blooming wood of the following summer, and at this season of the year when the branches should be aglow with flowers there is little but leaves. And some wonder is expressed that these Thorns do not bloom like those of their neighbours.—R. D.

SHORT NOTES.—TREES AND SHRUBS.

Magnolia fuscata.—As an instance of the vigour of our plant of this *Magnolia*, I may mention that a chaffinch has taken up its quarters in the top branches some 14 feet from the ground, and is now hatching its young, a quantity of the powerfully-scented flowers being just above its nest.—E. B.

Snowy Mespilus.—We have few more beautiful trees than this for the enrichment of our gardens in spring. We noticed it in full glory in many gardens at Feltham, and were struck with its chaste and delightful appearance when surrounded with trees of the same elegant character. It also makes a good specimen for the outskirts of a spacious lawn.—C.

Robinia inermis.—A neighbour of mine who has in his front garden some trees of this that are cut back close every year is much troubled by snails, who find their way to where the young shoots are breaking into growth and devour them. Is this an unusual occurrence? My neighbour has not been previously troubled in this way.—R. D.

Water Elder (*Viburnum Opulus*).—This is a very beautiful native shrub, quite as pretty, if not prettier, than many of the exotic shrubs now in cultivation. Of good habit and a profuse bloomer, it has a splendid effect in quiet corners or by the water. Water Elder is a good example of an English name based on a general resemblance to the true Elder.—A. H.

Double-flowered Horse Chestnut.—The double-flowered *Wistaria* has, as far as my experience of it goes, proved of little value. Of the double-flowered variety of the Horse Chestnut the same cannot be said, as the flowers are really double, open well, and remain a long time in beauty. This double-flowered Horse Chestnut is undoubtedly an acquisition, and as such is spoken highly of by Messrs. Ellwanger and Barry, Rochester, N.Y.—T.

Orange ball Tree (*Buddleia globosa*).—There is a fine specimen of this shrub flowering now at Gunnersbury House. When backed with dark-foliaged trees and shrubs, the golden yellow globose flower-heads have a rich and striking appear-

ance. In a garden at St. Margaret's, which is situated near to the sea, between Deal and Dover, the *Buddleia* thrives vigorously, notwithstanding that the soil is chalky and the position bleak. To ensure a sturdy growth and profuse display of flowers a light soil is necessary.—T. W.

ORCHIDS.

W. H. GOWER.

EUROPEAN TERRESTRIAL ORCHIDS.

THE collection of these plants shown by the Comte de Paris at the Regent's Park last week deservedly attracted considerable attention, not-



Long-bracted Orchid (*Orchis longibracteata*).

withstanding the counter attractions of the numerous examples of the showy epiphytal tropical kinds that were staged upon that occasion. The Comte de Paris has long been a de-

voted admirer and a most successful cultivator of these plants; for some years ago his garden at York House, Twickenham, was celebrated for its fine collection and for the excellent manner in which they were flowered. The extreme beauty of these choice and singular, if not showy, flowers should endear them to all genuine lovers of Nature, and especially as they commend themselves to those with limited space or the taste for the erection of glass houses, which are requisite to maintain such collections of their showy relatives as were to be seen in close proximity to them on Wednesday last. No excuse, therefore, is necessary for urging upon our readers the advisability of their culture. We propose confining our remarks for the most part to the kinds shown by the Comte de Paris, which, it was stated, had been collected from their native habitats and grown in either the open air or a cold house, the most notable amongst which were the heart-lipped *Serapias cordigera*, from the south of France and the whole Mediterranean region, with its dense spikes of bloom, delicate bracts, and large brownish purple lip; the tongue-lipped *S. lingua*, having a somewhat lax spike with a soft reddish carmine lip, stained in the centre and at the base with yellow; and a somewhat similar kind called *S. pseudo-cordigera*. Two other handsome species of this genus found in various places on the Riviera which were not shown in this collection are the long-petaled *S. longipetala* and the Butterfly Orchid, *S. papilionacea* and its variety *lingua*, which by some is considered to be a natural hybrid, having very large, velvety, reddish purple lips.

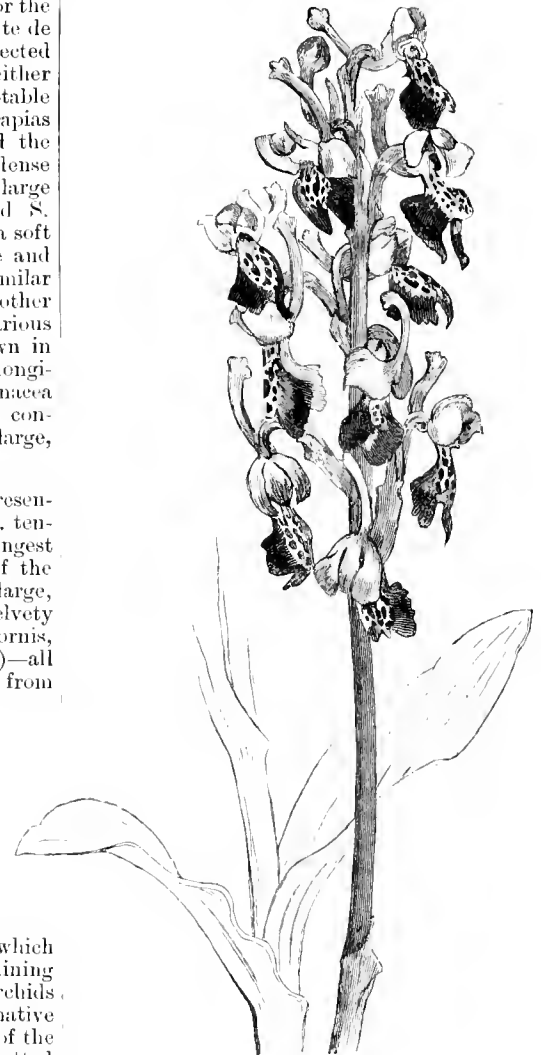
The genus *Ophrys* had numerous representatives. Conspicuous were the Saw-fly, *O. tenthredinifera*, which is one of the strongest growers of the genus, and withal one of the most profuse bloomers. Its flowers are large, and curiously marked with yellow and velvety brown. The beautiful purple *O. longicornis*, the Bumble Bee Orchid (*O. bombylifera*)—all three from the south of Spain; *O. fusca*, from the south of France.

The Spider Orchid (*O. aranifera*) from Mentone is nearly allied to our native Bee Orchid, and is one of the very earliest to appear, flowering about Christmas at Mentone. The outer portion of the flower is yellowish green; the large lip velvety brown, curiously marked on the centre with blue.

O. Speculum and its variety *luteum*, which has yellow flowers, with a conspicuous shining metallic blotch in the centre of its lip. Orchids were represented by some of our own native species, amongst which were grand spikes of the early purple Orchid, *O. mascula*, and the Spotted Hand Orchid, *O. maculata*, its spike of bloom resembling somewhat in colour that of *Saccolabium guttatum*. The Military Orchid, *O. militaris*, and its variety *O. tephrosanthos* and *O. fuscata*. Two very fine species of this genus not shown last week, but which we here figure, are *O. longibracteata* from the south of Europe, in which the sepals and petals are of a rusty brown and green. The large lip is soft purple, flaked and streaked near the margin with a deeper shade of the same colour, and white in the centre. It is one of the earliest varieties, flowering in a cold house during February and March. *O. longicalcarata*, from Algeria, is also an early flowering plant of great beauty; the sepals and petals and the spur are white, shading to lilac or purple, the lip being bright vinous red. Beside those named above, there were shown fine spikes of the pure white flowers of

Cephalanthera ensifolia, and also the yellowish green ones of the Man Orchid (*Aceras anthropophora*), &c.

We do not advise these plants to be treated as ordinary hardy plants, wet and heat being so inimical to them, an ordinary frame with the means of keeping severe frost and rain away being all that is requisite for our native species, but in order to succeed with the kinds from Southern Europe, Northern Africa, and Australia, a frame with a single row of hot-water pipes round it will be found of great advantage. The heat will not be required for forcing the plants into growth, but merely to dry up damp



Long-spurred Algerian Orchid (*Orchis longicalcarata*).

and protect from severe frosts. It must be borne in mind that the underground tubers of terrestrial Orchids only live one season; therefore every attention should be given them when growing in order to ensure their flowering the following season. After the leaves and stems have decayed water may be withheld entirely for a short time to thoroughly ripen the tubers, after which the soil should be kept in just a moderate damp condition, but not wet. Of the kinds named above, the *Serapias* and *Orchis longicornu* should be potted in a mixture of loam, leaf-mould, peat, and sand in about equal proportions, but the other kinds require loam and limestone only, whilst in all cases the drainage must be maintained in perfect working order. To make a good display at the flowering

season four or five tubers should be grown in one pot, but the ordinary system of potting in the middle must be abandoned, as the roots like to feel the pot, and therefore they should be inserted at regular intervals round the sides.

Cypripedium niveum.—This charming Lady's Slipper is flowering in several collections round London. It is one of the best of the dwarf-growing kinds, bearing with great freedom neat flowers, white, save a few purplish dots on the petals. It looks well in small pans or pots suspended in a light position in the Orchid house.—F. W.

Ionopsis utricularioides.—This is a rare, but extremely beautiful member of a small genus of which *I. paniculata* is the best known. We saw it recently in full bloom at Kew, and were struck with the surprising delicacy and beauty of the flowers, which vary somewhat in colour, but the majority are white, speckled and lightly suffused with purple. They are borne in lengthy spikes in great profusion, the plant, when suspended in a light position, having a graceful and pleasing appearance.—C.

Cow-horn Orchid (*Schomburgkia tibicinis*).—This interesting and noble Honduras species is now in bloom at Messrs. Veitch's nursery, Chelsea. The scapes are of considerable length, some nearly 5 feet, and terminated by panicles of large, handsome flowers. The waxy sepals and petals are pale rosy pink, with dark-coloured spots; the lip is pale rose, except the bold, lateral lobes, which are veined with dark brownish purple. It was discovered in Honduras by Mr. Skinner.—E.

Cœlogyne pandurata.—This plant is a native of Borneo, and bears bright apple-green and black flowers. It is said to grow naturally on branches of trees in very shady places, and mostly upon those overhanging streams or pools of water. It has generally been considered a difficult plant to manage, but probably this has arisen from its having been subjected too much to the sun's influence. There is a fine healthy plant now flowering in Mr. Measures' garden at The Woodlands, Streatham, bearing blooms nearly double the size of any we have seen produced by this species. Its peculiar colour renders it very conspicuous when grouped with light-coloured flowers. Mr. Fraser treats this plant to moderate heat, an abundant supply of water, and shades it well from the sun's rays.—W. H. G.

Vanda Amesiana.—This new and unique plant flowered in the Clapton Nursery with Messrs. Low and Co. some time ago, and is quite a distinct form both in habit of growth and also in flower. The leaves are somewhat thick and fleshy, and gradually taper to a point. The spike is erect, bearing about a dozen flowers, which at first sight remind one somewhat of the blooms of *Phalenopsis Portei*. The sepals and petals are creamy-white tinged with rose; lip rich rose colour, fading through bronze to yellow. It would appear to be a free-flowering plant, as the specimen in question is small, bearing about half-a-dozen leaves and two spikes of bloom. It was imported amongst other Orchids about three years ago, and is the only plant known to exist in Europe.—W. H. G.

SHORT NOTES.—ORCHIDS.

Oncidium auriferum.—This distinct and beautiful plant is now flowering freely at Kew. The flowers are rich golden yellow, and borne in spikes about 1 foot in length. It is one of the prettiest of all the *Oncidiums*.—T. W.

Dendrobium Farmeri aureum.—This is now in flower at Gunnersbury Park, and also the South American *Oncidium Phillipsianum*, with its gold and brown blossoms.—R. D.

Dendrobium Lowi.—This is one of the most interesting Orchids in bloom at Kew. The flowers are borne in dense racemes, and measure about 2 inches in diameter; the sepals and petals pale yellow, the base of the lip veined with crimson and fringed with reddish hairs. It is certainly not so popular as some of the members of the genus, but thoroughly deserves a place in choice collections.—C.

Viola canina.—Will any reader of THE GARDEN say if a variety of the above with pale pink or mauve flowers is known, and whether if so is it rare?—R. L. A.

CENTRAL PARK, NEW YORK.

THE Central Park contains over 800 acres, and is the park of New York. At the present time (May 27) in cool and shady places many Tulips linger. White Pottebakker as a white; *Chrysolora*, Yellow Prince, and Canary Bird, as yellow; and *Belle-Alliance*, red, are the favourite kinds, with *Duc Van Thol* as an early scarlet for edges. Large patches of red, pink, and white Moss Pink (*Phlox subulata*) are seen upon the rocks and rocky slopes; *Phlox amona*, purplish pink, and *P. stellaria*, lilac-blue, are associated with them, and have a striking effect as seen from the drives and walks. Evergreen Candytuft is a sheet of white; *Erysimum rupestre* a mat of yellow; *Aubrietias*, blue and purple and white; dwarf Thrift (*Armeria*), pale and deep pink; red Columbinæ; white and yellow Barreiworts (*Epi-medium*), and white Trilliums are used extensively in rocky places and contiguous beds, and catch the eye of every passer-by. To succeed these there are German Irises, Peonies, Columbinæ of sorts, perennial Coreopsis, Siebold's *Sedum*, Speedwells (*Veronica*) in variety, Bellflower (*Campanula*), and many others. Mantles of Stonecrop (*Sedum acre*) are also spread upon the rocks; a few weeks later they will be sheets of gold. But one of the most charming flowers now in bloom is the spring beauty (*Claytonia virginica*), which grows in great profusion among the Grass beneath some of the small growing trees near the base of moist slopes. Lily of the Valley spreads upon the sunny slopes and fills the air with fragrance; wild Hyacinths (*Scilla campanulata*), white, pink, and blue, are growing in the thinly planted shrubbery, and associated with them are snow mats of the great Stitchwort (*Stellaria Holostea*). And there are Day Lilies, Plantain Lilies, and true Lilies in abundance, and Solomon's Seal around the base of the rocks. In addition to the above, Pansies and Daisies are greatly used, and Forget-me-nots in limited quantity.

Greater quantities of bedding plants are being grown annually. Among *Pelargoniums*, Black Hawk, a golden bronze, is much liked; *Alternanthera versicolor*, *A. paronychioides major*, *A. aurea*, and *A. amona* are the favourites; *Coleus Verschaffelti* is not superseded by any crimson-leaved, nor Golden Bedder by any yellow variety; but *J. Goode*, a new variety, is being propagated very largely. *Centaurea candidissima*, *C. Clementi*, and *C. gymnocarpa*, *Ground Cypress* (*Santolina Chama-Cyparissus*) and *Gnaphalium lanatum* are the chief silvery-leaved plants. The *Acalyphæ* are prominent among tender shrubby plants; *Erythras* are isolated and grouped in little beds. Annuals comprise Golden Feather, *Globe Amaranth*, *Torenia Fournieri*, *Thunbergia*, *Vinca*, *Tropeolum*, and *Sanvitalia*.

In some of the water pools *Nelumbiums* are coming up, also seedlings of the tender Lilies that were planted in them last summer. But the old plants of the tender Lilies (*Nymphaea*, *Limnœcharis*, *Buck Bean* (*Villarsia*), *Pistia*, and the like) are still in pots and tanks in the greenhouses and sunny frames, as the water out of doors is yet too cold for them. These Lilies are grown in boxes some 4 feet or 5 feet square by 12 inches to 18 inches deep, partly filled with soil, and sunk in the ponds. By these means one can use the proper soil and plant nicely, and the boxes can be lowered or raised in the water to suit the plants, and in autumn the boxes can be brought out of the ponds and the Lilies removed to their winter pots with very little trouble and no fear of injuring the roots. Water Lilies are becoming quite a feature in the summer decoration of all prominent eastern parks and public gardens. *Nymphaea rubra* and *N. zanzibarensis* are in good bloom. *Pontederia crassipes* is also in flower. The flowers are large, bluish and pretty. I had not before seen it in bloom. Large, broad-headed trees of *Paulownia imperialis* are beginning to display their violet-blue flowers, but they are leafless still. The Snowdrop trees (*Haalesia tetraptera*), isolated and in groves, are a splendid sight, leafless, but covered with flowers. The flowering Dogwood (*Cornus florida*) is at its best, and shows to most advantage in front of larger trees and on warm, sunny slopes. The Colchican Bladder-wort (*Staphylea colchica*)

has clusters of waxy white flowers, and is an excellent showy shrub and the best of its race. The earlier *Magnolias* have done blooming. *M. Soulangeana* has a few blooms left, and *M. Lennei* a goodly crop. *Limonium trifoliatum* is in full bloom. The plant is about 7 feet high, very spiny, and well laden with large, white, fragrant flowers. We call it the hardy Orange tree, but whether it may prove hardy or not I cannot say. The specimen referred to occupies an exceptionally warm, well-sheltered spot. Bush Honeysuckles abound; among them *L. fragrantissima* is the favourite. The whitest of all white flowers is furnished by the Pearl Bush (*Exochorda grandiflora*), now blooming very freely. Isolated specimens of the common Wayfaring Tree (*Viburnum Lantana*) are handsome in themselves, and showy when associated with white flowers. Isolated specimens of *V. prunifolium* surpass in form and abundance of white flowers anything seen in our woods or by our waysides. *Forsythias* and Missouri Currants being past, *Canagana* and *Kerrias* furnish the yellow flowers among the shrubs. *Wistarias* in unusual profusion drape the rocks, cover the arbours, festoon the trees, and in several cases have climbed up into and taken full possession of some Maple trees.

In "The English Flower Garden" we find: "*Polygonum cuspidatum*, also known as *P. Sieboldi*, is a plant of sterling merit . . . and is undoubtedly one of the finest herbaceous plants in cultivation." In the Central Park it has become an almost exterminable pest. *Petasites vulgaris* is also found to be a very persistent weed.—W. FALCONER, in *American Florist*.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL Scientific Committee.

Dendrobium polyphelebium.—To this plant, supposed to be a hybrid between *D. Pierardi* and *D. Parishii*, a botanical certificate was awarded on the proposal of Messrs. O'Brien and Smee. The plant was shown by Mr. R. B. White, of Ardarauch, and was described by Professor Reichenbach.

Diseased Narcissus bulbs.—Mr. W. G. Smith showed bulbs thinly covered just beneath the outer skin with small hard black bodies like Lentil seeds, and which constitute the "sclerotia" or resting stage of some fungus, probably a *Peziza*.

Heterosporium ornithogalli.—Mr. W. G. Smith exhibited foliage of a species of *Ornithogalum* blackened and destroyed by this fungus, which spreads very rapidly.

Outgrowths on roots of Peas.—Mr. W. G. Smith brought before the committee specimens of the outgrowths so common on the roots of leguminous plants, and which he attributed in this instance to nematoid worms. Dr. Masters alluded to other explanations that have been offered for these outgrowths, such as a *Myxomycetous* fungus, Bacteria, &c. Whatever be the cause, the plant does not seem to be much affected, as leguminous plants almost invariably have these swellings.

Plants exhibited.—Dr. Lowe exhibited on behalf of Mr. Loder a magnificent spike of a white-flowered *Eremurus*, supposed to be a form of *E. robustus*. It is quite hardy, and when known will "make a sensation" in gardens. A *Primrose* was also shown under the name of *P. verticillata*, but it was destitute of meal. Dr. Lowe also drew attention to a *Cattleya* in which the sepals and petals were mottled as in the variety known as *Massangeana*. A discussion took place on the subject, the general result being that the committee considered the appearance to be due to debility. Dr. Lowe also showed succulent roots on *Scilla campanulata*, similar to those now called "ephemeral" roots in *Crocuses*. The general impression is that these roots are intended as reservoirs for storing up water.

Flowers with barren flowers.—Mr. Barron forwarded examples of flowers, some having the stamens

Spreading, which set fruit, others with the stamens reflexed, and which were always barren. Mr. Henslow reported upon a microscopical examination of the two kinds, and found that the pollen was shrivelled and utterly useless in the recurved stamens. Like those which remained erect after the corolla had fallen, they burst their anthers while in bud, but as soon as the flower has lost the corolla the filaments become reflexed. On examination of the stigmas, ovaries, and ovules, nothing abnormal was revealed, so that if these flowers be dusted with the pollen from a normal kind, a spray being gathered just as the corolla is falling, and shaken over the others, the probability is that they would set fruit. Such an experiment would soon show if the pistils were unaffected or not. It appears that these barren flowers occur on rods growing side by side with fertile ones, and may occur on any variety, so what is the inherent constitutional cause of the "contabescence" of the stamens would seem to be obscure. It is discussed by Darwin (*An. and Pl. under Dom.*, ii., p. 165), but he could not suggest a cause, though some plants (*Dianthus* and *Verbascum*) thus affected grew on a dry and sterile bank. Dr. Masters called attention to the researches of Engelmann and Planchon on this subject, as well as to his own observations at Chiswick several years since. A tendency to assume a diocious condition seems to be general in all Vines, and is completely attained in the American species. Allusion was also made to corresponding phenomena in Strawberries.

Calceolaria (double).—Mr. Henslow reported upon the plant forwarded by Mr. Veitch to the last meeting. It proved to have "double flowers." The sepals varied from four to six; the ordinary corolla was present in the usual form, but within it, or protruding from it, was a mass of calceolate petals, sometimes about twelve in number, and of different sizes. There was no trace of any stamens or of a pistil whatever.

Photographs of Eucalypts, &c.—Dr. Masters showed, on behalf of M. Joly, of Paris, a series of photographs representing various species of *Eucalyptus*, *Casuarina*, &c., which were valuable as affording illustrations of the mode of growth of these trees.

Psilotum triquetrum, &c.—Dr. Masters showed, on behalf of Mr. Tokutoro Ito, a series of Japanese representations of this curious Lycopod, revealing an amount of variation quite unknown to the botanists present. From the same source also came a sheet of coloured illustrations of varieties of *Kaki* or Persimmon (*Diospyros*) cultivated in Japan.

Osmanthus ilicifolius.—Dr. Masters called attention to a peculiarity in the mode of growth of this shrub, consisting principally in the uplifting of the innermost bud-scales, which in place of falling off at once, or remaining at the base of the shoot, remain attached for a considerable period to the growing shoot, and contrast remarkably with the ordinary leaves. The superficial resemblance of this plant to a Holly was commented on, and attention called to its excellence as an Evergreen for town gardens.

Dr. Masters also showed from Mr. A. Waterer's nurseries specimens of *Acer Walli* (yellow), *A. Weihi*, a large-leaved form of *A. dasycarpum*; *Tilia eucliora*, a very dark-leaved Lime; *Fagus antartica*, the evergreen Beech of Patagonia; and other plants.

YORK FLORAL FETE.

THE floral fete which has recently taken place at York proved as fine as any that have previously been held, the classes being well filled and the exhibits of high merit. In the class for a group of ten stove and greenhouse plants in bloom and six ornamental plants, Mr. Letts, gardener to the Earl of Zetland, Richmond, Yorks, was placed first with good well grown specimens of *Azalea Duc de Nassau*; *Anthurium Scherzerianum*, *Shuttleworth's variety*; *Erica coccinea minor*, *Clerodendron Balfourii*, *Phenocoma prolifera*; and among the foliage plants there were good examples of *Croton Victoria* and *Kentia Fosteriana*. For a group occupying a space not ex-

ceeding 250 square feet, Mr. J. McIntyre, gardener to Mrs. Gurney Pease, Darlington, and Mr. A. Webb, gardener to Mr. J. H. M. Sutton, Newark, were placed equal firsts; and Mr. McIntyre was also to the fore for a group occupying 150 square feet. For six stove and greenhouse plants Mr. Letts was first, his plants being models of good culture, and Mr. H. Johnston, gardener to Mr. J. B. Hodgkin, Darlington, followed closely. For four Crotons, Mr. McIntyre again occupied the leading position, Mr. A. Webb being second.

Pelargoniums were magnificent. Mr. Mackintosh was first in the class for twelve show varieties, having well grown plants of *Lady Isabella*, *Salmonida*, *Prince of Pelargoniums*, *Kingston Beauty*, and *Triomphe de St. Mandé*. Mr. I. Eastwood, gardener to Mrs. Tetley, Leeds, was second. The last mentioned exhibitor was first in the class for twelve zonals.

Orchids were very fine. Mr. Cypher gained the first prize of £21, staging well-flowered specimens of *Cattleya Mossiae*, *C. lobata*, *Odontoglossum vexillarium*, and other well known kinds. Mr. Cypher was also successful in several other classes.

Roses were largely represented. Messrs. Jackson and Co., Bedale, Yorks, were highly successful, taking several first places; *Duchess of Edinburgh*, *Abel Grand*, *Countess of Rosebery*, *Peach Blossom*, and *Miss Hassard* were creditably shown. For forty-eight cut Roses, Mr. H. May, Bedale, Yorkshire, was first, and he was also to the front for thirty-six and twenty-four blooms.

Fruits and vegetables were highly satisfactory considering the lateness of the season. In the class for a collection of six dishes, Mr. J. Edwards, gardener to the Duke of St. Albans, Notts, gained the first prize, which consisted of the Veitch Memorial medal and £5. Mr. McIndoe, gardener to Sir J. W. Pease, Bart., M.P., Gisborough, was a close second. Mr. McIndoe was first for a collection of eight dishes; Mr. Dawes second. Messrs. Webb offered special prizes for a collection of six kinds of vegetables, the winner of the premier award being Mr. McIndoe; Mr. Crawford, gardener to Colonel Thorpe, Newark-on-Trent, was second.

Among the miscellaneous exhibits, a group of *Clematis*, from Messrs. R. Smith & Co, Worcester, was very noteworthy. It consisted of twenty large and beautifully flowered specimens. Messrs. Kelway & Son, Langport, sent a beautiful lot of *Pyrethrums*, and Messrs. Backhouse and Sons presented cut flowers in great variety.

EXHIBITING.

THE widely spread floral exhibitions held throughout the country, especially in the midland and northern counties, are perfectly marvellous in their number and the influence they exercise. Not only do we find horticultural societies in the towns, but a very large number of villages have their flower shows also, and if they are not strong enough individually to hold one, a few villages lying close together will combine and hold their annual show. There is scarcely an important suburb of London without its horticultural society. It is a question with some whether flower shows are of much practical good. I think this depends in a large measure upon the schedule of prizes, the selection of plants, and the mode in which they are managed. When flower shows are promoted simply as a commercial speculation—as I fear many are—they prove of but little practical value, but when carried on with a view to advance gardening among allotment holders, cottagers, and amateurs, healthy competition is developed, and much good results. Still, it is a practice with some, where but little in the way of safeguards exist, to exhibit things not of their own growing. A painstaking and vigilant committee can do much in the direction of restraining such practices. I think it is always a good plan to have the exhibitors represented on a committee of management, taking care they do not unduly preponderate. Good is done by causing exhibitors to sign an entry form, in which they subscribe to the statement that the articles entered for exhibition are their real property and growth. I find on the part of men

not over-scrupulous a great dislike to make a false statement of this kind. In my own experience—now an extensive one—I have found members of committee leading offenders in this respect, and then it is difficult to deal with culprits. If the managers of flower shows will make a summary example of any exhibitors guilty of dishonest showing, this form of cheating will be considerably reduced, if not altogether stamped out.

R. D.

Snake millipedes.—I have by this post forwarded to you a box containing a centipede of some description, and shall be much obliged if you will kindly through your paper let me know if it is an insect injurious to Orchids, as I have found it only upon two plants which I lately purchased, six on one and two on the other. It only appears at night, and I believe, feeds upon the young roots, and should this be the case, no doubt Orchid growers, especially amateurs, will be pleased if you will kindly say what it is.—Geo. Wood, *Grafton House, Brandon*.

* * * The creature forwarded is one of the snake millipedes, a species of *Julus*, but which I cannot say, as it was literally smashed to powder. The snake millipedes are decidedly injurious to the roots of plants; the best way of catching them short of uprooting the plants is to cut Potatoes in halves and to slightly scoop them out, and lay them near the roots of the plant, so that the millipedes can creep under them. Examine these traps in the morning. Any insecticide which would kill them would probably injure the plants.—G. S. S.

Saw-flies.—I herewith send you a specimen of a fly (an Italian one). It appears to hover about Roses, and I fancy may deposit eggs on the stems. After the eggs are hatched the grubs eat their way into the stems. I should be much obliged for information as to getting rid of the pest.—M. SCOTT.

* * * The flies forwarded are saw-flies, one of the *Tenthredinidae*; several members of this family attack Roses, their grubs devour the leaves, and some burrow in the stems. Kill the grubs or flies wherever they can be found; if the former are very abundant, syringe the bushes with soft soap or tobacco water.—G. S. S.

Cork bark for edging.—Having a lot of old virgin cork lying about, it occurred to me that it might be utilised for an edging to walks. I embedded the pieces in the soil, leaving about 3 inches out of the ground. I rather like the appearance of it, as it does not look so formal as tiles, and will, of course, last a number of years. I have never seen cork bark mentioned as suitable for this purpose.—J. C. B.

Mode of packing cut flowers.—Will some of your readers kindly give some instructions as to the best way of sending cut flowers, best time of cutting them, and best method of packing? Mine always wither at once; those bought at shops do not last long.—F. J. RADCLIFFE.

We are requested to mention that in the official list of awards of the recent flower show at the Crystal Palace, the award of a first-class certificate to Messrs. J. Curter and Co. for their Jubilee Mimulus was inadvertently omitted.

A list of the awards of the fruit and floral committees of the Royal Horticultural Society from February, 1884, to May, 1887, has been sent to us, and, we understand, may be obtained at the South Kensington office of the society.

We are asked to state that a special general meeting of the Fellows of the Royal Horticultural Society will be held at 3 p.m. on Tuesday, June 28, in the conservatory, to consider the results of the negotiations and inquiries which have been made by the council as to the future maintenance and housing of the society. N.B.—Entrance N.E. Orchard House, Exhibition Road, South Kensington, S.W.

Names of plants.—*Corona*.—1, *Oncidium crispum*; 2, *Thunia Marshalli*; 3 and 4, *Cattleya Mossiae* vars., lips too bruised to identify; 5, *Andromeda japonica*.—*G. and J. Lane*.—1, *Lilium davuricum*; 2, Rose, probably a variety of *Rosa alba*; 4, *Lilium japonicum*.—*Anna*—*Cuedia coccinea*.—*F. M.*—The yellow variety is *Iris juncea*; other not known.—*J. Boller*.—*Eurybia Gumi*—*F. E. (Ladysmerry)*.—1, a Saxifraga, but flowers all gone; 2, *America vulgaris*; 3, *Corchorus japonicus*; 4, *Scilla nutans*; 5, *Asperula odorata* (Woodruff); 6, *Saxifraga tribracteata*.—*Bichter*.—*Scilla nutans*.—*Miss Robertson, Ipswich*.—*Ceanothus azureus*, *Oncidium spheclatum*, *Banksian Rose*.—*J. D. M.*.—1, *Cystopteris montana*; 2, specimen insufficient; 3, *Gnaphalium oleum*; 4, *Papaver bracteatum*; 5, flower shrivelled; Fern, *Plymatodes Billiarderi*.—*R. L. A.*—1, *Andromeda axillaria*; 2, *Cytisus Adamii*.

WOODS & FORESTS.

"YORKSHIREMAN."

FORESTRY NOTES.

FENCES.—I do not undertake to determine whether it be creditable to "the bulk of the people," as Mr. Yeo puts it, or not, that they do not all know the difference between riven and sawn stakes, but I am aware that there are some people who do not know this; hence my pointing the fact out. If it is well known that riven stakes are best, how comes it that so many sawn ones are used? On estates near here there are miles of these, and they are common everywhere. At one large saw-mill belonging to a timber merchant thousands are sold to farmers every year. It is facts I go by, not supposition. You can hardly travel by train anywhere without seeing fences of sawn stakes. As to the staying power of our post and wire fences, which Mr. Yeo says "he has little faith in if they exceed a height of from 3 feet to 4 feet when subjected to lateral pressure," I have only to say that he has clearly never tried them. I can show him fences of this sort 3 feet 9 inches high and posts 9 inches asunder without a stay for about 100 yards, and I will give him every opportunity of testing them by lateral pressure, so that he can judge for himself. We have scores of miles of plantation fences, I daresay, and I sorely grudge the expense of keeping them in order. In this part of Yorkshire, and other counties as well, I have noticed that the Quick hedges, almost without exception, have cost more than their worth to raise and keep good round plantations, and that they are generally dead, neglected, or useless, and as forestry on any estate must be managed economically to pay, I cast about in my own mind, some time ago, for a substitute for these and other wood fences generally in use, and pronounced in favour of the posts and wire. The wire is cheap and lasts a long while; the Oak stakes we can rive on wet days from dead and often sap rotten Oak, using the heart-wood mainly, which lasts longest, and the fences are the best we have tried. The lateral pressure suggested by Mr. Yeo is a myth. We have hundreds of cattle and horses grazing in the parks here, and I observe that the mere sight of a slim fence turns them. They never attempt to knock down a fence, or jump over one unless forced, and the only damage done is to the posts, against which the animals rub themselves.

PLANTING WASTE LAND. There is much waste land about here fit for no other purpose than planting, but where not planted, let in with farm lands at a merely nominal rent. One large tract, however, with which I am familiar, and which is not only unfit for agricultural purposes, but almost impassable in some places, being poor, precipitous and rocky, has produced trees for many generations, and has been planted and cared for according to the times. I cannot say what this ground may have produced previously, but during the last forty years probably at least £60,000 worth of timber has been sold from it, and its present valuation will come to about £40,000. It is one of the roughest pieces of land in England, and fit for nothing but tree-growing, and the surprising thing about it is that such poor high-lying ground should have produced good and saleable timber so long that it is likely to continue doing so, the young plantations of other kinds of trees planted on the cleared ground growing away as vigorously as if they were on virgin land. It is examples of this kind that cause us to treat with doubt the recommendations of some foresters to go to

so much expense to prepare ground for planting. All round here is a hilly country; wherever the rough, rocky slopes have been planted, the trees have done well and become very valuable. Foresters have quite enough to do at present to utilise waste land without troubling their heads about the comparative merits of timber *versus* corn culture. That good timber can be grown on ground where nothing else will thrive properly can be proved.

BEST SITUATIONS FOR TIMBER.—Whether it be hard or soft woods, Firs or Oaks, the tallest and straightest and most bulky timber is produced in the shortest time on steep slopes and ravines, and as such land is usually more unfit for farming purposes than the tops of the hills, it follows that they are the best places to plant with trees. There is hardly an exception to this rule; the length and straightness of the trees are remarkable. The soil being usually well drained in such places of fair depth, and shelter being afforded from cold winds, the plantations make rapid progress, and come to maturity in a reasonable time. It is sometimes desirable to plant exposed ridges for the sake of shelter, but these do not produce timber. Miles of "back-bones" of spurs of the Pennine range have been planted here in times past, and the difference between the timber on these spots and that close by, in the gorges and ravines, as regards bulk is apparent to the most casual observer. On the hill-tops the trees never get above the size of scrub at the margins of the plantations, and in the centre they are comparatively small, and where from gales spots have been thinned out, those left have quickly succumbed, leaving large gaps. The shelter afforded by these exposed plantations to the adjoining land is, however, undoubted. Some sixty or seventy years ago an enterprising landlord planted every exposed ridge on his extensive estate, and the effects are now visible in the better crops from the land. The timber crop over the whole area is, however, not worth much, and cannot be spared.

PLANTING FOR UTILITY AND ORNAMENT.—"W. B." speaks of doing this by filling the spaces under and between the timber trees with Hollies and other kinds of underwood, by which plan he can ensure a permanent undergrowth of evergreen or deciduous trees and shrubs with the most picturesque and profitable forest trees, instead of those unsightly naked plantations open at the bottom with nearly valueless timber trees so frequently to be seen, &c. I have myself seen abundant and healthy underwood of ornamental trees and shrubs in timber plantations, but never where the timber trees grew as thickly as they ought to do to make good timber and pay. My experience is that an unbroken canopy of foliage overhead nearly kills everything under it, even to the Grass; hence where underwood has to be permanently preserved, proprietors must do so at a sacrifice of timber crop and decide accordingly. As to plantations open at the bottom because of the trunks being bare—being valueless, the contrary is just the fact. Underwood will grow and live under the partial shade of other trees, but it must have a considerable amount of sunlight as well as other vegetation, and the picture drawn by "W. B." cannot be produced in timber plantations, but may be produced in the home woods where both the timber trees and the underwood are intended to remain. We are familiar with the best underwood-furnished woods in England, where the underwood consists of Hollies, Yews, Box, and Rhododendrons, &c., but the deciduous timber trees are thin on the ground, with bunchy, useless tops, owing to the room found for the Ever-

greens, &c., every one of which occupies the place of a timber tree, and none of these left can be spared. This is not timber growing.

SPRUCE HEDGES.

THE common Yew, as is well known, makes one of the most ornamental of hedges, but it grows slowly, and ought never to be planted in any situation where stock of any kind is likely to obtain access to it. On the other hand, the Spruce grows rapidly, and with proper attention proves little inferior to the Yew as regards appearance, and quite equal to it for affording shelter. The common Beech tree is also very useful for this purpose, as when kept in the form of a hedge it retains its old leaves until the young ones are about ready to take their place. In some parts of Norfolk and Suffolk, where the land is so light and poor that Quick or common Whitethorn, which is generally employed for hedges, refuses to grow upon it, the common Scotch Fir is frequently used for the purpose, and generally answers well, but in the course of a few years the lower branches are apt to die off, a fault not possessed by the Spruce. In the neighbourhood of Bury St. Edmunds there are hedges formed of Spruce some 6 feet or 7 feet high, and from fifteen to twenty years old, which at a short distance off one would think were Yew hedges. The soil where Spruce is intended to be planted should be prepared by being deeply dug or trenched, and the trees may be put in any time between the beginning of October and that of March, but the first-named month is the best. The plants should be healthy, young and well furnished, *z. e.*, plants which have been once or twice transplanted, and that have retained their lower branches, which will not be the case if they have been allowed to become crowded too long in nursery beds. They should be some 2½ feet or 3 feet in height, and should be planted 2 feet from each other; but if the plants are larger, this distance may be increased. But little attention will be required the first year after planting beyond freeing them from weeds, and as soon as growth commences, say towards the end of April, the hedge shears should be passed along each side so as to shorten the side shoots, and to some extent give form to the hedge. But the top or leading shoots should not be interfered with until they have attained the desired height, when they should be stopped, an operation which will induce the lower part to thicken or fill up; and at first the width should not be allowed to greatly exceed 2 feet, as the hedge, as it becomes older, will to some extent unavoidably increase in width. The main stem of the Spruce being fairly strong, the hedge may be allowed to grow to any desired height, and it may also be allowed to assume any desired form, such as wide at the bottom and tapering towards the top, or in what is known as the hog's-mané form; or it may be made, as it were, to form a dark green wall of any reasonable height, and exactly the same width at the top as at the bottom. The latter form is certainly the most ornamental. Such hedges must be annually clipped with the ordinary hedge shears, an operation which should be performed in August, or, if great neatness is desired, twice in the season, say in July and October. P. G.

Garden gates and doors.—The fallacy of using foreign wood so extensively for garden gates and doors is being, I believe, gradually exploded. Take the case of entrance gates. Instead of being made of good sound British Oak, they are often constructed of foreign deal. As a kind of compromise, the wood is occasionally grained to imitate Oak. Now, my notion of an entrance gate is that it should be what it pretends to be, and the proper material is British Oak. In entrance gates wood and iron can be blended to advantage, as strength and durability are gained without sacrificing the proper degree of lightness in design. The posts, of course, should be of Oak, and the rails and brace of the same material, whilst the upright rods or bars should be of iron. When the Oak is thoroughly good and varnished to show the grain, and the iron painted so as to nearly

resemble natural colour. I think we have the perfection of an entrance gate. Everyone can see of what it is composed and draw their conclusions accordingly. In the case of gates which are less prominent, a greater latitude is permissible, but on the whole, although the first cost may be somewhat greater, there is nothing better than Oak. For rails and poles Larch probably comes next. With doors as with gates, at least in every case where they are exposed to the weather, Oak should always be employed for the posts. The construction of the door itself will depend somewhat upon its size and situation. I know of doors forming the exits and entrances in a gentleman's garden which are made of Scotch Fir, and have probably been in use for a generation. As regards appearance they are as sound as when first made. I should not have suspected what the wood was had I not seen the gates when the paint was in course of removal for a new coating. The wood probably was thoroughly seasoned and first painted when dry. Owing to the comparative ease with which a door of this class is repaired, it is less important than in the case of gates that the most lasting material should be used. For this reason, and also on account of its lightness, wood of the Fir is mostly used for the boarding, and tough hard wood such as Elm for the ledges or framework.—D. J. YEO.

SEASIDE PLANTING.

NONE but those who have been engaged in forming plantations or pleasure grounds on an exposed sea-coast can form any idea of the difficulties to be encountered in carrying out that kind of work. My experience, which has been considerable, may therefore aid others who have work of that character to perform. The principal evils which one has to contend with in seaside planting are the saline particles which are carried by the wind and deposited with such persistent force on the leaves and tender shoots of trees and shrubs planted near the seaboard, as to cause them to burn and wither away. This is more particularly the case when the plants are young and have just been transplanted from the sheltered rows of the nursery garden and other places, where they have not been exposed to the full force of the south-west or other gales that come laden with salt from the ocean. Another evil, nearly as great, is the fact that the young trees and plants become loosened through wind-waving, unless they are well staked, leaving often a large hole near the neck or collar, in which water rests, and causes the bark at that point and the roots to decay. Firm planting and staking are great points in the management of young plantations near the seaside.

PREPARATION OF SOIL.—Everyone who has had any experience in planting knows how necessary it is to deeply dig or trench the ground; but this in some instances can be wrongly carried out. Wherever there is a subsoil of stiff clay, or poor binding loam, I hold it to be wrong to throw the good top spit into the bottom of the trench, and to bring the sour clay or poor loam to the top. Roots make no progress in such sterile soil, and the tops have no opportunity of making a vigorous start. Moreover, I have often seen these kinds of soil run together, and set as firmly as cement for some inches deep on the surface, so as to be impervious to air or rain, and the young roots taken from the well-prepared soil of nurseries refuse for some time to feed on the sour poor soil in which they find themselves. In all cases in which the soil is as I have just described, it is preferable to trench, so that the best material can be kept on the top. If the second spit of soil is equal, or nearly so, in quality to the top soil, trenching should be performed in the ordinary manner of casting the first spit into the bottom of the trench and the lower one on the top, this being by far the quickest way, and in some instances, where the under spit is composed of sandy, poor loam, I would bring it to the top, as this kind of soil speedily settles with a few showers round the base of the young trees, without baking or being impervious to rainfall, as the soils I have before mentioned are. All heavy clayey soils should be thoroughly drained previous to being trenched and

planted; the draining can be done by means of open drains or ditches in ordinary plantations. Spaces for open drains should be left until the trenching and planting are done, when they can be carefully thrown out, with smooth sloping sides, and the surplus soil cast among the young plants. I prefer 4-inch common socket drain-pipes, and, if obtainable, I would put some common rubble as a slight covering to the pipes, and turn a turf sod upside down on the top of the rubble. If the latter cannot be obtained, place the turf as above mentioned on the drain-pipes. I think it is always best to allow the land to have some days to settle after trenching previous to putting in the plants, and if a good heavy shower has taken place between the time of trenching and planting, so much the better for the young trees. In chalky and stiff hard lands I would, if labour could be afforded, trench 3 feet deep.

SELECTION OF SHRUBS AND TREES.—Among forest trees the Elm stands in the foremost rank, owing to the way in which it manages to grow aloft and spread its ponderous limbs direct in the teeth of the wind. On the south coast, in many neighbourhoods, are found some magnificent examples of Elms growing in most exposed situations. The Sycamore likewise thrives well near the sea, and, owing to its rapid growth, is also a valuable tree. Oak, Birch, Willows, and Poplars, Ash, and in fact every kind of deciduous tree, may be used in mixed plantations near the sea, for the sake of variety of foliage and expression; but the two first named are the most certain. It is, however, not deciduous trees that are the greatest sufferers from the salt spray. Evergreen trees and shrubs are the most injured, and many, particularly Conifers, cannot exist at all within the salt line. Fortunately, however, there are a goodly number that do withstand the sea breeze, and, with careful judicious grouping and planting, produce a good effect where other things would fail. The following is a list of such as I have tried and know will succeed, viz.: *Pinus austriaca*, a Conifer which grows rapidly and affords good shelter. I have found this Pine to resist the effects of the salt, and to grow in the most exposed situations, even in the form of single trees, as well as in avenues, having no shelter whatever. It succeeds best planted when about 18 inches or 2 feet in height. I have often lifted it when 6 feet and 8 feet in height with success. The following Pines will also grow near the sea, if not in too exposed situations, viz., *Pinus Cembra*, *Pinus insignis*, *Pinaster*, the Corsican Pine, and the Aleppo Pine. The *Pinus sylvestris*, or Scotch Fir, after it has been planted some time, resists the salt well, but I have had young plants of it, fresh from nursery beds, so injured by salt, that many of them died. Among the *Piceas* I found the following to do well, viz., *Picea lasiocarpa*, *P. nobilis*, *P. Nordmanniana*, *P. Pinapo*, and *P. grandis*. Of the Fir tribe, I have found *Abies canadensis*, *Douglasii*, *Menziesii*, *Claibrasiliana*, and *pygmaea* all to have great power of resistance as regards sea breezes. Young plants when first exposed, particularly if obtained from inland nurseries, sometimes suffer. I would recommend everyone who has planting to do by the sea to obtain the plants near at hand, and from the most exposed nurseries they can find. In continuing my list of plants and trees that will succeed well under ordinary care I must not omit *Araucaria imbricata*, which is one of the very best for the purpose, and one that bears transplanting well, even when nearly 20 feet in height. This *Araucaria* will grow almost close to the edge of the sea. Another class of useful trees for seaside planting are the *Cypresses*, of which I found the following do well, viz., *Cupressus Lambertiana* and *macrocarpa*, the latter having quite a notoriety as a seaside plant, which on the south coast is fully borne out by the many fine examples of it to be met with. In a garden at Eastbourne I saw a fine example of this *Cypress* upwards of 50 feet in height, and about the same in spread of the branches. I planted some fine trees of *Cupressus Lawsoniana* in very exposed situations, where they stood many a trying breeze, but they were not at all injured by the salt. I also found *Thuopsis borealis* and many of the *Thujas* bear exposure well, as did also *Fitzroya patagonica* and

several of the *Junipers* and *Yews*. Among evergreen trees and shrubs, the Evergreen Oak (*Quercus ilex*), *Hollies*, *Euonymus*, *Phillyreas*, *Bays*, *Portugal* and common *Laurels*, *Laurustinus*, *Arbutus*, *Erica* *codonoides* and *mediterranea*, and *Rhododendrons*, if only slightly sheltered, also do well. In fact, there are many other well-known trees and shrubs that bear almost any amount of exposure to the sea breeze. Among these I may mention the *Tamarisk*, which grows near the seashore everywhere. In St. Michael's, in the Azores, *Pittosporum undulatum* and *Tobira* grow down to the edge of the sea, and *Camellias* may be found only a few hundred feet away from it. The common green and silver-striped *Euonymuses* are the best plants with which I am acquainted for protection to borders of low tender shrubs. Their rapid, compact, and sturdy habit of growth renders them almost as impervious to wind as a brick wall; consequently, when planted, either as a hedgerow or in broken lines, they form excellent nurses and protectors to the more tender plants. I have never found the *Euonymus* to be injured by salt spray, though I have seen it growing close to the sea. I have known it to grow from 18 inches high to the height of 6 feet, 7 feet, and 8 feet in a few years. For forming masses on embankments I prefer it to the common *Laurel*. It bears cutting in any shape, and is a plant admirably adapted for forming divisions between small properties. No one, therefore, need despair of making gardens and plantations near the sea, with so much material from which to choose, if they have only good soil, and will trench, plant firmly and thick, and by all means stake young trees for a year or two. By planting the Austrian Fir in belts 4 feet or 5 feet deep round the outer edge of plantations, they speedily form a thick screen, and shelter the less hardy trees. In narrow and exposed borders of ornamental shrubs an excellent screen or nurse can be made thus: Drive some stakes firmly into the ground about 4 feet apart, interlace them with wattles, and draw or pack them firmly with green *Furze*. This will afford protection for two winters, by which time the trees and shrubs will have become established, and will protect one another.

TIME OF PLANTING.—There are a great many opinions as to the proper time to plant trees and shrubs, or, perhaps, I should say, as to the different times at which they may be planted. Some say, "plant at any time," and this may succeed occasionally. But when one has forty acres or fifty acres of plantations to put in, midsummer is not the time one would choose for the operation, even if supplied with hydrants and similar appliances. My experience points to early spring as the best time for seaside planting. Trees and shrubs planted in the early autumn are subjected to the whole of the winter's surly blast, which, in addition to the singeing they get from the salt spray, robs them of more than half their leaves. I am now alluding to situations very much exposed. With the shelter of a hill or of strong belts of plantation, I would plant in October rather than in spring, particularly if I were sure that the winter would be open. I have, however, planted young Austrian and Scotch Firs from the same nursery both in autumn and in early spring, and have found the spring-planted ones to succeed infinitely better than those put in in autumn, which got burnt so brown with salt spray as to be to all appearance dead, and, in fact, many of them were; whilst the spring-planted trees rarely or never turned a leaf, and failures among them were rare. P. W.

Destroying tree butts.—The following method is recommended of getting rid of the stumps and roots of timber in cases where grubbing-up is not considered desirable: In the autumn bore a hole 1 inch or 1½ inches in diameter, according to the girth of the stump, vertically in the centre of the latter, and 18 inches deep. Put in 1 oz. or 1½ ozs. of saltpetre; fill the hole with water, and plug it close. In the ensuing spring take out the plug, and pour in half a gill of kerosene oil, and ignite it. The stump will smoulder away, without blazing, to the very extremities of the roots, leaving nothing but ashes.

No. 815. SATURDAY, July 2, 1887. Vol. XXXI.

"This is an Art
Which does mend Nature: change it rather; but
THE ART ITSELF IS NATURE."—*Shakespeare.*

BEAUTIFUL SINGLE POPPIES.

I SEND you a small handful of my Poppies. I exhibited a few at the Royal Horticultural show on Tuesday, and they were greatly admired.

I remember very similar flowers when I was a boy, five-and-thirty years ago, but I have never seen them since, nor had anyone at South Kensington seen such till I exhibited them there last year.

Their history is one of simple perseverance. In 1879, when I first came here, there was, in the wild part of the garden, a stray common field Poppy (*P. Rhæas*). One blossom of it showed a narrow white edge. I marked this, and saved the seed-capsule and sowed, getting in 1880 several pale red flowers and a few white margined. The best of these were again selected, the bad ones being ruthlessly pulled up. In 1881 I had distinctly advanced, and so have until now, when they appear to be perfect; indeed I am a little fearful for them, as they appear to be developing a tendency to go double, which (in my opinion) altogether spoils them. I have lots of doubles come similar in appearance to that figured in *THE GARDEN* last week, but I pull them up at once for fear of infection to the others.

I also always destroy any plant showing a sign of black in petals or stamens, or even anthers. In this lies the great difference between mine and Mr. Geo. Paul's. Often you meet with a really lovely flower, but it has black in it somewhere, and if left will infect all the rest and cause a muddy, blood-coloured progeny. Mr. Paul has not the heart to destroy these black-eyed beauties; I have no hesitation, however lovely. In mine you will observe the exquisite brightness and clearness of colour and tone. I now get not more, I think, than 1 per cent. of rogues, *i.e.*, "blackies," and I do not suppose I shall ever reduce the number below that—only, if they are to be kept pure, they require constant early morning attention to banish every rogue as soon as, or even before, he expands in villany.

You will observe one blossom which is white with a coloured edge, and one or two flaked flowers; these (though not so lovely as the pale pink with white edge) are my latest arrivals of variation save a marbled one, which, however, has not a bloom open to-day.

W. WILKS.

* * * Although Poppies do not travel so well as most flowers, the blooms sent, on the second day after their arrival, display a purity and novelty of tone quite charming to see—lovely pink and flesh colours, with white petals inside sometimes. The most refined and

charming flowers we have seen for many a day, and all forms of our common English field Poppy.—*Ed.*

ENGLISH NAMES FOR ENGLISH-SPEAKING PEOPLE.

TO THE EDITOR OF THE GARDEN.

SIR,—To a certain extent I sympathise with both sides. I fully sympathise with your endeavour to popularise our favourite plants, but I cannot think that the plan you have adopted will in any way help forward that good object. A plant becomes popular because it is beautiful, or because it is easily cultivated. Its name is of no consequence in either direction. It will not fail to win popularity because it has an ugly or a learned name, nor will it win popularity because it has a simple English name; nor do I think your new names make the plants more easily distinguished. For myself, I can safely state the contrary. *THE GARDEN* is now to me a weekly puzzle. I often do not know what plants are meant, and I am sure many must be in the same position as myself. [*Mr. Ellacombe may now have some idea of the feelings of people who have been talked to in an unknown tongue for many years.*—*Ed.*] We want an interpreter.

You object to Latin names, but leave the poor plants to themselves, and if they are worth anything the Latin names will not hurt them. What are you going to do with Rose, Tulip, Violet, Anemone, Cyclamen, Hyacinth, Cypress, Melon, Asparagus, Thyme, and hundreds of others that are pure Greek and Latin names, which have adapted themselves to their localities, and have become Anglicised, and have certainly not stood in the way of the popularity of the plants? [*Canon Ellacombe cannot suppose that anybody wants to abolish our best English names. He mentions pure English names here. Whatever they were once they are English now; but, in addition to these, we said we should keep the good Latin names.*—*Ed.*] Indeed, in many cases the classical names have taken the place of the common English names. Nobody now talks of Sowbread; we prefer the Greek Cyclamen. Nobody talks of Saffron, once the common name of all Crocuses and Colchicums. We prefer the Greek Crocus.

You mention two new names that you propose adopting. I object to both. Tiarella is to be the Foam Flower, but which Tiarella? There are several in cultivation, and certainly the name (which does not seem to me to be very applicable to any) is quite inapplicable to some. The plant already has an English name—the Mitre plant—which has the advantage of connecting together the English and Latin names (Mitre and Tiara) and of directing attention to the peculiar seed-vessel. [*A good English name need do none of these things.*—*Ed.*] Then the Saxifrage family is to be called Rockfoil, which does not seem to me as excellent as it does to you. It is a hybrid word, half English and half Latin, after the manner of trade advertisements; and why is a new name wanted? Saxifrage has become completely naturalised, and if you are going to apply the new name to all the family, what is to become of London Pride, None so Pretty, and other such names, which I certainly will not give up for Rockfoil? [*To adopt the name Rockfoil for the family in no way interferes with a good old name like London Pride. Saxifrage is very far from being "completely naturalised."*—*Ed.*]

But, as a matter of fact, have your laudable endeavours met with success? Have you thoroughly established one new name beyond the pages of *THE GARDEN*? I think not. One of

the best of the proposed names was Plantain Lily (two Latin words) for the Funkia. But in all my intercourse with gardeners I do not remember to have heard that name as the common name for the plant. Nor have I ever heard the Echiochorda called the Pearl Bush; its common name is Spiræa. [*Spiræa is the Latin name of a genus, and as an English name for Echiochorda wrong in all ways. The true Spiræa has a good English name of its own—Meadow Sweet.*—*Ed.*]

The fact is, that popular names cannot be made to order. They spring up no one knows how, and establish themselves by their own vital force, or they die at once. You cannot force a name, and you cannot kill one; and Horace's rule still holds good:—

Multi renascuntur que jam cecidere, cadentque
Que nunc sunt in honore vocabula, si volet usus,
Quem penes arbitrium est et jus et norma loquendi.

I must apologise for writing at such length, but I must add that I do not for a moment dispute your full right to coin as many new names as you think desirable. I only protest against being compelled to accept the new coinage as the only current coin, though I may also think that no new coinage is necessary. I also protest against being called a pedant because I prefer the old coinage. There is often less pedantry in using a well-recognised word (in whatever language it may be found) than in insisting on a new one merely because it is in English.—HENRY N. ELLACOMBE, *Bitton Vicarage, Gloucestershire.*

* * * I am hopeless, and said so long ago, but I print these words lest even one person should suppose there is anything in the "reasons" urged against English names for plants. Canon Ellacombe contemplates the subject wholly from the standpoint of an educated man, who has all his life been familiar with the meaning of the Latin names of plants. His (bigoted) reverence for these will not let him take any account of the existing thousands of plant-lovers who know nothing whatever of Latin, or of the multitudes yet unborn who will live and die in the same predicament. "I do not want English names, therefore no one else does," is the logic of one who has lived all his days in the sound of Latin names for plants. We cannot accuse him of altruism! I will now say a few plain words as to points raised in his note before again going on my way regardless.

1. Mr. Ellacombe says "*a name is of no consequence*" in making a beautiful plant popular. Now, long ugly names are distinctly a real difficulty in the way of a plant being known. What is a cottager, who understands what is meant by Musk, Snapdragon, and Marigold, to make of such names as *Oxyura chrysanthemoides* or *Calliethra platyglossa*, or *Platystemon californicum*, all good things that might be grown in any cottage garden? I was in a cottage garden yesterday, and asked the woman what she called the flowers. London Pride, Double Buttercup, Candytuft, Rocket Snapdragon—only one she had no name for, an autumn plant half grown. I told her it was the great Ox-eye Daisy. I wonder what she would have made of *Pyrethrum uliginosum*?

2. "*What are you going to do with Rose, &c.*" To suppose that people who crave for such names as Rose and Violet and Thyme

are going to abolish these is really too much even from an opponent of English names. These are anglicised, *not* "pure" Greek and Latin. Then names—Rose, Tulip, &c.—directly derived from Latin are as good English as half the words in the good Canon's letter that have the same parentage. Many everyday words now English are absolute Latin, not Latin anglicised, like the plant names he quotes—*opera*, *circus*, *omnibus*—but these none the less are now English.

3. "Have you thoroughly established one name beyond the pages of THE GARDEN?" It is not a question of the few names that in the interests of decency we of THE GARDEN have tried to create for pretty flowers, as, for example, Plantain Lily. There is scarcely a beautiful race of flowers of the old day that had not a pretty English name—alas! often driven out of use by the so-called scientific term. When I came to London there was only one nursery that sold any hardy flowers. The Royal Gardens at Kew were rank with bedding-out, and even there the flowers of the northern world were not considered fit to take any part in its flower gardening. The Botanic Garden in the Regent's Park was like the Marylebone Cemetery, with names written up and down instead of across. I wrote to Syon House for some white Lilies; the gardener said I was too late; the last had been burnt with the rubbish a few days before. Apart altogether from THE GARDEN, I now speak on a moderate average to over 150,000 persons every week about hardy flowers by English names where possible. Strange to say, too, people like it. No doubt Canon Ellacombe will think it sad. I cannot even say that I am at the end of my evil course. Without waiting for the end, however, I may, without presumption, I hope, say that I have established many names "beyond the pages of THE GARDEN."

4. "Popular names cannot be made to order." What of Paris Daisy, a new name adopted by trade, amateurs, and everybody? The wish is father to the thought here. Even Mr. Ruskin's Rockfoil is distasteful to Canon Ellacombe. The name will live as long as the English tongue, and that means long after the present modes of teaching botany. Botanists having given plants ridiculous appellations for many years, we are now told popular names cannot be created. Happily, thousands exist. Every day we see new inventions for which English names are found, but we are not, forsooth! to create names for new flowers. It would not please the botanic gardener, who has always been so full of tenderness for us and talked to us in such pretty ways!

Canon Ellacombe does not even see that the question is one for all, even for children. He objects to being called a pedant, and quotes "Horace" in a gardening paper! He cannot see away from his own correct labels. If he should ever repent and help me with a good English name, I will be grateful, and print it, but I cannot waste space with such "reasons" as he gives against our English

names, poor though some may be. We do not even wish to rob him of the use of his Latin, as he supposes. We want English names for flowers for English-speaking people, and any space we can give to the matter for the future will be for those who help us to get them. We, if anything, err too much in the use of Latin names ourselves. The name Flag, for example, is a beautiful English name which we have too long forgotten.

W. R.

FLOWERS IN THE HOUSE.

Under this head we propose, during the present season of flowers, to notice things, from whatever department, that are pretty and useful for the house.

THRIFT (Armeria).—I send you for your table Armeria cephalotes alba and the pink Armeria grandiflora.—C. M. OWEN.

ROSE MALMAISON AND FORGET-ME-NOT.—A beautiful thing just now is a large bowl of good old Souvenir de la Malmaison mixed with the true Forget-me-not.

THE SMOOTH ALUM ROOT (Heuchera glabra).—This is an exceedingly pretty plant for placing among cut flowers, its form being quite unique and productive of lightness and elegance, requisites in all floral arrangements.—E. JENKINS.

ROSE ANNA OLLIVIER.—Lovely Rose for the table; good in colour out of doors; indoors, by artificial light, far more beautiful; fine salmon-pink. Its pretty, urn-like form is very distinct. It is best arranged by itself.

POPPY DANEBROG (pink form).—The pink form of Papaver Danebrog, which I send you, appears to be a hybrid between the scarlet and white Danebrog and the pure white Flag of Truce varieties.—C. M. OWEN.

WALL HARRELL (Campanula Portenschlagiana).—Amongst all the pretty dwarf Campanulas I do not think any kind is so satisfactory as C. Portenschlagiana (C. muralis). We find it the easiest to grow and the longest to flower on the rockwork.—C. M. OWEN.

DELPHINIUM TRISTE.—This curious plant is easily grown, and forms a very striking contrast in colour to other flowers at this season. Some of the plants produce very dark brown flowers, but the prevailing colour is sepia to black.—J. W. ODELL, *Burrow Point, Pinner.*

PEONIES FROM IRELAND.—I send you a few Peony flowers. The plants grow about 4 feet high, and the flowers are very fragrant; but, owing to the heat and long-continued drought, the latter are smaller and of less substance than usual.—F. BEDFORD.

PEACOCK POPPY (Papaver pavoninum).—I enclose a few blooms of this new Poppy. It is very free, and will become as popular as P. umbrosum. The flowers droop very quickly, but this is due partly, I believe, to the excessive hot sun we have been having the last few days.—J. W. ODELL.

SCOTCH ROSES.—I herewith send you a gathering of Scotch Roses for your table.—M. WILLIAM, *Kirkcunell, Dumfries.*

*** Among these graceful little Roses, which

deserve a place in every garden, we notice that the colour is far brighter than in many Tea Roses reported to be yellow.—ED.

THE MOCASSIN FLOWER (Cypripedium spectabile).—I send you blooms of Cypripedium spectabile, taken from a nice clump with eighty-nine flowers. It has been planted three years.—F. BEDFORD, *Stratton, Kildare.*

*** A very vigorous and well-flowered spike of this popular hardy Orchid. Lasts well when cut.—ED.

HARDY BULBS IN LONDON GARDEN.—I send a few more flowers. The Liliastrum does very well with me, as you see, as does the smaller form, and the graceful, tall Ornithogalum, which I received as O. Elwesi (but which I am told it is not), is very ornamental. The Asphodelus I send is rather past its bloom; it was very handsome when fully out. The Cyclobothras do very well; the white form is, I think, one of our prettiest bulbs, particularly when grown in a good clump. I ought to have said last week (as you may have some readers who do not know the plant) that the lovely salmon pink colour of the Eremurus and its delightful fragrance are charms added to its stately magnificence.—H. STUART-WORTLEY (Colonel), *Roslyn House, London.*

THE VINE-LEAVED INDIAN MALLOW (Abutilon vitifolium).—I enclose the first flowers we have had here of Abutilon vitifolium. The shrub, now about 9 feet high, was raised from seed four or five years ago, from a plant growing near Bray, county Wicklow, and it was so pretty when I saw it, some years ago, that it is worth risking many failures for one success in growing it. Of two plants shaded from the east by shrubs, only the one completely shaded from the winter morning sun has survived—one of the numerous proofs gardeners have of how small a difference in position may cause success or failure in experiments with plants of doubtful hardiness. A plant from the same batch of seedlings has lived out-of-doors for several winters, against a wall in the Edinburgh Botanic Gardens. Perhaps drought affects this shrub as much as cold does, as I found it drooping greatly to-day from want of water.—C. M. OWEN, *Knockmullen, Gorey.*

NOTES OF THE WEEK.

The Yellow Indian Rock Cress (Tropaeolum polyphyllum).—I send you two sprays of Tropaeolum polyphyllum, which is fast becoming a pest with us.—F. BEDFORD.

*** A beautiful wreath of bloom fully 4 feet long. This plant is very showy when planted on a warm, sunny rockwork where it can ramble at will and display its lovely wreaths of golden orange flowers.—ED.

Allium giganteum.—In THE GARDEN of June 25 (p. 571) "Delta" says that he received an Allium giganteum from our establishment, but that he does not see it in the catalogues, nor in Nicholson's "Dictionary of Gardening." We offered this Allium in our last year's Dutch and Cape Bulb Catalogue, and offer it again in New and Rare Bulb and Plant List, pp. 1-3, and on p. 70 in this year's issue.—ANT. ROOZEN AND SON, *Oeverveen, Haarlem, Holland.*

The weather in Ireland.—The heat and drought are an exceptional experience in this usually damp climate. I fear the garden will not recover the whole summer, as it has become so burnt up. Even the Grass is quite brown, and so many plants must be watered, that those which can get on at all without this attention have to be left to themselves. The drought is becoming very serious for farming as well as for gardening in this part of the country, and after the very dry spring there is much fear of wells, &c., failing if rain does not soon come.—C. M. OWEN, *Knockmullen, Gorey.*

FLOWER GARDEN.

THE ROSY PRIMROSE.

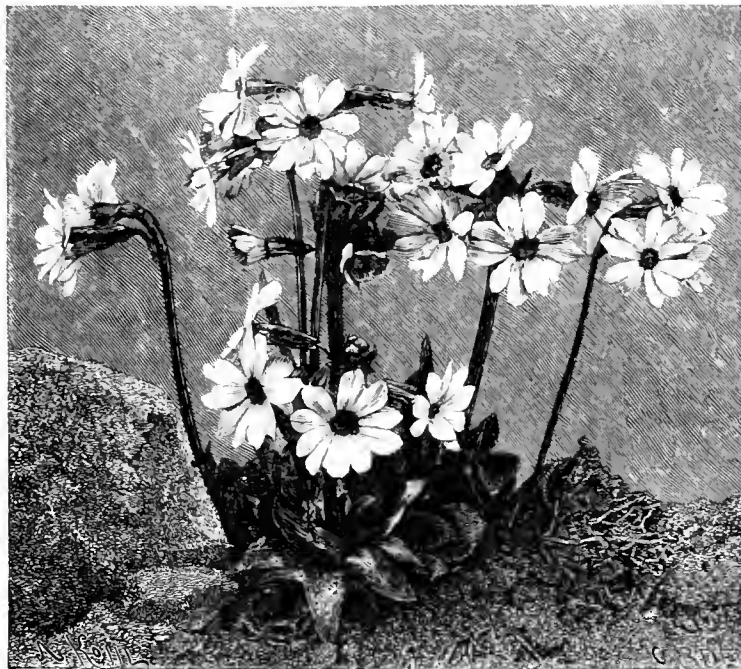
(PRIMULA ROSEA.)

OF the many pretty Primroses that have come to us of late years from the alpine regions of India, none surpasses this little gem in charming beauty. From the time when the flower-buds show the first spot of vivid crimson colour, on stalks scarcely rising from the rosette of yet undeveloped leaves, till the complete expansion of the neat trusses of full pink flowers at 6 inches or 8 inches high, the plant is full of charm and interest. There is a large garden variety considered by some as an improvement on the type, but though it gains in size and strength of colour, it loses in grace and refinement. It is a plant that wants no improving. It is a rapid grower, soon making thick tufts of many crowns. They should be divided at mid-summer by cutting off the whole thick mass of root within an inch of the base of the crowns,

a patch of these growing in a neighbour's garden two years since. He kindly gave me leave to mark a few of the best flowers. I sowed the seed as soon as ripe, and now have numerous plants, some 11 inches over, and carrying great quantities of flowers. I am sure ladies would be delighted with these single Pinks as cut flowers for house decoration.—A. D.

RANUNCULUS LYALLI.

IT is interesting to know from "G. J." that this lovely New Zealand species is to be seen in flower at Reading, and that permission has been kindly granted to see it at Park House, but hundreds of readers like myself cannot spare time to take a long journey for this purpose. If "G. J." would kindly say under what conditions the plant has been grown, whether it is in a greenhouse or planted out of doors, the information would be most valuable. I must say it is tantalising to read an account of a choice new plant, such as that furnished by "G. J.," and to find not a hint of how or under what conditions it has been grown. I have a plant of it in our cool Orchid house, and it is growing remarkably well.



The Rosy Primrose (*Primula rosea*). Engraved for THE GARDEN from a photograph.

when these should be divided singly and planted out in a cool place, where they may either remain, or be replanted in autumn. J.

Single Pinks.—How very pretty are the single forms of *Dianthus plumarius*, the old garden Pink! Those who have not seen these, and, I fear, they are numerous, have little notion of the remarkable beauty found in these medium-sized, but elegantly lacinated flowers. Even the best forms of *D. Heddwigi* are not so finely cut round the edges as these single Pinks are, and the flowers are borne in marvellous profusion on tall stems, so that they are specially useful for bunching. White ground hues predominate, but some are pink and others red; whilst all have carmine, red, maroon, or crimson bands round the eyes, giving them a most distinctive appearance. These single Pinks are also very deliciously perfumed, and that is far more than can be said of many of the flowers which fashion favours. If raised from seed, sown out in the open ground in the month of April, strong plants result for blooming the following year, and, if needed, will endure for years afterwards. I saw

it planted in a pot, but has not yet flowered. I find it is very liable to be attacked by green fly. Our plant is potted in turfy loam, with a little manure and leaf-mould added. This beautiful plant is said to cover the ground for hundreds of acres with sheets of its pure white flowers. It is confined to Middle Island, New Zealand, and grows on mountain slopes at from 1000 feet to 1000 feet elevation. An excellent coloured illustration is given of it in the *Botanical Magazine*, tab. 6888, but no cultural memoranda is given, except that it is stated "the seeds, from one of which the plant figured was raised, were procured per Major Leschke-maker, of Sydenham; they were sown in a tropical heat at Kew in October, 1882, and germinated in November of the following year." The plant flowered in April, 1886. The late Mr. Isaac Anderson-Henry is said to have flowered it previous to 1864, and remarked that the seeds lay dormant for four or five years. "It is known in New Zealand as the Lily, Water Lily, Mountain Lily, and Rookwood Lily." It is altogether a most interesting plant, and anyone who has succeeded in growing it well would confer a great favour by saying how it has been done. The plant must be hardy enough; the ground where it is

found growing is kept moist during the summer by the trickling down of the water from the melting snow. J. DOUGLAS.

Dianthus Greivei.—There is a fine tuft of this Pink on the rockery at Kew, and it may be considered a valuable acquisition. It will probably become a popular garden variety, as it is of the right character to please the amateur. It is the result of a cross between the alpine Pink (*D. alpinus*) and the Sweet William (*D. barbatus*). Its parentage is plainly seen, the individual flowers resembling those of the former, while they are produced in the dense cymes characteristic of the last-mentioned. The colour varies somewhat, being, however, usually bright rosy pink, though occasionally approaching to white. It both grows and blooms freely, and makes an effective rock or border plant.—E. C.

Lathyrus Drummondii.—I have a plant of this that is about 5 feet in height and some 4 feet through. It was a strong plant put out in good soil two or three years ago, and having been liberally mulched in spring it has attained to a large size, and is now covered with trusses of brilliant carmine-red flowers. All that I have done in the way of training is to put a few strong stakes round the plants, and then by winding twine round them, the shoots, which are very numerous, are kept in a compact mass. It is a very striking subject for isolated positions, or it can be allowed to trail over any suitable place. I think it does best when the roots can be kept cool and moist, and if planted in a hot and exposed position, should be well looked after in the matter of watering and mulching.—R. D.

Thrift edgings.—It is not often a Thrift edging forms a feature of the hardy garden, though there are few plants better suited for taking the place of Grass edgings than our common seashore *Armeria*. It would not be wise to advocate the entire use of the Thrift for the purpose, but it might be more often employed under certain conditions than is at present the case. At Kew there is a wide band of *Armeria*, which finishes off a bulb border, and as this is almost destitute of colour at the present time, the mass of rosy Thrift flowers helps to atone for the deficiency. In forming a verge of this description, it is necessary in the first place to well prepare the ground, and, secondly, to plant moderate sized pieces. These with proper care and attention will grow freely, and in the second season after planting will give a good display of flowers. When the weather is hot and dry it is wise policy to water freely, so as to keep the verge as fresh and healthy as possible.—E. C.

New early-flowering Clematis.—When looking through Mr. Charles Noble's nursery at Sunningdale a few days ago, I was much struck with some new Clematises of the patens section raised at the nursery and in course of distribution. They were George Elliot, blue-violet, large, well-formed, eight-petalled flowers of a charming hue of colour, and exquisitely scented, like Violets. We do not appear to possess many fragrant Clematises, but this is one of them. Then there is Lady Constance Kennedy, a charming pure white variety. On young plants the flowers are single, but as the plants increase in size they become semi-double and double, and it is very free indeed. This makes an excellent addition to our pure white early-flowering Clematises. Lord Beaconsfield has light lavender-grey flowers of good form and large size. Mr. Gladstone is of a light azure blue-grey, a very pretty shade, large in size, and of fine form. The last is Daniel Deronda, mauve-violet, flushed with red, and with a slight flame of white on each petal. This variety sometimes comes semi-double. These Clematises are propagated very largely and with great rapidity. They are worked—*i.e.*, grafted—on roots of *Clematis Vitalba*. Grafting is done about the middle of March, and the graft is tied round with a bit of raffia, which rots, and therefore saves the trouble of cutting away. They are then plunged in bottom heat in frames within a propagating house, and as soon as they have made a shoot of 6 inches or 8 inches in length, they are placed in a cooler temperature, then shifted into 4½-inch pots as they

require it; and when sufficiently hardened off, they are plunged in beds in the open ground for sale in autumn. The wood made during the summer ripens off and produces flowers in May and June following; therefore, it must not on any account be cut away, as in the case of *C. Jackmanni* and others of that type. Some of these early-flowering Clematises, if planted out among varieties of the *C. Jackmanni* type, that bloom through the summer and autumn, by reason of their flowering some time before the latter, give a desirable succession of bloom throughout the summer.—R. D.

NOTES FROM EDGE HALL.

ACHILLEA MONGOLICA.—A giant relation of *A. ptarmica*, very free flowering. I am unable to verify the name, having no description of the species at hand.

* * One of the prettiest composite flowers we have ever seen, very bright and distinct in its effect.—ED.

CHRYSOGONUM VIRGINIANUM (A. Gray).—A distinct and long-flowering plant of a new character.

* * Quite distinct. Very rich colour.—ED.

HEMEROCALLIS MIDDENDORFIANA.—A bright, large form of *H. Sieboldi*. The plant came to me from W. Thompson, of Ipswich (who generally takes the lead with novelties of merit) ten years ago. I see it has at last been exhibited before the floral committee at South Kensington.

VERONICA TEUGRIUM FLORE-ALBO.—A white-flowered form of the rock plant, generally sold as *V. rupestris*. I never saw it in my garden before, though my gardener says I sent it from the Pyrenees last year.

PENTSTEMON GLABER.—A prostrate plant with brilliant blue flowers, from W. Thompson's seed.

ANEMONE NARCISSIFLORA.—This grows 2 feet high in my garden, bearing a dozen bunches of flowers, bright pink, in bud like an Apple flower, and not unlike it when open.

HIERACIUM VILLOSUM (Lin.).—This is an excellent plant in bright sun, never flagging with heat or drought. It is a long-lived perennial easily raised from seed. I raised it from seed sent by W. Thompson. The *Hieraciums* are not very easy to identify, and I should not wonder if this is the *H. valde-pilosum* of Villars (Flor. de Dauphiné) offered in Baekhouse's catalogue. It is very ornamental and bright.—C. WOLLEY DOD.

* * A very distinct and pretty plant, the effect quite curious from the contrast of the downy buds and the soft yellow flowers.—ED.

P.S.—Since writing the above I hear from Mr. W. Thompson that he carefully verified the name of the Hawkweed, *H. villosum*. He is seldom wrong in his names, and so I think this name may be trusted.

Canterbury Bells.—The variation in colour which is now to be found in a good strain of Canterbury Bells is remarkable, and generally the diverse tints show such close assimilation to those nearest them that distinct division into colours seems impossible. From pure white down to deep purplish blue there is room for pink, mauve, peach, heliotrope, lilac, and many diverse shades, all of which may be found in plenty. A large bed of some four rods of ground in extent is just now indeed a fine sight; the plants being strong, and, as all are erect and in full bloom, they are distinct and effective. The single forms open first, and after these come the semi-doubles, that is, those having two cups, one just within the other; latest of all come the most double kinds, the cups being crowded into the outer one so thickly that the flowers are very solid. The semi-double forms usually are the finest and have the most graceful outline. These are not to be confounded with the quaint, showy Calycanthema, or Cup-and-saucer forms, which also have several distinctive and some closely allied hues; indeed, the Canterbury Bell is so sportive, that it seems useless to attempt to fix colours, and I do not see that it is desirable, as the greater variety the more pleasing the result.

The seed as a rule germinates badly in the open here, because the ground is hard in texture; but in good, soft garden soils it may be sown freely, and no better time than early in the month of May with other biennials. The plants should be got out early, as the sooner they are planted the finer will be the pyramids of flowers the following year. The earlier blooms at the top of the spikes have short stems, but lower down the stems are very useful for cutting.—A. D.

PYRETHRUMS.

THAT the Pyrethrums, double and single, make excellent border plants, and are most useful for cutting purposes, no one will deny. In May last I was in a west of England nursery, where there was a large bed of Pyrethrums, and found many of the plants had been lifted, put into pots, and placed in a cold house, where they came on into flower earlier than those in the open ground. As the soil was well moistened before the plants were lifted from the open, there was no check experienced, and it was said that the flowers obtained a few days earlier came in very useful at a season of the year when they are somewhat scarce.

At the meeting of the Royal Horticultural Society, on the 14th ult., and of the Royal Botanic Society, on the 15th ult., the Pyrethrums could be seen in all their glory, and in great variety. It is within the past forty years that the double Pyrethrum has developed from the single into the large, full, double form, as seen in the present day. But the single varieties are not overlooked, for they could also be seen in great variety and striking colours. If the late Mr. John Salter—to whom we owe the double varieties—could see the rich coloured single flowers developed since his death, he would probably own they were well worthy of cultivation, especially those having deep crimson shades contrasting so well with the yellow disc in the centre.

Messrs. Kelway & Son, of Langport, are now our foremost raisers of double Pyrethrums. They have produced very fine and striking forms in Melton, bright crimson-scarlet; Ormonde, rich rosy red; Figaro, carmine-rose, very bright and fine; Empress Queen, delicate blush, very pretty; Florentine, the most delicate of all the blush varieties, large and full; Duchess of Teck, pale rose, very pretty; Magician, clear pale pinkish rose, a charming variety, having an orange centre; Gazelle, pale rosy pink, very pretty; Mega, flesh with orange centre, very pretty; and Pericles, pale primrose ground tinted with delicate rosy pink. These are all new varieties raised by the Messrs. Kelway & Son, and represent the latest improvements in the flower.

Of older varieties, the very finest are Brilliant, rich rosy purple; Captain Nares, bright crimson; Coquetterie Flore, purplish lilac, very pretty; Gloire d'Italie, rosy red, very fine; Hobart Pasha, maroon-crimson, very fine; Madame Munier, rosy lilac; Mons. Barel, purplish crimson; Ne Plus Ultra, blush white; Placida, peach, very fine; Princess Metternich, pure white with slight rosy ring in the centre; Rembrandt, rosy purple, extra fine; Rose Perfection, lilac, very pretty; and Wilhelm Krumper, rosy lilac, very fine. Here, then, is a collection varied, numerous enough, and comprising the best flowers yet raised.

New single varieties appear to be numerous produced. Of those raised by Messrs. Kelway and Son, and shown on the above dates, special mention should be made of Merry Hampton, brilliant crimson, very fine; Rêve d'Or, brilliant scarlet-magenta; Sulphur Queen, delicate sulphur; Oliver Twist, pale blush with thread-like petals; Lucifer, dark crimson; Abianus, white; Abrupolis, pink, very fine and pleasing; Arnold, amaranth; Cabades, white; Escalus, bright purple, very fine; Fundanus, flesh white; Glowworm, purple-crimson, very fine; Tarsius, flesh colour; and Zelia, rosy lilac.

A few good older varieties will be found in the following list: *Astræa*, rose, very fine; *Bellona*, pink and white; *Hebe*, white; *Plutus*, carmine-rose, very fine; *Saturn*, purplish red; *Sylvanus*, maroon; and *Venus*, flesh-coloured.

The propagation of double and single Pyrethrums is a simple matter. Those who have a few large plants of good varieties can easily increase them by dividing them in the autumn when they have done blooming. Any side shoots that may not have put forth roots make very good cuttings if taken off in autumn also, and pricked out in a prepared bed made up in a cool frame or if placed in pots. If carefully looked after, by spring the cuttings should have made rooted plants fit for planting out in a prepared bed.

The double Pyrethrums do not seed freely in this country, but seeds can be had saved in France and Germany, and, as far as our experience has gone, good varieties can be raised from it. If sown in early spring in pans of fine light soil, the pans placed in a cold frame and covered with a hand-glass, the seeds will germinate. The young plants need to be shaded from the sun and encouraged to grow on into size for planting out to flower.

Slugs are troublesome to Pyrethrums, as they devour the young growths. Some rough sand sprinkled on the soil about the plants will help to keep them away, and they should be picked off by the hand also. R. D.

NOTES ON HARDY PLANTS.

Aster alpinus var. rubra is likely to prove an acceptable dwarf Daisy for early summer effect in the rock garden, and it is a charming companion to the blue and white kinds. About the beginning of June we have none too many composites, and no more desirable flowers could be employed in groups. The habit of all the varieties of *A. alpinus* is very neat, and the heads are freely produced. The var. *rubra* might be more strictly described as pinkish than red. Like the others, it will grow better if propagated annually from cuttings, and the plants in their second year produce the best effect.

Primula purpurea (Royle).—A splendid scape of blossom was most carefully tended in a well-aired cold frame, with a view to the saving of seed. The capsules were well formed and large, and kept fresh for a long time, but when they began to wither and were examined, not a seed was to be found.

P. Reidi, so quaint, distinct, and also so beautiful, seems now to be maturing seeds, and on examining the seed-pods, one is struck by the beauty of the calices, which are campanulate in form, large, broad, and plainly toothed; all the inner surfaces are thickly coated with a creamy white meal which may be seen round the toothed edges. Many flowers are less showy than these large bell-shaped and pendent calices, which are, moreover, of an enduring nature, and retain the delightful perfume of the younger flower. It is to be hoped that so distinct a Primrose will be quite hardy in England.

P. reticulata.—From various sources I had seed, supposed to be of this desirable Himalayan Primrose. All, however, so far prove to be but slightly varying forms of *P. sikkimensis*, which, well marked as they are, come far short of the description belonging to *reticulata*. Among plants sent me by Mr. Dod, there are many fine, dark yellow-flowered forms, and the almost chestnut-brown calices are an additional feature. In the foliage, too, there is great dissimilarity. So far as I have observed, a fine batch of seedlings raised under the name of *P. Kingi* is more likely to yield the desirable *P. reticulata*, but, as yet, all seems to be uncertainty. Anyone raising seeds of the Himalayan Primroses is likely to be struck with their character as regards the variety of sorts they produce.

P. bellidifolia in my hands has been another proof of the statement just made. From Dr. Appleton and Mr. Wolley Dod seeds came as *P. capitata*, but from Mr. Dod the words "or *bellidifolia*" were added. From the latter's, however, there proved to be far fewer plants of *bellidifolia* than from the seed sent by the former. The plant from the time it gets its second pair of leaves is quite distinct from *P. capitata*, and if I relate what occurred, the reader may judge whether the description of the leafage of these seedlings is correct.

Messrs. Gumbleton and Poü called here last November and asked about a few plants they saw in a box. I promised a plant to Mr. Gumbleton on his reaching home. Before sending, he wrote asking me if I was quite sure the small plants he saw were not weeds of the common Daisy. I think the plant pretty well justified his suspicion, and I am sure the untidy and weedy state of things he saw might easily enough lead him to suppose Daisies could be flourishing among Primroses, but as it happens he was wrong, as I hope his plant may have shown, and as my plants have shown. The flattened rosettes of smooth and all but meallless leaves are totally distinct from those of *P. capitata*; the scapes are shorter and stouter in proportion, and the heads of blossom totally different both as regards colour and arrangement; of course this may well be expected, for though the seedlings came up among *P. capitata*, the seed may have been taken from different plants. We are less disposed to put the two types far asunder when it can be shown, as I believe I shall be able to show, that by slow gradations they are linked together. I have not flowered more than four or six plants, and they have been the more typical specimens; those yet to flower approach *P. capitata* by such features as a little farina, wrinkled and serrated leaves, and otherwise by various deviations, but in all there prevails the distinct habit of flattened or spreading leaves—even the youngest central ones—and the midrib is broad, succulent, and irregular. The appearance of the plant after flowering is not such as to lead one to suppose that it will prove biennial, like *P. capitata*, for it makes compact crowns more like *P. rosea*; it also produces seed freely.

Polygonum capitatum reproduces itself freely from self-sown seed. The seedlings make rapid progress, and flower the first year under favourable conditions. It is worth while, perhaps, to pot a few of the later plants for keeping during winter in a cold frame, where, when kept dry, they will stand much frost. Treated in this way, the plants begin to flower soon after they are planted out in spring, and keep on blooming all the summer. J. WOOD.

Kirkstall.

Golden Drop (*Onosma taurica*).—Many grow this interesting plant, but it is seldom we find it displaying its true character by reason of improper treatment. It is neither fastidious nor tender, and flourishes best in a gravelly soil, or one in which Cactases delight in, bearing full exposure to the sun with impunity. It is advisable to slightly shelter in winter, and during hot weather to water freely; when treated in this manner the leafage is remarkably robust, and the golden yellow pendent flowers are produced with great freedom. These last well in water, and, owing to their elegance and refined appearance, may be utilised for table decoration. It strikes readily from cuttings.—E. C.

Phacelia campanularia.—This is a glorious blue-flowered plant, sadly wanting an English name. I should like to term it Blue Cup, for the lovely flowers are cup-shaped and erect. The plants from an early sowing came thinly, sown, I fear, too early—indeed, before the March snowfall, but those spared are now blooming beautifully. In colour the flowers rival the Gentian, but have more gloss. The plants flower almost close to the ground, sending out several stems which bloom for several weeks. It is probably the most effective of blue-flowered hardy annuals we have. A later sowing made in April has given plants in abundance.—A. D.

Pink Dog Violets.—"R. L. A.," on page 591, asks whether a variety of *Viola canina* with pale pink or mauve flowers is rare. It grows in great abundance in a garden near Ryde, from which I have introduced it to my garden. In the garden referred to it comes true to colour from seed, not being mixed with other Dog Violets. I have never seen this colour in wild Dog Violets, though I have sometimes found pure white. The Dog Violet is capable of being made in gardens an ornamental spring flower by judicious treatment. I have seen it growing wild in the lake district on heaps of limestone *débris* with such dense masses of flower

and of so bright a colour, that I could scarcely believe its identity. I have also seen it very ornamental on old walls, but on strong or rich soils it becomes rambling and untidy. Such a blue as that of the typical Dog Violet is always welcome in a spring garden, and by timely sowing the plant may be made neat and elegant.—C. WOLLEY DOD, *Edge Hall, Malpas*.

HIMALAYAN PRIMULAS.

I WAS glad to see Mr. Douglas' letter about these plants in THE GARDEN (p. 552), as I had seen no previous account of the results of the large collection of seeds made by Dr. King's collectors in 1875, and which were so liberally distributed through the Horticultural Society last spring. It is not surprising that many of the names have turned out to be incorrect, as all, or nearly all, of these seeds were gathered by natives in parts of Sikkim which are inaccessible to Europeans on account of political and other difficulties; and though some of these natives know the plants of their country remarkably well, yet, as the seeds must be collected when the flowers are no longer visible, and the dried plants which they are instructed to bring with them often get mixed, confusion occurs among the names. But we must be very grateful both to Dr. King and to Mr. Gammie for the trouble and expense which they take to introduce these plants, and hope that in a few years it may be possible for Europeans to visit more of these rich and interesting localities.

I will make a few remarks about the Himalayan Primulas, hoping to induce Messrs. Llewellyn, Dewar, and Sinclair to give us some notes on the culture of the numerous species which are, or have been, so well grown at Kew, Edinburgh, and elsewhere. I take them in the order of the "Flora of British India," which is the latest and best account of them I know:—

P. ROTUNDIFOLIA (Wall.).—Kashmir to Sikkim; 11,000 feet to 13,000 feet. I raised this in 1882, but soon lost it. Is it now in cultivation? I think not.

P. GAMBELIANA (Watt.).—Jongri (a yak pasturage about nine marches north of Darjeeling), 14,000 feet; not introduced.

P. PULCHRA (Watt.).—Jongri and Lachen, 12,000 feet to 14,000 feet. A small, but very handsome plant, which I think has never introduced alive, but which might be procured, as Jongri is accessible.

P. RETICULATA (Wall.).—Sikkim, 10,000 feet to 15,000 feet. This plant, which I found in the interior, is described as very like *P. sikkimensis*, and as Mr. Douglas says the seedlings vary much, it is quite possible that his living specimens would break down the supposed distinctions. They should be compared at Kew. I should be glad to have a few plants of this for comparison.

P. VAGINATA (Watt.).—Sikkim; only found by Mr. Clarke; not introduced.

P. CLARKEI (Watt.).—Kashmir, 7000 feet. Habit of a *Viola*; not introduced.

P. MOLLI (Hook.).—Bhotan. A robust plant, but not hardy, which has lived for many years and seeded annually in my greenhouse.

P. GERANIIFOLIA (Hook.).—Chumbi valley (between Sikkim and Tibet); 10,000 feet. This I have never seen, and hope Mr. Douglas will spare me a plant to be figured in the Bot. Mag.

P. FILIPES (Watt.).—Bhotan, 6500 feet. Allied to *P. obovata*, but smaller; not introduced.

P. LISTERI (King).—Tonglo, near Darjeeling; 9000 feet to 10,000 feet. Perhaps the same as the last. I searched for it last year in the dense Bamboo thickets where it grows, but without success.

P. DENTICULATA (Smith).—Kashmir to Bhotan and Khasia; 5000 ft. to 13,000 ft. The numerous varieties in cultivation which go under the names of *cashmeriana*, *purpurea*, &c., all belong to this very wide-ranging and variable species.

P. CAPITATA (Hook.).—Sir J. Hooker is inclined to keep this as a form of *denticulata*, but its annual or biennial habit and general appearance seem to make it for garden purposes a very distinct plant. Has anyone found it to be truly perennial like *denticulata*?

P. EROSA (Wall.).—Kumaon to Bhotan, 1500 feet to 9500 feet; but not known in Sikkim. A good perennial species, but not hardy with me.

P. BELLIDIFOLIA (King).—Sikkim, 13,000 feet. Has anyone raised this from Dr. King's seeds?

P. FARINOSA (L.).—Hardly a Himalayan plant, though found in Ladak, Central Asia, and Europe.

P. HEYDEI (Watt.).—Also a Ladak plant; 12,000 feet to 14,000 feet. Not introduced.

P. CONCINNA (Watt.).—Sikkim, 15,000 feet to 17,000 feet. A minute plant in the way of *farinosa*, but botanically distinct.

P. GLABRA (Klatt.).—Sikkim, 13,000 ft. to 15,000 ft. A small, distinct species; not introduced.

P. SIBIRICA (Jacq.).—A wide-ranging species, found in the high, dry regions of the N.W. Himalaya.

P. INVOLUCRATA (Wall.)—MUNROE (Lindl.).—A hardy perennial with me.

P. TIBETICA (Watt.).—West and East Tibet; 15,000 feet to 17,000 feet. Near *sibirica*.

P. ELLIPTICA (Royle).—N.W. Himalayas and Ladak; 8000 feet to 12,000 feet. This is a distinct and beautiful plant which ought to be in cultivation, but I have not seen or heard of it. All the species which come from the drier regions of the north-west are more easily grown than those from the wetter mountains of Sikkim.

P. ROSEA (Royle).—N.W. Himalayas at 10,000 feet to 12,000 feet. This and *sikkimensis* are, in my opinion, the best and easiest grown and increased of all the Himalayan species, but both should be treated as biennials to have them in perfection.

P. PROLIFERA (Wall.) = *IMPERIALIS* (Jungb.).—Chumbi, 11,000 feet; Khasia, 6000 feet; Java, 10,000 feet. A fine plant, which is now in cultivation from the produce of a single plant raised by the late Mr. A. Henry, from seeds which I procured from Sikkim several years ago. It has now been raised by Mr. Douglas and others, and as it has proved difficult to grow, I will state the conditions under which I saw it in the Khasia hills last September. It probably requires some protection from frost in winter, but flowers early, before the heavy rains commence, and grows in a wet, black, marshy soil. After flowering, it requires much moisture and becomes almost an aquatic, ripening its seeds early in September when the plant is at times under water. Its long, strong roots penetrate deeply into the mud among Reeds and coarse Grasses.

P. OBTUSIFOLIA (Royle), Himalayas 10,000 feet to 12,000 feet; *P. ELONGATA* (Watt.), Lemu Valley, Sikkim, 12,000 feet to 13,000 feet.—Perhaps only forms of one species. A form of *obtusifolia*, called *Gammiana*, was raised by Mr. Douglas and shown this year.

P. STUARTI (Wall.).—Himalayas and Tibet, 12,000 feet to 16,000 feet. There are many varieties of this wide-ranging species, of which perhaps the best is *P. purpurea* (Royle), not the *purpurea* of gardens, which is only a form of *denticulata*. This seems to be in cultivation under the name of *Jalschikiana* (Kerner), but I have not seen it. The typical yellow *P. Stuarti* (Bot. Mag., 4356) is not unlike *P. luteola* in appearance, and does not seem an easy plant to keep.

P. SIKKIMENSIS (Hook.).—Sikkim, 11,000 feet to 15,000 feet. This lovely sweet-scented species is very easy to cultivate, but cannot bear sun or drought. It comes up so late, that it is never injured by spring frosts, and does well in pots as a semi-aquatic. My stock, however, all died in the open ground from drought during my absence last summer, and I shall be glad of some fresh plants of it.

P. KINGI (Watt.), *P. ELWESIANA* (King).—Both of these fine and distinct plants grow at about 12,000 feet at Natong, on the road from Darjeeling to Tibet, and flower in July in wet, marshy places. I was in sight of this spot last August and hoped to procure fresh seed, but the road being occupied by a Tibetan force, who have practically invaded British territory and remain in defiance of the mild remonstrances of the Indian Government, I was unable to proceed. I hope, however, to procure seed this year. If anyone has raised either of them I should be glad to know of it.

P. DICKIEANA (Watt.).—Sikkim, in the Lachen Valley, 10,000 feet to 13,000 feet. A beautiful plant, like a small *Stuarti*, and, according to Sir Joseph Hooker, who alone has seen it in flower, scentless.

P. TENELLA (King), *P. PUSILLA* (Wall.), *P. SAPHIRINI* (Hook.), *P. UNIFLORA* (Klatt.), *P. SOLDANELLOIDES* (Watt.).—All these are minute species, growing at great elevations, 12,000 feet to 16,000 feet in Sikkim, and not likely ever to become good garden plants

on account of their small size and difficult cultivation. The only one I have seen in cultivation is saphirini, which I had for a year or two; a pretty little thing, but I soon lost it.

P. PETIOLARIS (Wall.).—*Sinla* to Bhotan, 4000 feet to 12,000 feet. This is a very fine species, very early-flowering. I have seen it on the Nepal frontier in Sikkim, at 10,000 feet, in great beauty in March. I gathered ripe seeds last year in July on Tonglo, and sent them to M. Leichtlin, who has raised it. It is a plant that should be kept in a damp and shady spot, and will probably require some protection in winter. There are many varieties of it.

P. MINUTISSIMA (Jacquem.), **P. REPTANS** (Hook.), **P. MUSCOIDES** (Hook.), **P. HOOKERI** (Watt.), **P. STIRTONIANA** (Watt.).—These, again, are all little-known species found at great elevations, and none of them from the descriptions seem to be of any great horticultural value.

P. FLORIBUNDA (Wall.).—A low-level plant (2500 feet to 6500 feet) of the N.W. Himalayas, allied to *P. verticillata*, a greenhouse plant with small flowers, but I have not seen enough of it to say whether it is worthy of general cultivation.

P. REIDI (Duthie).—A newly-discovered species (from Kumaon?) which I saw in flower this spring in London. It is distinct, but does not appear to have much horticultural merit.

Out of these forty-four species we have about eighteen only in cultivation of which I should say *P. denticulata*, *capitata*, *erosa*, *rosea*, *prolifera*, *Stuarti*, *sikkimensis*, *petiolaris*, and *invulnerata* were the best. Of those not introduced, the following are worthy of some trouble: *P. pulchra*, *elliptica*, *Kingi*, and *Elwesiana*; while the whole of the remainder will be of high interest from a botanical point of view.

Preston, Cirencester.

H. J. ELWES.

SHORT NOTES.—FLOWER.

Japan Rose (*Rosa rugosa*).—There is a well-developed plant of this in bloom on the rockery at Chiswick. The newly expanded leafage is of a rich green, and the deliciously fragrant flowers are of a delightful rosy crimson colour.—E.

Edelweiss.—This hoary plant may be seen in condition now on the rockery at Kew. It is provided with a moist, sandy, peat soil, which seems to thoroughly agree with its requirements. It is a most interesting alpine herb when well grown.—C.

Balearic Sandwort.—This is invaluable for running over the facings of stones, clothing them with a green carpet. At the present time it is smothered with small, pure white, star-like flowers, which give it a distinct and inviting appearance. *Arenaria montana* is of the same character, but its flowers are four or five times as large.—E.

Bellflowers in pans.—These lovely plants are not often seen in pans, but in this way they may be grown with advantage. My method is to grow the dwarf Bellflower (*Campanula pumila*) and the Austrian Harebell (*C. pulka*) in small pots, and when in flower to remove them to shallow pans, arranging them so as to obtain a pleasing harmony of colour. The snow-white flowers of the former and the deep violet-purple of the last mentioned make a fine contrast.—E.

Cabe Pondweed (*Aponogeton distachyon*).—This is now blooming freely, and its white fragrant flowers are welcome. There are few beautiful water plants of such hardy constitution as this, and it is useful both for a greenhouse tank and ornamental pond. It succeeds best in running streams, and on some of the Portuguese rivers, where it has been introduced, it has become a noxious weed.—E.

White Fraxinella (*Dietum fraxinella alba*).—This is flowering freely in the herbaceous border at Chiswick; its spikes of pure white flowers are very pretty. It is at once distinct and handsome, and a charming companion for the type.—E.

Wall Bellflower (*Campanula muralis*).—This is a charming Bellflower for clothing the stonework of the rockery, which it covers with a dense mat of vegetation. It is at the present time a mass of pale violet flowers. We have often seen it in splendid condition in cottage windows.—E.

Eremurus Korolkowi.—This is a very rare species, or rather variety, of *E. Aucherianus*. The flowers are rose or whitish, but I fear Mr. Tallack's plant is not true to name. It grows in very remote quarters, and I fancy it is not yet under cultivation. It stands next to *E. robustus*, and is a very showy plant.—MAX LEICHTLIN, *Baden-Baden*.

Ivy and Clematis Jackmanni.—These harmonise effectively, the dark leafage of the former bringing out conspicuously the rich purple-coloured

flowers of the Clematis. In growing them together, the plants of the latter must be closely attended to, so as to prevent the more vigorous Ivy smothering them. We could by a little forethought obtain rich effects in the garden, as in this case.—T. W.

TUFTED PANSIES.

THERE has, unfortunately, been a falling off in the number of cultivators of these handsome flowers within the last few years, which is much to be regretted, seeing what a charming sight a good selection presents when in flower. The reason of this falling off in the number of growers is not far to seek, for no experienced person would question the statement that they are rather difficult subjects to deal with. This feature in their behaviour may be overcome by pursuing a judicious system of management in the late summer and autumn months. I find that the southern growers treat them too tenderly as a rule during the winter, which makes the plants so weak, as spring advances, that they quickly succumb to any unfavourable influences when they are planted. They are certainly not tender in the strict sense of the word, although I should not advise anyone to risk the whole of their stock in the open without affording them some protection during the winter. That they are not tender, I have proof here, where we have some clumps now in fairly good health, that have stood for years without being disturbed. To keep them through the winter in the open ground, I find that the soil must be well drained, as damp is a greater enemy than frost. It is also necessary to stir up the surface lightly round the plants in the autumn, to allow the water to percolate through the soil. I have watched the behaviour of Pansies rather closely for some years, and I am satisfied that the principal cause of the plants dying out is through exhaustion, by the plants being allowed to continue longer in bloom than is good for them; the result of which is, the stock becomes so weak that the cultivator cannot get sufficiently strong growth in the autumn to perpetuate his plants. He must, therefore, do so with weakly cuttings or offsets; the consequence is, the plants do not get sufficient strength to go through the winter without a good deal of coddling, and many losses occur. Besides heat and drought, which cause the plants to die away during the summer, losses occur through the continuous flowering of the plants. This feature is more remarkable in those varieties bearing medium-sized flowers than in the case of the large ones.

In a good soil that is favourable to their growth, Pansies will continue flowering until quite late in the summer, and I need hardly say that, when allowed to do so, the plants are weakened thereby. Every cultivator of Pansies ought to be content if his stock is in flower three months, at the end of which all the flowering shoots should be cut off. Strong, well-hardened plants, put out early in April, will be in flower in a month (except, perhaps, in the north); in any case, three months are long enough to allow them to be in flower, as by that time the strength of the plants will be exhausted, having in view that the cultivator wishes them to live, and by the early autumn to provide him with cuttings in sufficient numbers and strength to perpetuate his stock. Acting on this principle, the plants will be cut over at the latest by the middle of July, which leaves them sufficient time, while the weather is favourable, to make growth to produce fresh shoots from the bottom, and that sufficiently early in the season to admit of them being rooted before winter sets in.

Plants raised from cuttings are undoubtedly the best. They not only grow more compact, but they grow with greater vigour, and produce larger flowers than plants raised from offsets. A place for the cuttings should be prepared on a border facing east or west, where they will be shaded for about half the day. Plenty of sand should be mixed with the soil. The cuttings should then be made about 2 inches long, and dibbled firmly in the earth, and some handlights placed over. They will require a little shading at first, and the soil must be kept constantly moist. At the end of a month a little air may be given them, and the quantity increased

as the growth progresses. The best place in winter for plants raised in this way is in a cold frame, where they can be protected from severe frost and heavy rain. Many increase their stock in the autumn by dividing the old stools. This plan gives much less trouble, as after the plants are pulled to pieces, and the oldest portions rejected, they can be placed at once where they are to remain during the winter, but such plants are not equal to those raised from cuttings.

The treatment of Pansies during the winter need not involve much labour. In mild weather the frames should be ventilated night and day, and on all favourable occasions the lights should be drawn off early in the morning and put on again at night. Slugs are often troublesome during the winter, and the most satisfactory way of destroying them is to search the frames at night with a candle.

With regard to the after management, very few care to devote frames to flower them in, but I can only say that the best blooms I ever saw were grown in frames by an amateur; his flowers were exceptionally large, all the markings clearly defined, and the colours distinct. This grower used to have from three to five plants in 8-inch and 10-inch pots instead of a bed of soil, which enabled him to remove his plants to a cool position as soon as bright weather commenced. Seeing that the majority of cultivators must grow their plants in beds in the open, I recommend them to use as sheltered a position as possible, providing it is not draughty. If the soil is fairly heavy, they are better without strong manure. They like a gritty staple for the roots, therefore a fair proportion of coarse sand should be incorporated with the soil, and in dry weather they will be much benefited by a mulching of Cocoa fibre or decayed Fern.—J. C. C., in *The Field*.

A DAY ON THE SNOWDON RANGE.

WE may safely say that no other county—nor, indeed, any equal extent of ground in Britain—can boast of so rich a flora as Carnarvonshire. At least three plants, *Lloydia serotina*, *Cotoneaster vulgaris*, and *Potamogeton Griffithi*, have been found wild in no other part of the British Isles, while many others are extremely rare, a number having only been recorded from one or two other stations, and there very sparingly distributed. In the following brief notice of a botanical trip, which occupied but a single day, a short description of some of the rarer plants met in with would, we thought, not only be of interest, but serve to show what a rich ground for botanical research are the gorges and tarns of this imposing mountain range, and that even as early as the latter end of June. Ascending from Ogwen Lake, two other friends and myself leisurely crossed the Myddyn-bach, and on peeping into some of the clefts and crevices of the rocks we saw numerous fine sheets of *Hymenophyllum Wilsoni* and *Saxifraga oppositifolia*, the latter just out of flower, but plainly showing, from its numerous partially withered flower-stems, what sheets of purple must have been revealed but a few weeks before. *Saxifraga stellaris* was in all its glory, the quickly sloping banks of half the rivulets as well as sides of the damper, almost dripping, rocks being literally carpeted with its deep green rosettes of foliage and abundance of pinky white starry flowers. The Mountain Saxifrage (*S. nivalis*) we likewise saw in small quantities, usually in some shady, dampish, north-facing crevices, and not unfrequently in company with that pretty, fresh-looking Fern, *Asplenium viride*. Higher still, and away through a deep, rocky defile—glorious botanising ground—we ascended the Myddyn-mawr, and were fortunate enough to spy out, on an almost inaccessible ledge of rock, the pretty creamy white-flowered *Drvas octopetala*. Along with it was growing the Mountain Cudweed (*Antennaria tomentosa*), whose everlasting flowers vary almost as much in depth of colouring as do the stems in the height to which they rise from the proeminent silvery-white foliage.

Here peak after peak of the hazy hills rise behind each other, and one sees at a short distance what, until he has gained their craggy heights, appeared

the highest of all, but when topped, alas! as often before, others more majestic rise up in view and almost make one give up in despair of ever attaining the highest peak.

Whilst quietly seated on the edge of a mighty precipice—another gap of Dunlow—a treat both rich and rare met our gaze, for there at no great distance below the sweet little flowers and lush-like foliage of the Mountain Tulip (*Lloydia serotina*) were distinctly to be seen. There, indeed, they were, but out of reach, one beautiful tuft of a dozen or more and thickly studded with flowers being just 1 foot beyond our grasp—just as well, perhaps, for irresistible temptations come alike to botanists and ordinary plant collectors.

Whilst gazing on these diminutive plants in this their only known British station, we could not help recalling Grant Allen's pleasant, but wisely misleading description in *Louquans* of the plant which he chooses to style as a degenerate and dying out member of the Lily family. Growing not far distant from the latter we were delighted to find the dwarf or Welsh Golden Rod (*Solidago virgaurea* var. *cambrica*) blooming in all its beauty. A lowland clime and the best cultivation do not alter this plant's habit in the least, the low, sturdy nature—flowers and all rarely exceed much over half a foot in height—having been grown for six or seven years in various gardens I know. It is a pretty little alpine that we prize much, the close-set and longish flower-spike being of the brightest yellow. Of the *Thalictrums*, with their ornamental Maiden-hair Fern-like foliage, we saw two forms, the lesser, *T. alpinum*, being particularly abundant on some of the slopes. What a diminutive and withal pretty plant it is, so fragile-like and yet so wiry, for growing on the bare, breezy rocks and at these high elevations must try any plant.

By the sides of the streams *Geum montanum* and *Meconopsis cambrica* were fairly abundant, while drier portions of the same ground were thickly carpeted with the bright green foliage and occasional flowers of *Saxifraga hypnoides*. Along the sunny, bare rocks we noticed but few plants of the Cloudberry (*Rubus Chamæmorus*), but what we saw looked unusually healthy and vigorous.

Many of the rocks were clothed very thickly with the reddish purple flowers of the Moss Campion (*Silene acaulis*), whilst *Anemones*, blue and white, just peeped out from the deep and more shady crevices, but these latter were past their best, only a few late straggling blooms being left. *Erica vulgaris*, *E. cinerea*, and *E. tetralix* were abundant; *Vaccinium Vitis-idaea* less so; while the nearly allied *Empetrum nigrum* clothed the rugged tops of many of the higher peaks. Treading the shores of a little mountain lake on our return journey, we were fortunate in discovering numbers of the rare European Quillwort (*Isoetes lacustris*) and *I. echinospora*, and on the banks of the same, growing amongst Rushes, and *Sphagnum* were a few plants of one of our smallest and rarest of Orchids, the bog *Malaxis* (*M. paludosa*), *Ptilularia globulifera* we also saw, and not far off a quantity of the water *Lobelia*, *L. Dortmanni*, was seen forming vivid green cushions at the lake bottom. Ferns were particularly abundant, amongst the rarer being *Cystopteris fragilis* and *C. dentata*; the Parsley Fern (*Allosorus crispus*), *Lastrea montana*, *Ophioglossum vulgatum*, *Botrychium lunaria*, as well as the already recorded *Hymenophyllum Wilsoni*. Of Orchids, as well as the bog *Malaxis* mentioned above, the sweet little *Habenaria bifolia* and the lesser *H. albida* were abundant on the hilly meadows, and *Orchis conopsea* scented the air for a considerable distance from where they grew. *Listera ovata* and *L. cordata*, the latter reaching the greatest altitudes, were likewise met with, while the true Marsh Orchid (*O. latifolia*) was just coming into flower, and would, in another fortnight, give a glow of purplish pink to the swampy grounds in which they were growing. *Pedicularis sylvatica*, of the purest white, was found in abundance, but only in one particular spot, the normal form being, however, abundant everywhere. Three forms of the Milkwort (*Polygala vulgaris*), pure white, purple, and deep pink flowers, were very often seen on the

downward journey, and in many places rendered the Grass amongst which they creep highly attractive as well as somewhat misleading.

A. D. W.

MANY-FLOWERED WOOD SORREL.

(*OXALIS FLORIBUNDA*.)

THE *Oxalis* genus contains a large number of charming garden plants; indeed, so graceful in habit and so floriferous are they, that the majority would be included even in choice collections. Unfortunately, it is almost impossible to grow the greater part of them out of doors with any degree of success, but they may be easily cultivated in a cool greenhouse, and the rich and varied coloured flowers make a fine display. A few have proved perfectly hardy in the open, such as *O. Smithiana*, *O. Grahamiana*, *O. lobata*, *O. corymbosa*, and others. These when in full bloom are very attractive on the rockery, or in sheltered spots on the flower border. A few of the other kinds may be grown out of doors with a little management. The bulbs are lifted in the autumn, and when starting into growth, are planted in a cold frame in a rather stiff compost so as to enable



The many-flowered Wood Sorrel (*Oxalis floribunda*).

them to be lifted with good balls. They will commence to grow early, and as soon as frosts are over may be lifted and planted out in the beds or borders, where they will flower freely towards the end of summer. Where accommodation can, however, be given them indoors, I prefer growing them in pots. The majority are so well adapted for hanging baskets, edging stages, &c., that it seems somewhat strange they are not more generally grown. There are few of the *Oxalis* to equal the many-flowered Wood Sorrel (*O. floribunda*), represented in the accompanying woodcut. Its flowers vary in colour, being white, rose, yellow, and pink, its graceful drooping habit giving it a charming appearance. It produces its flowers in the greatest profusion all through the summer and early autumn months. K.

Ornithogalum arabicum—Fred. Capes, in THE GARDEN, June 25 (p. 574), asks about a plant allied to the Lilies. *Ornithogalum arabicum* is a very beautiful plant with pure white flowers which have a black spot in the centre. I have not found it a very satisfactory plant to grow, but perhaps my treatment of it may be wrong. I grew it in the border, but it did not prove hardy in this part of England. I also grew some in pots; they flowered

well, but the following year they never bloomed at all. The bulbs remained sound in the pots, but there was no growth whatever; the next year they started off strongly again. I would like to know whether this is a usual thing with this species; if so, it detracts considerably from its merits, and is very unlike the habit of the common Star of Bethlehem (*Ornithogalum umbellatum*), which is very free-flowering.—DELTA.

A beautiful Iris—I send you a lovely white Iris which is now blossoming on the hillside. It was discovered in an old garden in the north of Ireland, where the now wealthy industries of the neighbourhood point distinctly to the settlement in bygone days of French refugees. What fair legend may hang around this bridal flower we cannot say, but that it is ours to rejoice in to-day, we owe, no doubt, to some sweet memory of home, borne hence by an exile's hand.—ST. BRIGID.

* * * Flowers pure white, the falls broad, with a yellowish tinge. A very chaste and pretty flower.—ED.

Herbaceous Pæonies.—In THE GARDEN, June 18 (p. 554), R. Vesey complains that his Pæonies have died off. The reason of this is probably because they were planted in the spring instead of in the autumn. They must be classed amongst the hardiest of herbaceous plants. I planted in autumn last year thirty-six distinct species, some of them in several varieties, and we have not lost a single plant. Some of them being of extreme rarity, we took the precaution of planting the whole of them in some prepared soil, consisting of two parts loam to one of decayed manure. A spadeful or two of the ordinary garden loam was taken out, and in its place the compost was put in, and the plants firmly planted in it, a dressing of decayed manure being placed round the plants. Ordinary plants, such as can be purchased in the nurseries, take a year or two to become established. Mr. Vesey should see that his plants are well watered during the present hot weather. He says, "I have taken care in mulching and manuring them," &c. How was the manure applied? If it was dug or trenched into the ground it would be all right; but if holes were dug for the plants and partly filled with manure, perhaps not sufficiently decayed, and the roots of the plants were placed in immediate contact with the manure, this would be injurious.—J. DOUGLAS.

STOVE AND GREENHOUSE.

T. BAINES.

KALOSANTHES.

AMONGST greenhouse plants that flower profusely, *Kalosanthes* hold a high position. In the massive heads of highly coloured flowers which several of the varieties produce, they almost vie with the *Ixoras*, whilst being cool greenhouse subjects they do not require the heat necessary for *Ixoras*, and they are also easily grown, and may be readily increased. So readily do they strike, that the shoots if thrown down on any damp moisture-holding material, such as sand, fine ashes, or Cocoa-nut fibre, will produce roots freely. So free flowering are *Kalosanthes*, that small plants consisting of a single growth in little pots, struck the year previous, will bloom as readily as large specimens. As compact-growing, dense-habited plants, *Kalosanthes* are highly effective for greenhouse or conservatory decoration. The last-named structures are not, as a rule, the best places wherein to locate flowering subjects, even if only for the time they are in bloom, as they often are attached to dwellings, where external appearance is thought more of than the healthy growth of plants. Yet, even in houses of this character, where the amount of light which the plants receive is often very insufficient, there need be no hesitation in standing *Kalosanthes* whilst in flower. Another thing in their favour is that the best varieties bloom in summer after the bulk of the spring-flowering plants is over. The scent of the flowers is sweet and peculiar, and is liked by some, whilst others deem it oppressive, especially if a number of plants are

located in a house with the ventilators closed. Though, as already said, Kalosanthes are remarkably free bloomers, some growers do not get them to flower evenly, a portion of the shoots producing flowers, whilst others fail, although the plants collectively are strong, and give no indication of the cause of partial failure. Where this occurs, it is caused by the previous summer's shoots not being sufficiently matured, a condition that is indispensable to the production of an even display of bloom. The necessary ripening of the growth can only be effected by the plants being stood out of doors for a longer time during the summer than is requisite for most things.

Cuttings will strike at any time from early in the spring up to autumn. In the case of spring-struck plants they require to be grown on freely, so as to gain the necessary strength and maturity to enable them to bloom the year following. Another method is to take off strong shoots in August that have been grown on plants stood out of doors during the summer in the way described; they will root in a very short time, and so admit of their getting sufficiently established before winter. These late-struck cuttings must be put singly into small pots, drained and filled with a mixture of loam and sand. In this way the disturbance of the roots that occurs in potting off when several cuttings have been struck together is avoided. They will root in a greenhouse or cold frame, and require very little shade. As soon as they are rooted stand them in the open air, allowing them to remain out as long as there is no danger of frost. When well established move them into 5-inch or 6-inch pots, and during the winter they should be stood close to the glass.

Plants that have flowered two or three times often get straggling and bare of leaves at the bottom, and in this way have an unsightly appearance. The tops of such as these may with advantage be struck and flowered next year, and if larger examples are required than the single-stemmed plants, all that is necessary is to put several together in larger pots; this should be done in spring just as growth is about to commence. If to be thus managed it is better to keep them in 4-inch pots through the winter. When to be flowered several together in a pot the balls must be kept intact, using pots no larger than necessary. Young stock struck early in spring, or older examples that were propagated in the spring or summer previous, and which have been stopped and grown on with a view to flowering them in a larger state next year, should have been placed out of doors during the past month. So managed, every shoot that is strong enough may be expected to bear a head of bloom. When Kalosanthes are well grown, with the shoots strong and even, nearly the whole will flower. After the flowers are over, there is not time for new growth to be made that will bloom the following year. In the case of plants that have only produced a partial crop of flowers, if, immediately the bloom is faded, the shoots that have flowered are cut away and the plants are again turned out of doors, the portion that did not flower will gain enough strength to enable them to do so next summer. When they get tall and straggling, however well they may bloom, they do not look so well as younger examples that are close and compact; consequently, it is better to discard them and fill their places with younger stock, to keep up a supply, of which a few should be struck annually.

The old *K. coccinea superba* is a fine showy kind, but requires the growth to be thoroughly matured by lengthened open-air exposure to ensure its flowering well.

K. phenix and *K. frederick desbois* are both exceptionally fine, highly-coloured sorts.

K. miniata, another old and well-known variety, is a free bloomer, not requiring the growth to be so much hardened up to induce it to flower as the previously named sorts. The flower-heads are smaller and not so deep in colour. All the kinds mentioned should be out of doors whilst their flowers are opening, as if stood ever so near the glass in even the lightest of houses during this time they will be very

deficient in colour as compared with those that have developed their flowers in the open air.

BLANDFORDIAS.

THIS Australian genus of plants forms a tuft of Grass-like leaves, from the centre of which the flower-stems rise up to a height of a foot or two, and bear upon their upper portion a number of bell-shaped flowers of a wax-like texture. The colour of the blooms is red and yellow in varying proportions. These plants are now in full flower, and in this stage are remarkably pretty, in addition to which the blossoms remain in beauty a long time. Blandfordias are generally considered difficult to cultivate (indeed, they are rarely seen in a flourishing condition), yet I have never failed to induce them to grow and flower in a satisfactory manner, and that by no means under the best atmospheric surroundings, for in this neighbourhood the air is often heavily smoke-laden. They may be well grown in an ordinary greenhouse under the same treatment as Pelargoniums, except that they require to be shaded from the full rays of the sun, and succeed best if the atmosphere is kept cool and moist during the summer months. The compost we use for them is two-thirds good open peat to one of fibrous loam, and a very liberal admixture of rough silver sand. The plants are potted when they have done flowering, as then they become well rooted before winter. Owing to the Blandfordias requiring copious supplies of water when growing, and at the same time being very impatient of stagnant moisture, thorough drainage must be given. In potting a good plan is to place a little pure silver sand in immediate contact with the roots, which are few in number, but thick and fleshy, and which if injured in any way are very apt to decay. Should a root be bruised during the potting, it is better to cut it off altogether, otherwise the decay proceeding from the injured portion will rapidly spread upwards. During the winter these plants will only require sufficient water to keep the soil slightly moist, but as the spring advances more must be given, and as soon as the flower-stems make their appearance the supply must be still further increased. Blandfordias can be propagated by division, which may be effected when potting, or occasionally seeds will ripen. When seeds can be obtained, they will germinate readily if sown in pots of sandy peat and kept in a temperature somewhat higher than that of a greenhouse. Of the different Blandfordias in cultivation, *B. Cunninghami* and *B. flammea* are about the most showy; but *B. nobilis*, though smaller, flowers more freely than either. H. P.

SHORT NOTES.—STOVE AND GREENHOUSE.

Impatiens Episcopi.—This species is now flowering in one of the houses at Gammersbury Park. It is quite distinct from *Sultani*, very dwarf in growth, and of a free habit.—R. D.

Anthurium ferrierense.—This is a distinct kind worthy of a place in all choice collections of stove plants. It is of moderately vigorous growth, and associates well with *A. Scherzerianum* and *A. Andreanum*. The spathe is large and rosy pink; the spadix is erect and measures fully 4 inches.—T. W.

Cochliostema Jacobiana.—This beautiful plant we recently saw in flower at Kew. Both flowers and foliage are beautiful; the former are borne in branching panicles and are of a bluish violet colour, the large bracts being of a mauve hue. It is at once distinct and interesting.—T. W.

Dracæna Mrs. R. Turner.—This is a robust-growing variety which we saw recently at Messrs. Veitch's. The foliage is bold and handsome, the colour brownish, with a broad band of rosy pink at the margin; the young leaves are entirely pink, and it has the merit of colouring well even in a small state. E.

Trumpet Honeysuckle (*Lonicera sempervirens*). We saw a fine specimen of this climbing plant at Gammersbury House, and were struck with the density and distinct character of its foliage. The flowers are reddish pink, and borne in trusses about the same size as those of the common Honeysuckle, but not with such delightful profusion. It is not one

of the best of indoor climbers, but in a spacious conservatory or greenhouse room should be found for a specimen.—T. W.

Ivy-leaved Pelargoniums.—The vast improvement effected in the double-flowered forms of these Pelargoniums within the last few years, and the different uses to which they may be put, have been so frequently dwelt upon by various writers, that nothing more on that point is necessary, yet there are now so many varieties, some of which differ so slightly, if at all, from each other, that a few notes regarding the best of them may be of service. Having grown a great number, I have selected the following as the most desirable: Alice Crousse, deep magenta-purple, a vigorous grower, and very floriferous—indeed, one of the best of all; Emile Lemoine, bright cerise-scarlet; Jeanne d'Arc, pale mauve—form of the flower and habit of the plant very good; Isidore Feral, soft satiny rose, a variety of more trailing habit than most of the newer kinds; Madame Crousse, salmon-pink, a good and generally cultivated variety; Louis Thibaut, bright red; Madame Thibaut, a short-jointed, sturdy variety of a bright rose colour; the outside petals of this are distinctly reflexed, which gives to the whole flower a very uncommon appearance. Fürstin Josephine Von Hohenzollern—though this variety has such a cumbersome name, it is very beautiful, the flowers being bright red, shaded magenta, and very double. The other selected varieties are Madame Pages, deep lilac, feathered with a darker tint; Madame Jules Menoreau, rich bright rose; Sheipoo, bright carmine; Comtesse Horace de Choiseul, small, but double flowers of a pleasing shade of soft rose; Madame E. Gallé, almost white; Madame Thouvenin, bright carmine, a grand flower and in all respects a desirable variety. The above may be relied on as a good and distinct selection, while I have a number of new varieties under trial which may also be desirable.—H. P.

WORK IN PLANT HOUSES.

GREENHOUSE.—SOLLYAS.—Owing to many of the blue and purple-flowered old-fashioned plants not being now grown, there are wanting two of the most important colours. Amongst blue-flowered plants that used to be met with everywhere in cool plant houses, the Sollyas were conspicuous; their flowers, though comparatively small, are produced in such quantities as to have a telling effect. As roof-climbers—except for a small house—their slender habit of growth renders them less conspicuous than some things; for clothing a pillar they are better adapted. But to utilise the colour their flowers afford to the best advantage they require to be grown in pots and trained loosely as specimens; in this way they can be placed when in flower wherever they are most wanted. A few examples, such as can be grown in 10-inch or 12-inch pots, when in flower and mixed amongst other things in a greenhouse or conservatory, make a good contrast to the class of plants now usually met with. Sollyas bloom so freely, that they will flower whilst quite small. During their early stages, until the plants have got large enough to cover permanent trellises, it is best to train the shoots round a few sticks inserted in the soil. Young stock, the potting of which may have been deferred till after they had flowered, should, as soon as out of bloom, be at once shifted into larger pots. The plants are free rooters, and not by any means delicate or difficult to manage, but they do not require nearly so much pot-room as most climbers; consequently, it is well not to give too large shifts in the early stages of growth. Specimens that are now in 12-inch or 13-inch pots should have manure-water frequently during the whole time they continue growing; by these means they can be kept for years in a vigorous thriving condition, simply looking to the drainage at times to see that it is efficient.

PLEROMA ELEGANS.—The matchless shade of purple which the flowers of this plant possess admit of its being used in the same way as the Sollyas. Like them, it flowers in a small state. It is as readily propagated as a Fuchsia, and is easily grown. It is a summer bloomer, coming in sooner or later

according to the temperature it is kept in through the winter. I have had it in flower in June after it has been wintered at about 16° or 18°, but if kept during the dormant season with cool greenhouse stock the flowers do not begin to open before August or the beginning of September. By varying the winter treatment a succession of bloom may be had. The leaves do not bear full exposure to the sun, especially if stood near the glass; this being the case, a thin shade should be used from the beginning of June through the summer months. Until the flowers begin to open the plants do well out of doors, choosing a place for them where they will be shaded from the sun during the middle of the day. As soon as the blooming is over shorten the shoots back at once, removing about half the length of the preceding year's growth, and when they have started into growth give pots a size or two larger. The plant may be grown to a size of 4 feet or 5 feet through, but smaller examples are much more useful for greenhouse or conservatory decoration, and as it is grown quickly and is easily propagated, it is best to discard any that are getting too large. Cuttings made of the current season's shoots, consisting of two or three joints each, will strike in a few weeks if put in now. Put them singly in small pots drained and half filled with a mixture of sand and loam, the remainder all sand. An intermediate temperature is better to strike them in than more heat; keep moderately close, moist, and shaded from the sun. Stop the shoots as soon as they begin to grow. When the plants have attained a useful flowering size they will take manure water freely all through the growing season. The flowers, if cut when about half open, give an effect to a bouquet unsurpassed by anything I have ever tried. At this stage their lovely purple shade is unequalled.

PLUMBAGO CAPENSIS.—With the aid of this and the two plants already named much may be done to secure the required colours in cool plant houses during the summer. One of the best properties of this *Plumbago* is that it will flower freely whilst young and small. Cuttings struck twelve months since and grown on in 5-inch or 6-inch pots will produce a sufficient number of their large bunches of flower to make them useful. Even in this size they are effective when placed amongst other plants, and last for several weeks in bloom. The plant may be cut back freely, and also a good portion of the old soil may be removed without injuring the roots or interfering with the following season's bloom. By annually following this course the plants can be confined to pots of any size. Where large examples, say 5 feet through by as much in height, are wanted, proportionately more root room must be given. When it is necessary to confine the plants for several years to the smallest sized pots named, the shoots must be cut in each year to within two or three joints of where they were shortened to the first season after blooming; this may be done either as soon as the flowering is over or deferred until spring, a little before growth commences. When large specimens are wanted, 10 inches or 12 inches of the preceding season's growth should be left; in the case of these larger examples it is immaterial whether the cutting in is carried out immediately after flowering or in spring, but it must be borne in mind that plants that are cut back late in the summer cannot make very much growth before autumn; consequently less water must be given them during the winter months. This *Plumbago*, whilst in active growth, likes manure water, especially in the case of large specimens grown as climbers, and planted out in borders where the roots are much restricted for room. Small plants struck during the past spring should be encouraged to make as much growth as possible, as the amount of flower that may be looked for will be proportionate to the size and strength attained. Attend to stopping the strongest shoots of the young plants in question so as to keep them bushy. Where there is a deficiency of stock, cuttings may yet be struck; treated in the ordinary way they will root in a few weeks.

PELARGONIUMS.—The early-blooming varieties of the large-flowered section of *Pelargoniums*

will in most cases now be going out of flower, and should be prepared for heading down, for, though they will continue to bloom more or less so long as the plants are encouraged to make growth, it is not advisable to keep them blooming later, as if the cutting back is deferred, it will interfere with their early-flowering next spring. The large-flowered varieties of these plants require to have their wood well matured before heading down, as without this they do not break satisfactorily, coming with only a limited number of gross, over-luxuriant shoots. To hasten the ripening it is best to turn the plants out of doors, standing them where they will be fully exposed to the sun. Gradually reduce the water supply, giving no more than will suffice to prevent the leaves flagging. A continuance of this treatment for about three weeks will usually suffice to harden up the shoots sufficiently, when the wood will assume a brown colour. In cutting down it is necessary to be guided by the size of the plants; if young, and they are required to be grown larger, the shoots should be shortened so as to leave three or four eyes to each. If the plants are already large enough, a couple of eyes to each shoot will be enough to leave. In all cases the soil ought to be allowed to become dry before heading down, after which the plants should be moved to a cold pit or frame and syringed overhead freely each afternoon, but no water beyond this must be given until they have fairly started into growth.

FANCY PELARGONIUMS.—These do not keep on flowering as the large-bloomed sorts, and in most cases the plants will now require cutting in. With these it is not advisable to carry out the ripening process to the extent that is necessary with the large-flowered section; neither should the shoots be shortened so far, as if so treated the plants often break indifferently, or not at all; neither should the soil be allowed to get too dry. In other respects the fancies require to be treated as advised for the larger sorts.

KALOSANTHES.—Young stock struck from cuttings in spring, if not already moved into larger pots, should at once be shifted. Six-inch pots will be large enough for plants of this age. If the growth is well matured they will flower nicely next summer, and be found very useful for greenhouse decoration. If larger examples are wanted, three or four plants may be put together in pots proportionately larger. To ensure the growth being sufficiently matured to bloom well next season, the plants must be fully exposed out of doors in a sunny position during the summer and autumn, so long as there is no danger from frost. Larger specimens that have been grown on a year longer before allowing them to bloom must have sufficient pot room to keep them in a vigorous state, and in like manner have the benefit of the sun out of doors. Some of the varieties will flower without such a lengthened exposure in the open air, but the largest flowered sorts require to have their growth fully matured in this way, otherwise they produce very few flowers.

T. B.

Gloxinia with variegated foliage.—I have a seedling *Gloxinia* of the large-flowered strain raised here last year which has foliage prettily mottled all over with yellow. I would like to know if it is infrequent for these plants to sport thus. With the impression that it is, I have inserted a number of leaves as cuttings.—J. M.

Plumbago capensis.—This is still without a rival as a beautiful greenhouse climber, its pale lavender-blue bunches of bloom being so freely produced as to weigh the slender branches down. It makes a capital pillar plant, and the best way to see it to perfection is to train up the main shoots by tying them firmly to the supports, and then let the annual growth hang quite loosely. We have at present half a dozen plants in large pots treated in this way, and the effect is very pleasing. A good syringing to keep down red spider and plenty of root moisture are the chief requirements of this useful plant. It will grow freely in any good soil. A good companion plant is *Tecoma jasminoides*, that flourishes in the same house and makes a

pretty combination if the shoots are allowed to mingle together.—J. G.

KITCHEN GARDEN.

W. WILDSMITH.

CAULIFLOWERS.

IN early summer and late autumn we find Cauliflowers to be invaluable vegetables. They are desirable enough, indeed, all through the summer, but we usually have then a wealth of Peas, Beans, new Potatoes, and other toothsome vegetables, the which rank high in popular esteem; whilst all the Brassica tribe, and Cauliflowers especially so, are very liable to attacks of caterpillars, and even the nicest of heads are hardly pleasant eating when such livestock is abundant. The best months, therefore, for having a plentiful lot of Cauliflowers are those of May, June, September, and October. Happy, indeed, should we be could we have Cauliflowers in May; whilst if the weather be not too severe they may be plentiful enough in November, although as the winter approaches there is a tendency on the part of the heads to become rather strong tasted under the influence of frost. In the matter of earliness, probably none excel the Snowball, the which since its introduction into this country, curiously enough from Norway, is now offered under various designations; whilst on the Continent it is known as Extra Earliest Dwarf Erfurt, and is usually quoted at a remarkably high price, so sparse does it seed. Here at home, in the matter of seeding, it seems to be somewhat capricious, but much depends upon a knowledge of its peculiarities; still, a fair seed crop in this country is by no means difficult to obtain. Careful selection has led to the kind being produced with remarkable evenness and earliness. It is not desirable to sow the Snowball strain in the autumn, as the resting incidental to being wintered in a frame tends to induce buttoning. The best course is to sow seed in gentle warmth in January and keep the plants growing on rapidly, but near the glass, when large enough either dibbling up some 3 inches apart in a frame or else placing two plants into a 5-inch pot, and when these are strong turning them out on to a warm border, and, if possible, for a couple of weeks or so under hand-lights. In this way it is easy to have fine pure solid white heads for cutting from quite as early as late August-sown plants of the Early London would yield. Even earlier heads may be got if plants be put singly into 8-inch pots, and stood on the floor of a vinery. A second sowing in a cool frame, made in February or March, will give a good succession of heads as long as Cauliflowers may be desirable. Those who prefer big heads will do well still to sow the Early London if they can get a good stock of it; but the plants must be housed all the winter, needing considerable attention, and requiring numerous handlights or cloches if any quantity is grown. Cauliflowers demand quick growth to be soft and pleasant eating; hence the soil in which they are planted should be deep, well pulverised and manured. We have Cauliflowers under numerous names, but, after all, there are not many distinct varieties. Of these, however, none seem to be more useful or reliable than is the Autumn Giant, and no kind is so widely grown. So popular is it as a market variety, that some growers put out 20 acres of it at once, and yet we seem never to have too much of it. Of course, when it is in good form in the London market from home growth, any imported samples stand a poor chance. As the plants have a life so much shorter than other spring-sown members of the Brassica tribe, it is on that account all the more popular with market growers. Sowings of this invaluable sort can hardly be made too early in the open ground; indeed, March seems to be the favoured month, if weather and soil be favourable also. A second sowing in the month of May will give plants to turn in during November should weather permit. Of course, heading-in may be accelerated by close planting, and may be deferred by thin planting if the soil be good enough to induce strong growth. In private gardens this Cauliflower is too often made to produce heads

which are too large, for size and strong flavour are too often allied. A valuable addition to the semi-Cauliflower group of Brassica is the Self-protecting kind, for which, as well as the Autumn Giant, we have to thank Messrs. Veitch and Sons for introducing. Even the most determined pessimist will hardly deny but that, during the past twenty years, we have made considerable progress in Cauliflowers; indeed, more with these, perhaps, than with any other members of the Brassica family. A. D.

OVER-CROPPING CUCUMBERS.

I CANNOT agree with Mr. Muir in his remarks in THE GARDEN, June 18 (p. 565), on this subject; indeed, the idea of thinning Cucumbers is quite a novel one to me, and I have never found any ill effects from so-called over-cropping, even with the most prolific varieties. All that is required to keep the plants growing when a very heavy crop is hanging is plenty of surface-feeding and a little change in general treatment. I usually devote a small seven-light pit to Cucumbers. We commence cutting here the last week in March, and have plenty of fruit without any break until the end of October.

We have had recourse to exceptional feeding this season, for a variety on trial has proved wonderfully short-jointed and prolific, the majority of joints showing five fruit. We have not taken every fruit, but the proportion of loss has not been one in ten; there are plenty hanging now, and the plants are healthy and vigorous. The secret, if there be any secret in it, of keeping up a continuous supply of Cucumbers from one house or pit for some seven months in the year is to grow the plants along quietly in the early stages close up to the glass, avoiding excess of heat or moisture. I usually sow in Christmas week, plant out in the last week in January, and begin to cut during the last week in March. No shading should be used until the fruit is swelling away fast, but at this particular time if the crop is so heavy that there is scarcely any growth made, a little shading may be used, more heat and moisture applied, and plenty of surface-feeding to get the first batch of fruit off quickly. If the ordinary manure water is not a sufficient stimulant I have generally found a heavy top-dressing of horse droppings answer the purpose, and by these means sufficient impetus is given the plants to enable them not only to swell off the fruit, but to furnish them with a lot of young growth that will push away rapidly when the bulk of the fruit is gone. If the plants suffer at any time from neglect, the best remedy is to withhold the copious supplies of water the Cucumbers usually delight in, give a little shade, plenty of heat and moisture, and keep the surface of the beds moist to encourage root action. E. BURELL.

Peas.—After using every effort to raise early Peas so that gatherings may be made as soon as it is possible to obtain them, some dissatisfaction mingled with gratification is experienced when we find that those which were sown at new year in boxes, tended carefully with air, light, and other requirements, are no further forward in the middle of June than those which were sown during February in open borders. The latter are stronger, more productive, and resist the drought better than those sown under glass. We gathered the first pods on June 11. William the First was a few days only ahead of Sangster's No. 1, and several others are coming in together. The finest and most productive lots were those sown in rows where the soil was thrown out in lines right and left, 18 inches wide, and the seed covered with light rich soil. A number of rows are doing well which were sown on an early border in strips of turf and transplanted without any check to the roots by removal. A mulching 2 inches thick of loose soil thrown over the roots has done good service in preventing the destruction of the crop by drought, no rain having fallen in sufficient quantity since March to reach the roots of any of the crops. Proprietors put much value on the produce of their

own gardens, otherwise it is a simple matter to get abundant supplies of early Peas and other garden produce from earlier climes than North Britain (this is a Scottish midland county). In the villages and adjacent towns, Continental produce was carted about as well as exhibited in shops for sale weeks before any vegetables were fit for use in this part of the country.—SCOTT.

KITCHEN GARDEN NOTES.

MULCHING AND WATERING.—The prevalence of hot, dry weather has rendered both these operations imperative. Of course, the former lessens the latter, but all the mulching that could be given would not suffice without watering to keep such crops as Cauliflower, Celery, Peas, runner and dwarf Beans in vigorous growth. The hose has therefore been in full work, and we have abundance of Peas, Cauliflowers, Carrots, and Potatoes, whilst other crops are looking as vigorous as if the weather had been specially made for them. We have recently applied mulching to the last planted crop of Celery, and lately planted Asparagus and Seakale plots. Watering the two last is out of the question, and as they are not expected to be fit for use next year it will not be likely to permanently affect them should they suffer from drought. A thin sprinkling of salt has been applied over the mulching to keep down weeds.

HOEING.—Crops that it is inconvenient to either mulch or water are hoed as frequently as possible; amongst these are Carrots, Parsnips, Onions, Beet, Salsafy, Lettuce, Endive, and Potatoes. The latest and tallest haulmed kinds of Potatoes have all been earthed up. Earthing up of early and short haulmed kinds we cannot do, because between the rows we have planted autumn Cauliflowers, early Broccoli, Savoys, and Coleworts; besides, the practice is of no benefit to the crops; therefore such work as this must be accounted wasted labour. By persistent adherence to the above rules in regard to hoeing, weeds are never a serious annoyance to us, simply because they get no chance to develop, so that, apart from the benefit that the crops derive from frequent stirring of the soil, there is no exhaustion of it by weed growth.

PEAS AND FRENCH BEANS.—Other sowings of these have been made; of the former we have sown both early and late kinds. The early sorts are sure to do well, and, given a genial autumn, late sorts will probably be still better. The deep drills were, before the seed was sown, well watered, and after sowing another soaking was given, and were it not for the raids that slugs made on the young plants we should apply mulching at once; it is, however, such a convenient harbour for the pests that its application must be deferred till the Peas are about 6 inches high. The last sown are now being staked and mulched, and the crops of the earliest being now exhausted the ground will be cleared forthwith and recropped with early Broccoli. A south border now nearly cleared of early Potatoes is in course of preparation for French Beans, by being deeply dug and having applied to it a dressing of artificial manure. The last sowing of Runner Beans has been made and advancing crops staked, as also have all Peas that had attained 6 inches in height.

SPINACH, LETTUCE, AND ENDIVE.—The plot of ground cleared by digging up foreing roots of Asparagus, after due preparation by manuring and trenching, has been set apart for the crop of winter Spinach. The drills are already drawn, and as soon as we get a shower the seed will be put in. This is a crop that well repays the most liberal treatment and plenty of space. The drills ought not to be closer than 18 inches apart, and the plants when finally thinned not less than a foot. In an extra warm season this sowing may prove to be too early, and premature seeding result; it is therefore well to arrange for making another sowing about the 20th July. Lettuce we shall continue to sow in small quantities about every ten days till the end of July, and at that time we shall make a larger sowing of the Black-seeded Bath Cos for winter use. A couple of other sowings of Endive—now and in the middle of July—will be ample to keep up a

continuous supply of this salad during the winter. The last sowings of both Lettuce and Endive require thinning out, and if rain does not come soon, we shall have to water in order to draw the plants out easily, as they are already being injured by overcrowding.

GENERAL WORK.—Though so late in being ready, Asparagus was never more valued or more profitable, by reason of Cauliflowers and Peas being so late. Both are now plentiful, and we shall therefore discontinue cutting Asparagus. There are a few self-sown plants, and these with weeds will now be pulled up, then for this season will be ended all labour in regard to this crop. Turnips require thinning out and another sowing to be made. All the Year Round is, I think, the best variety for present sowing. Tomatoes need attention as to ties once a week, and those on walls will take any amount of water. We keep the shoots rather closely pinched back, and this has a tendency to make the plants more fruitful. An over-abundance of foliage or shoots prevents the proper colouring of the fruit, which can hardly have too much light and sunshine. Pick off the flowers of Seakale, Rhubarb, and Horseradish, and if the ground is not mulched it should be frequently hoed. As soon as rain comes plant out Broccoli and other winter greens, and meantime every spare piece of ground should be made ready for the same. Keep Vegetable Marrow and ridge Cucumber beds free of weeds and the shoots well thinned out. W. W.

GARDEN FLORA.

PLATE 603.

RUELLIA MACRANTHA.

(WITH COLOURED PLATE.*)

THIS genus of Acanthaceae plants as now constituted includes many species which are known in our gardens under the generic names of *Dipteracanthus* and *Stephanophyllum*, and comprises about 150 species, some of which are sufficiently showy to render them worthy of a place in any garden having the convenience of an intermediate stove. This statement is amply borne out by the coloured plate of the species we here give.

Ruellias are easily and quickly grown into good sized specimens. The soil for them should consist of an admixture of leaf-mould, loam, peat, and well decomposed (but not spent) manure, in about equal parts, adding to the whole a small portion of sharp river or silver sand. They strike readily from cuttings, and where moderate sized plants only are required, they should be renewed in this way annually, as the young examples retain their foliage better, and produce larger flowers than old plants. During the summer these young plants should frequently have the points of their shoots pinched out, in order to produce lateral growth, form bushy plants, and thus increase the number of flowering shoots. In the case of the winter-flowering kinds it is not advisable to continue this system of stopping later than the beginning of August. If, however, larger specimens are required than can be grown in one season from cuttings, the plants after flowering should be cut back hard; and as soon as the buds show the first signs of starting, the old soil must be partially shaken away from the roots and the plants repotted in fresh material, increasing the size of pot from time to time as may be requisite. The shoots must be stopped during the growing season, as previously recommended for young plants. An abundant supply of water is necessary; therefore the drainage must be kept open.

* Drawn for THE GARDEN in Col. Beldome's garden, Sispera, Putney, by Miss E. Lowe, Nov. 3, 1886, and printed by G. Severeys.



A few years ago Acanthaceous plants were more popular than they appear to be at the present time. The fact is, that although they are profuse bloomers, and many of them come into flower during the dull winter months, when, as a rule, bright blooms are not plentiful, these plants are useless for yielding cut flowers or for market purposes, as their flowers fall quickly, and even when growing on the plants they last a very short time. Nevertheless, for the decoration of the plant house they are extremely valuable, producing in succession a great quantity of their richly-coloured blooms. The following species of *Ruellia*, as winter bloomers, are well deserving of general cultivation:—

R. MACRANTHA, producing large trumpet-shaped flowers of a rosy purple, veined and streaked in the throat with lines of a deeper hue.

R. HERBSTI.—This plant is a most profuse bloomer, producing dense racemes of beautiful flowers of a rosy purple and white, whilst its leaves are streaked along the centre with white.

R. CILIATIFLORA produces funnel-shaped blooms of a bluish purple hue, and is perhaps more valuable for autumn decoration than winter.

R. PORTELLE is a free-growing and free-flowering and much-branched plant, bearing hairy, rosy pink flowers throughout the whole winter.

R. BAIKIEI produces dense racemes of bright scarlet tubular flowers of great beauty. It is a plant which requires less attention to stopping during the growing season, as it branches freely and naturally, but does not ascend quickly if the points of the shoots are pinched out. W. H. G.

FRUIT GARDEN.

W. COLEMAN.

FRUIT BORDERS.

MULCHING AND WATERING.—When writing some few months ago upon the value and importance of mulching, I did not at the time think a period of exceptionally dry weather, if not actual drought, had then set in. Such, however, was the case; consequently, the subsoil in this part of England having been deprived of a portion of its usual supply of winter rain commenced drawing upon the surface, now equally dry—certainly too dry for the roots of many trees and all succulent vegetables. Mulches, I stated, might be composed of various materials and be used to answer many, some of them directly opposite, purposes. The protective mulch for keeping out frost is good in its way, but just now, with the mercury standing at 80° in the shade, it is rather out of season, and may be dismissed for the present. The spring mulch for the preservation of moisture, combined with the inlet of warmth, this year has been a powerful host, and on cold soils might have been found quite sufficient for the season. Something more, however, now is needed, and the sooner it is applied the better will it be for fruit-laden trees in general, and newly planted ones in particular. Long litter, Moss, Grass from the lawns, old Mushroom manure, and solid manure, one or all, spread from 2 inches to 4 inches or 5 inches thick over the surface of fruit borders, will tell in several ways: first, in keeping or holding the water in suspension on application through the hose or otherwise until the ground can take it in; second, in preventing its evaporation on hot days; third, in drawing the roots to the surface and keeping them there; and last, but not least, in feeding when the dry heated atmosphere is taking moisture from the foliage so much needed by the fruit. Any of these materials used in plenty will form a non-conducting medium; but the best at the present time, no doubt, is rotten or half-rotten manure, which should be laid loosely over the whole

root-run and lightly covered with long litter, for the twofold purpose of preserving its stimulating properties, and, in the case of wall trees, maintaining a neat and clean pathway. Pyramids, bushes, and standards do not absolutely require the covering of litter, but, where plentiful, the two combined form a more complete and lasting mulch than one or the other separately. Whatever is used at this time of year, be it rich or poor, there must be no stint, otherwise the intense heat playing on the wall-path, say, of a Peach border, will very soon reduce the bulk to a useless quantity. In all cases where fruit as well as foliage is roasting against hot brick walls, old Mushroom manure or hotbed manure, not leaf-mould, stands first on my list, as it feeds the roots at a most critical time, and can be dug into the vegetable portion of the border afterwards.

Next as to watering, the non-professional with an unlimited supply of water at his command may say, why mulch at all where water is so plentiful? The question is easily answered, if it does not answer itself. One gallon of water passed through a good layer of manure is worth ten gallons poured over a roasting, sandy border, for it draws the roots upwards to the influence of sun, heat, and air; it maintains an evenly moist and growing condition of the soil, and it does a maximum of good at a minimum cost in time and labour. Water, again, varies in quality, and often carries away more than it deposits in the soil. Pure spring water, for instance, which we should prefer for domestic use, not only is cold, but it acts upon some, if not upon all, soils in a prejudicial way; therefore, unless well warmed and softened by exposure to the atmosphere, a minimum through the mulch will be found infinitely superior to the maximum without it. Assuming that no other water can be obtained, then the deeper and richer the mulch the better the effect, and more freely may it be used. The best of all water for horticultural purposes is that which falls from the clouds, but this is too scarce and precious for irrigating purposes. The next best is obtained from ponds or open tanks, and the nearest substitute for either is running water from rivers or brooks fully exposed to the sun. The proper time to apply water is after the turn of the day when the sun has lost its fierce power, as the foliage as well as the borders can then be bathed and revel in its refreshing influence throughout the night. The quantity, it is hardly necessary to say, should be sufficient to penetrate to the lowest roots; therefore, notwithstanding the fact that many trees may stand sorely in need of help, the best and proper method of applying it is one thorough soaking in preference to incessant dribbles as fleeting as they are misleading. Dull, cloudy, or even rainy days offer still better facilities for doing an immensity of good with the hose. Many people, finding the mercury on the decline, lay down the hose and push aside the barrel to make ready for the shower, which, while refreshing all Nature, may not penetrate half an inch beneath the surface. Instead of resting on their oars, advantage should be taken of this delightful state of the atmosphere, not for washing the foliage—Nature will do that—but for soaking the roots to their utmost depths, and so preparing the soil for the rain to follow.

Strawberry Black Prince.—I have managed to thoroughly connect the Strawberry season this year. The last batch of Sir J. Paxton in pots will be over in a few days, and by that time we shall pick quantities of Black Prince from a warm outside border. Vicountesse Héricart de Thury and La Grosse Suerée will not be ready for ten days, so the Prince is a valuable

variety, and until something new is raised to equal it in earliness and colour and superior in size, it is not likely to be ousted from collections. I do not know Pioneer; is it an improvement on Black Prince?—E. B.

THE STRAWBERRY.

In the spring I sent some notes on the Strawberry plants taken just as they had passed through the winter. The leaves of some of them were quite blasted and decayed from the effects of the keen frosty winds. I stated at the time that the crowns were good, and safely predicted that the loss of the leaves was immaterial, and the present state of the plants has verified our most sanguine anticipations. A quarter containing 936 plants, set out in August last year, is now a most interesting study to an ardent fruit cultivator. Beginning with what we have hitherto considered our best early variety, Black Prince, one plant only has died; all the others, without an exception, are each laden with fruit and healthy green leaves. By the way, this old variety was the only one attacked by mildew last year. The leaves were well dusted with flowers of sulphur, which destroyed the parasite on those particular plants, and it appeared on no others.

Pauline we have tried, and are now growing in different positions in the open garden. Mr. George Paul, who, I believe, introduced it, told me that it did best on a warm border, that it was a week earlier than Black Prince, but he could not recommend it for early forcing. Following his advice, we planted out some good plants on a border exposed to the south, and protected from the north by a wall 9 feet high. The fruit is now (June 18) ripe enough for the birds; it is of the largest size and of excellent flavour. I may add that every plant (with one or two exceptions) planted on the border is bearing fruit; whereas nearly half of those in the open ground are not so. The plants were all alike when put out. Did the warmer position promote an earlier and better ripening of the crowns? The evidence points very strongly in this direction, and suggests the importance of getting the runners layered early in small pots, to be planted out permanently in the open ground not later than the first week in August.

King of the Earlies is on trial with the others, and promises well. It is very hardy, fruitful, and free in growth. We will increase our stock of this next year.

Keen's Seedling has produced the most even lot of plants, only one having gone off, and that since the hot weather set in. This good old sort was raised about 1806 by Mr. Michael Keen, of Isleworth, from seeds of the large white Chili. It was the only variety saved from a numerous progeny, for the most part white, and not well flavoured. It has been grown under the name of Keen's Seedling, Keen's New Seedling, Murphy's Child, Keen's New Pine, and Keen's Black Pine. This is the only variety we have grown in pots for forcing this year, besides Black Prince. We grew with it for several years President, but this last-named excellent variety has not been found so satisfactory as a pot plant. As an out-of-doors variety, Sir Joseph Paxton has the best appearance at present; the plants have plenty of foliage, and carry an excellent crop of fruit. This variety we discarded from our garden of light gravelly soil, but here in a clay loam it is superior to President, which with us this year is not of very even growth in the rows. James Veitch, usually of good growth, is below medium this year; it suffered considerably in winter, but the cause of its not growing well is owing to the runners not being strong enough last year. Duc de Magenta is rather stronger in growth, and is a very free bearer. This and James Veitch are the only two Continental sorts we grow now, after trying many of them.

Mr. Radcliffe we have grown instead of British Queen; it is scarcely to be distinguished from that good old variety except by its more vigorous constitution; but even this distinguishing feature may not be apparent in all gardens. Frogmore Late Pine suffered most in winter, and it has taken

longest to recover; four plants have been killed outright, and many are weakly. Unser Fritz is a favourite here, but to do well it must be propagated from runners annually. They must be taken early, and be planted, if possible, not later than the first week in August.

The same remarks apply to the latest variety we have, viz., Loxford Hall Seedling. It has not suffered in the least, which is rather remarkable, seeing its parents La Constante and Frogmore Late Pine are not of very strong constitution. Instead of the usual litter caused by placing straw, short cut Grass, &c., round the plants to protect the fruit from injury by dirt, we place to them short sprays cut from the ends of Pea sticks; these are stuck into the ground close to the plants, and the Strawberries hang from the branches. We tried wire protectors, but did not find them answer so well as these sprays, which are obtained at no cost in most gardens. We use them for pot plants, and for outdoor work they answer equally well. We mulch the surface of the ground with short decayed manure, and water freely. A tropical summer and water freely applied suit Strawberry plants best. I advise getting in the runners as soon as possible, as it is best to make a new plantation annually. Plant on deeply trenched and well manured ground, doing the work carefully to avoid giving any check to the plants, as time lost at the first cannot by any means be made up afterwards.

J. DOUGLAS.

TO DESTROY ANTS IN VINERIES.

"W. G. G." appeals for help in this matter (p. 557). One almost wonders how they get there. Well-managed vineries are about the last places, as a rule, ants would choose to infest. The case is rather different with Peaches. As the latter approach maturity and diffuse their aroma, ants are attracted from afar at times, and prove as troublesome as they are mischievous; but ants, with all their faults, do not eat Grapes, and seldom trouble vineries.

All this, however, may be but poor comfort and of little use to "W. G. G.," and yet, if it helps him to find out how the ants get in, it will assuredly assist him in getting them out and in keeping them out ever afterwards. In ignorance of the entire case, I should predict that they get in through drought, and must be driven out and kept out through water. Ants will not care, in fact, to remain in vineries, in which every portion of the surface is kept sufficiently moist to sustain vigorous growth and keep down insect pests of all sorts. For example, a Vine border kept sufficiently moist on the surface to generate a genial moisture throughout the atmosphere and keep down the ravages of red spider would afford no foothold, resting-place, or breeding ground for ants. Should any of the latter exist sufficiently far from the roots to be safely dosed with boiling water, such radical measures will facilitate the clearance. But it is not essential to scald to get rid of them. Persistent waterings, repeating them several times a day, with clean water will tire the ants out. Of course, should the borders, as is most probable, be very dry, turn, if possible, a hose over them, and let the water run over them for six, twelve, or even more hours at a stretch. If applied with a heavy rose, so as to wet large portions, or the whole of the border at once, the ants will hasten to shift their quarters, bag and baggage, after a few floodings. Even should the Grapes be nearly ripe, still the ants may be watered out by constant sprinklings and waterings overhead. The work may be hastened through using guano or soot, or almost any kind of manure water, supposing the Grapes are green and the Vines in full growth, while doses of paraffin or other mineral oils, or sweet or linseed oil, also hurry the exit of the ants. These insects love a dry bed, and clean and sweet food and quarters; hence, the opposites of these will make them decamp.

In a few cases I have known a few hungry toads very helpful in the clearance of ants; but the toads are not always hungry, nor will they, as a rule, eat to order. But the moist state of Vine borders—most congenial to the toads—is most abhorrent to ants. Besides, the overhead sprinklings, &c., that

keep the ants in motion, tempt the toads to pounce upon them, for the latter only eat their prey when in motion. Hence, should "W. G. G." adopt our general advice of washing the ants out, he may also try the toad remedy under the most favourable circumstances and report the results through your pages. One caution I must give him in reference to these useful helps. Toads are very shy at first, and as their sight is sharp and keen, they will not feed when watched. When used to those that stir up their prey with the watering-pot, they lay aside their reserve and eat at a rate and with a voracity that will astonish anyone unacquainted with their active feeding habits and enormous appetites. Water and scald the ants out, disturb their layers, by deep hoeing or forking up, as often as may be, render these noxious by the application of pungent manures, and get an army of live toads to snap up the ants on the move, and soon there will not be one to be seen.

HORTUS.

FRUIT NOTES AT WYCOMBE ABBEY.

MR. G. T. MILES, who has filled the post of head gardener at Wycombe Abbey, High Wycombe, for forty years, is well known as a successful grower of fruit, and though by reason of the absence abroad of his noble employer, Lord Carington, he has, for the present at least, relinquished exhibiting, he still grows as successfully as ever, as anyone visiting the place at the present time can testify. The admirable condition of the gardens is one of the leading features of the place, and denotes the close and constant oversight of Mr. Miles.

There are two houses devoted to Melons, the vines bearing fine crops of fruit. The best varieties for general culture and for market purposes are Cox's Golden Gem, a very fine white-fleshed variety; Longlet Perfection, pale green-fleshed, oval in shape, and quite smooth on the rind; Eastnor Castle, green flesh, one of the very best, early or late; Scarlet Hybrid, scarlet flesh; and Hero of Lockinge, one of the best of the early sorts, and it is also useful for exhibition. The plants are all in a very healthy condition. As soon as the roots come through the surface, a top-dressing of manure from a spent Mushroom bed is applied.

Cucumbers are in excellent bearing, and succession houses are got ready as required. The two leading sorts are Improved Telegraph and Tender and True. There are several houses devoted to Peaches. In the earliest house the fruit of Alexandra, a noble Peach raised by the late Mr. T. Rivers from the Old Noblesse, was already gathered. Mr. Miles has a very high opinion of this as an early variety, and considers it quite a week earlier than Hale's Early. Lord Napier Nectarine comes in with the last named, and for early crops Royal George and Bellegarde are grown together with Elrue Nectarine. In the second house are Bellegarde and A Bee Peaches, Lord Napier and Elrue Nectarines. In the third and latest houses are Barrington, Bellegarde, Violette Hative, and Sea Eagle Peaches, also Lord Napier and Humboldt Nectarines. There are remarkably fine crops of Peaches on open walls, and, save here and there a little blister on the leaves, the trees are in excellent condition. Alexandra is also the earliest outdoor variety, followed by Early Beatrice and Hale's Early, the latter coming very fine on open walls. The second earlies are Grosse Mignonne, Royal George, and Stirling Castle. The latest are Sea Eagle, Nectarine Peach, which is regarded as a very fine late variety, and Lord Palmerston. The earliest Nectarines in the open are Violette Hative and the Stanwick Elrue, followed by Murrey, Handwick Seedling, Pine-apple, the latest of all being Stanwick, Albert Victor, and Victoria. The two last, and the Victoria especially, produce fine green fruit, and Mr. Miles states that he has no difficulty in disposing of these, as they are in great demand for sending abroad, being gathered just before they are ripe. No doubt something, and perhaps more than is generally supposed, depends upon the character of the stock upon which the tree is worked. There is one tree here of Lord Napier that quite fills a small house, and produces

every year wonderful crops of remarkably fine fruit. That this tree is on a good stock there can be no doubt. Fine crops of splendid Peaches are obtained every year from trees under glass. The trees are always syringed with rain water, a supply of which is in a tank within each house. This is necessary, because all the fresh water on the estate comes through the chalk, and if it is used for syringing it is found to contain a white sediment which marks the fruit. On outside walls half standard trees are planted so as to have the lowest branches 3 feet from the ground. The abbey gardens are situated on low ground and spring frosts are at times keenly felt. A few maiden trees are also planted every year against walls, and trained so as to get just the kind of trees required for any particular position.

The Cherry house was very interesting. The earliest variety is Early Rivers, a black kind, excellent in all respects, the fruit produced abundantly. A week later was Black Circassian, a variety that is here grown to perfection; the branches carried their rich-looking fruit in great clusters. Governor Wood and Elton are two excellent forcing Cherries, bearing capital crops. The trees are planted in good loam, and a surface-dressing of loam is occasionally given them. The house is started in January, the temperature being kept low at night and from 10° to 50° by day. Cherries want plenty of air to get them well flavoured. It is a critical period, when forcing Cherries, up to the completion of the stoning process, and then a freer course of treatment can be allowed.

Tomatoes are also largely grown. The earliest crop is obtained from cuttings struck about November, and succession crops come from seeds sown in January along with early Melons. Stamfordian and Hathaway's Excelsior are the two favourite varieties, the latter remarkable for its handsome shape.

Pine-apples and Figs are to be seen in excellent condition. Of the former, some excellent plants of the Queen variety were developing fine fruit.

R. D.

Apple Green Costard.—I have noticed with interest your comments in THE GARDEN on the beauty of different sorts of Apple blossoms. The largest and most beautiful Apple blossom with which I am acquainted (and I grow over 300 varieties of Apples) is that of a variety called the Green Costard: these blossoms are usually about 3 inches in diameter, and I have measured one as much as 3½ inches. I have often deceived people, even those who have a fair knowledge of flowers, as to its nature. The tree itself is a moderate bloomer, and a good, but not extra heavy cropper. The tree grows strong with stout downy shoots, and the Apple itself is a large green conical variety, not unlike Catshead, but more regular in shape; a very good culinary variety; in season from October to the end of December.—JNO. WATKINS, *Pomona Farm, Withington, Hereford.*

Shading Strawberries.—The latest crops of forced Strawberries are this year later than usual, and in ripening are likely to suffer from sunshine. Now, although the Strawberry likes heat when swelling and ripening its fruit, a roasting temperature tells most unfavourably on size, colour and flavour. I, who grow for profit and to whom bulk is of the greatest importance, have long made a practice of warding off hot sun at this season. Shade applied with care improves the weight and quality of the berries. Strawberries to command the best price in the market must be firm and of bright colour. Neither can be had when the fruits are exposed all day long to a hot burning sun. Plants growing in a bed of soil are naturally under more favourable conditions than when grown in pots, but even in their case the effect of a little shade is good. It is when the berries are beginning to colour that the plants are most likely to suffer from sun. Some kinds are more liable to burn than others, Sir C. Napier sooner showing signs of injury than any sort I know. I shade my frames with scrim canvas during the hottest part of the day. This year, owing to an unusually long period of dull, moist weather, the foliage became so flaccid, that when

the very hot weather came the plants did not seem to possess sufficient hardness to resist it. In a lengthened period of dull weather a little air on at night is very helpful to the plants. J. C. B.

Summer pruning of Currants.—Black Currants promise this year to be such a poor crop, that what few berries are set on the bushes growers are declaring will not pay to gather. That being the case, it seems as if an excellent opportunity is now offered to try the effect of summer pruning, and certainly as a rule the bushes need it. Generally we leave too much wood in our Black Currant bushes, and during the present summer, having no fruit to carry, they will make excessive growth. If that liberty to produce wood could be fully utilised by removing now the chief of the old branches and thus affording the younger and stouter shoots ample light and air, how those would plump up during the summer, and what stout buds would they show for next year's crop production. Probably pruning Black Currants is just now a question of time, but it is obvious that if relief be not given now, when it would do so much good, it will have to be given in the winter, when as relief it will come too late. No doubt the summer pruning of Currants, and of red ones especially, is excellent practice, but far more honoured in the breach than in the observance. As to styles of pruning, it is certain that in market gardens here, the hard or spur pruning is that most practised, for the bushes in the winter are merely some half-dozen stumps, but in the summer are invariably laden with heavy crops of fine fruit. That is the case again this year; whilst Black Currants are so thin, Gooseberries are but a moderate crop. The recent heat has promoted blight on the standard trees considerably, and yet a month must elapse ere a true line as to the year's fruit crop can be obtained. A. D.

— In reply to "J. G." in THE GARDEN, June 18 (p. 557), I would only say that what the practice of market-growers in his neighbourhood may be has nothing to do with the merits of this question. All I assert is, that a vigorous unpinched or unpruned Currant shoot, not being sucker, produces more fruit, and of as good quality, than a shoot that is pinched or pruned back, thereby removing the best fruit-buds, &c. "J. G." will never be able to produce a general example to the contrary. "J. G." regards it as "something new" that Red Currants should be left unshortened, like Black Currants. Can he, or anyone else, give an intelligent reason why Red Currant shoots should be shortened any more than Black ones? In habit they are both almost alike, and bear exactly in the same way when treated alike. Why, then, top the shoots of the one, and not the other? As to needing ladders to reach extension-trained Currant bushes, I did not know before that Currant bushes grow above their natural height, or could be finally kept much under it by any system of pruning. "J. G.'s" idea of putting more fruit into a shoot by denuding it of half of its best buds will require some establishing.—J. S. W.

Ornamental Apple blossom.—"T. W. G." gives us in THE GARDEN, June 18 (p. 555), a long list of Apple trees which flower more or less, but as to presenting any special guide in the selection of a few sorts which produce particularly effective bloom, the list is valueless. Apple bloom is wondrously like on most kinds, and on but very few sorts indeed does it stand out as exceptionally striking and effective. It is just those few of which we wish to know, and probably a list of twelve of the very best trees to include good habit of growth, average freedom in blooming, and richness or depth of colour in the flowers, would be all that could be specified, or indeed is needed. As a rule, the bloom in ninety sorts of Apples out of a hundred is so much alike, that only minute examination could reveal the difference. We want to learn of trees which stand out from all others as having special elements of beauty when in bloom. To give short selections of these would be of real service, whilst long lists of kinds which all know and grow, and know also to have no special effectiveness associated with them, render no aid. As a rule, the best decorative Apple trees are those which

have moderate and somewhat pendulous habits of growth. If, on the other hand, effect is sought for in fruit colouration, we must put aside habit altogether, and accept whatsoever Worcester Pearmain, Duchess Favourite, Hollandbury, Cox's Pomona, Manks Codlin, Emperor Alexander, and similar showy fruited sorts may offer. On the whole, having regard to the wealth of decorative trees we have, I do not think we shall take to planting Apple trees for such a purpose just yet.—A. D.

RED SPIDER.

THERE is much truth, probably too much, in "W. I.'s" pithy and pungent criticisms against sulphur fumes as a remedy against red spider. As frequently applied, these are not seldom useless. But, nevertheless, I believe they can be, and often, in fact, are, so used as to suffocate or destroy the spider. To do this, however, sufficient heat must be used so as to vapourise a portion of the sulphur. It must by no means be burnt, or the Vines and other plants will be seriously crippled or killed, whether the spider is or not. And it is difficult to define the process or result of vapourisation. Suffice it to say that this cannot be accomplished at ordinary heating temperature. Neither from smeared flues nor pipes will sufficient vapour of sulphur be given off, unless the temperature of these is specially raised on purpose. While I am unable to give the exact heat that may be safely used for this purpose, it may be stated that it must be sufficient to cause the vapourous fumes of sulphur to be produced and distributed at once. You may not only see them diffused, but feel their potency in the eyes and nose. "W. I." says he did not care to stay in the house with the sulphur fumes. Let me add that had those been made sufficiently potent he could not have stayed. Neither are fumes that we can bear without serious inconvenience likely to kill spider. It is even so with tobacco smoke, a far less subtle and powerful thing than sulphur fumes. The inveterate smoker has to leave the house long before the aphides fall in dead shoals on the floor, and such rough and ready tests are useful in the application of sulphur fumes to red spider. The leaves of Vines, Peaches, and Melons will bear much more sulphur in the air than we can, and most fortunately than red spider or any other insect pest can.

No doubt there are risks involved in vapourising red spider to death with sulphur fumes; but so there are in all other modes of eradicating the red spider, and also in letting it alone. For example, neither Vine nor Melon leaves thrive the better for being coated with sulphur on their under sides. I have seen such leaves shrivel up under fierce sunshine like parched paper, and the process of sulphur daubing, dusting, painting, is slow and tedious at best. Besides, sulphur seems at times too gross to get to close quarters with the spider. Has "W. I." never found colonies of the latter happily disporting themselves under their cloaks of sulphur? Vapourising is by far the speediest; possibly, also, the most effective way. It has doubtless killed some plants when overdone, failed to clear others of the pest when underdone, but it has also killed millions of red spider and delivered thousands of plants from their cruel ravages. Skillfully vapourised, sulphur is not only a remedy, but an antidote, and in this matter prevention is infinitely better than cure.

HORTUS.

Mulching of outdoor Figs. A curious sentence on the above occurs on page 558. As it is apt to mislead as well as confuse, you will probably allow me to call attention to it. "The thirty hours' rain which fell at the beginning of the month will have penetrated the borders, and a mulch of long litter, while letting in the sun-heat, will keep the roots sufficiently moist for some time to come." The words italicised do not express the truth, but very much the contrary. No mulch that will keep in the moisture, but must of necessity shut out the sun's heat in the same ratio as it conserves the moisture. And besides all this, the

mulching of outdoor Figs is wholly a mistake. It keeps the roots and the local atmosphere cool, while the great need of Figs in the open air is, give them all the available leaf that our climate affords; there is always moisture enough and to spare to supply all the needs of our Figs in the open. What they desiderate is more heat alike in the earth and the atmosphere, and it is physically impossible that either can be added to during our summer by means of surface mulchings of litter, long or short.—HORTUS.

SEASONABLE WORK AMONG FRUITS.

ORCHARD HOUSES.

ASSUMING that many of the early varieties of Peaches and Nectarines have been cleared of their fruit, and midseason sorts are continuing the supply, the first may now be placed at the coolest end of the house, where they can be copiously syringed without detriment to the ripening fruit. Here they may be regularly supplied with water of a stimulating nature or otherwise, according to the condition of the roots, the size of the pots, and the quantity of fruit they have carried. Maiden trees that have just finished their first crops will most likely require a shift into pots a size or two larger, and as these should be grown into the finest possible condition for next year's forcing the secret of success in a great measure depends upon potting early and getting the compost well filled with roots before the leaves fall. Although all the trees cannot be potted at one time, a start should be made as soon as the first batch is ready, and the better to prevent them from feeling the check which follows picking out the crocks and points of the roots, a close growing atmosphere under glass, if not in the same house, where they can be frequently syringed will set this matter right in a few days. Growing trees should have one good watering to settle the soil as soon as they are potted, but this must not be repeated to a saturating extent until the new roots are working freely; dryness or anything approaching it, on the other hand, must be avoided; therefore constant surface syringing being apt to mislead, a light mulch placed on the tops of the pots and a little loose litter cast in amongst them will be found a great help, not only to the roots, but also to the foliage, as it will absorb and in hot days throw off a steady supply of moisture. Newly potted trees, as a matter of course, should be allowed to make wood and leaves until they have re-established themselves, when pinching and ordinary treatment may be resumed. Older trees, which it may be desirable to reduce and return to the same sized pots, should be allowed to stand over until they have completed their growth and the foliage shows signs of changing. Their return to the house is not absolutely necessary, but a moist, temperate atmosphere favours rapid recovery.

The general house now replete with the best of the midseason and late sorts will now require heavy syringing twice a day, and many of the trees will take water equally often. Good mulching or rich top-dressings cannot be dispensed with, and the oftener the liquid food is changed the larger will be the fruit. Where the drainage from animal manure is plentiful, this forms the main staple, always in a diluted state, as serious mischief often follows overfeeding. Then, by way of change, weak guano and soot water can be used once or twice a week, the latter being alike applicable to the foliage and the roots. If well managed trees are kept clear of aphid until after the fruit is set, generous culture generally keeps them free, but should this or black fly appear, the usual remedy of smoking for the first, and dipping for the second should immediately be put into force. For spider there is no excuse, as the syringe, engine, or hose, in good hands, make their existence impossible. Airing is not less important than water and cleanliness; therefore it should be managed on a very liberal scale, especially through the early part of the day. Indeed, extreme lateness being the object, the ventilators need not be closed after midsummer. When stoning is safely got over, the final thinning

with a liberal hand, or otherwise, will determine the quality of the crop. Many growers leave a great deal more fruit on pot trees than is good for them, and in this way bring the orchard house into bad repute. Others, who can tell at a glance what each tree is capable of carrying, crop accordingly, and rest satisfied with a fair quantity of fine Peaches in preference to double the number of stones whose meagre covering of pulp is not worth eating. If Figs are grown in the orchard house they will require liberal feeding with diluted liquid, top-dressing with rich compost, and copious syringing twice a day. If in pots or tubs and space is contracted, the pyramidal form answers best, and pinching once may be necessary to the maintenance of a compact habit of growth. Figs require very little pot room, and often do well plunged or planted out in narrow shallow borders near the front lights where limited head-room necessitates the bush form of training. If left alone they soon become gross and unfruitful, but annual lifting and replanting in pure loam and old lime rubble will keep many of the moderate growers within bounds for a great number of years. The hardest varieties enjoy strong heat, and fruit best when grown in the hottest and brightest part of the house.

STRAWBERRIES.

I have often suggested the growth of good batches of the best late varieties for filling up the gap which so often intervenes after forced fruit is over. This year is not only a fortnight to three weeks later than usual, but the intense dry heat which set in before outdoor plants were fairly out of flower having already told upon the quantity, if not the quality, of early pickings, these sets of pot plants will be found unusually acceptable to those who have them. Free-fruiting varieties, also British Queen, are well adapted for this kind of work, and when it is borne in mind that pits or frames, unaided by fire-heat, will grow them to perfection, the veriest tyro must see at a glance that anyone having a few lights to spare may have fruit of the finest quality through May and the early part of June. The layering and potting of the plants which form this connecting link in no way differs from the ordinary course followed by Strawberry forcers, the main points being early runners, medium-sized pots, extra well crocked, and ripe single crowns by the end of October. When ripe and going to rest, the pots may be plunged in the open air certainly until Christmas, when, the pits being at liberty, they should be placed where they are intended to remain until the fruit is ripe. If partially plunged in old tan, leaves or the soil of the bed, ample room should be allowed for the development of the foliage in the spring, as lifting and replunging at that time not only makes work, but the operation disturbs the roots which have worked into the bed and are ready to feed the enormous crops they should be capable of carrying. Some successful Strawberry growers do not even go the length of potting up as for forcing, but plant out from 3-inch pots in August, lift and replant in the pits from February to April. Codding being no part of the programme, these selected plants, after being well watered home in the pits and protected from bad weather to give them a start, should have full exposure on all favourable occasions until they come into flower. At the present time we are gathering from plants so treated, and having nothing like ripe Strawberries out of doors, the fruit is especially useful.

Layering.—Where strong maidens were put out last August and divested of their flowers in the spring, good watering and mulching by this time will have produced a rapid growth of runners. These, for planting out, I peg down upon small pots, for forcing and late spring use upon 5-inch and 6-inch pots, and having plenty of water close at hand, in dry weather they are bosed every evening. As soon as the plants are well rooted they are detached, carried in, and arranged in the full blaze of the sun and watered after it has gone down without wetting the foliage. Potting by some is carried on until quite late in the summer, but ripe roots as well as crowns being imperative and cold seasons frequent, the safest course is preparation

for any emergency by starting early. The Strawberry is by no means fastidious as to soil, provided it is well pulverised, the reverse of light, and never allowed to feel the want of water. The best, however, is strong maiden loam capable of growing good stone fruits and Roses. This may require enriching or correcting with burnt earth or lime rubble in preference to solid animal manure, which attracts worms if it does not induce sourness, and it should be well rammed into the pots when dry—no difficult matter just now, as nothing would please me better than spending my jubilee beneath an umbrella. When light, poor soils require correcting, sun-baked and finely broken marl, bone-dust, and a little very old cow manure rubbed through a sieve will give stability. Strong liquid from the manure-tank poured over the heap is a great help, and the latter in a diluted state may be used occasionally when the plants are growing freely. When young plants are transferred from 3-inch to the fruiting pots, the foundation for the little balls should be well rammed to prevent them from settling and strangling. They should be thoroughly moist at the time and arranged to admit of a good half-inch of compost over the surface. When the runners are pegged down upon the fruiting pots, danger from sinking or strangling is avoided, as each crown, like an enlarged fruit bud, sits upon the surface—the best of all positions for hardening and ripening.

PINES.

When the compartment devoted to the first batch of Queens has been cleared of fruit, a favourable opportunity for a thorough cleansing must be taken advantage of. Woodlice, crickets, and cockroaches, which increase rapidly and often injure the fruit by eating the pips, may be kept in check when the house is occupied, but nothing short of a complete clearance of the plunging material, scalding and dressing the walls with hot limewash will thoroughly eradicate them. When these irregular opportunities offer, not only in Pine houses, but in every house and pit heated by hot water, cleanliness should be the first step in the preparation for succeeding crops. The old and tainted material having been destroyed by fire, or taken quite away from the garden, the pit must be refilled with fresh tan or leaves, which will require some little time to ferment and settle. When the heat becomes steady, the plants, be they successions or fruiters, should be selected, top-dressed, or potted as may be found necessary, and plunged lightly at first, as it not infrequently happens that the slightest disturbance at this time of year renews violent fermentation. Unless we have a great change, fire-heat in a newly renovated pit will certainly be unnecessary, but the plants having been kept well up to the glass it will be wise to shade for a few hours through the hottest part of the day, not only to preserve the foliage, but also to keep down the bottom heat. Air and moisture, it is hardly necessary to say, must be on a scale suitable to the requirements of the plants, and early closing with a sharp rise from sun-heat under any circumstances will be advantageous. If the rearrangement of this pit favours the clearance and cleansing of another, a busy time must not be the excuse for allowing the opportunity to slip, as time in the long run is saved, and plants of all kinds by their health and vigour show that a complete change is good for them.

Fruiting houses.—The plants in this structure will require plenty of atmospheric moisture in preference to overhead syringing which enlarges the crowns, and careful attention to watering with weak stimulants, as too much water kills the roots and produces black hearts, whilst too little induces premature ripening. Because the Pine does not soon suffer in a close house, the baneful practice of giving water in small quantities to keep want away is frequently followed; but this is a great mistake; either the plant does require water, or it will do without it; therefore, a full supply or none at all should be given. When the fruit has attained full size and there is an indication of changing colour, water may be withheld, and the better to retard any particular Pine, the pot and plant may be moved bodily to a freely ventilated early vinery,

where the dry atmosphere and partial shade will favour perfect colour and flavour.

Young stock in pits and frames is now growing freely, and, provided this brilliant weather continues, will soon be fit for a shift into larger pots. When a proper degree of heat is maintained by fermenting materials alone and the pit is closed early with moisture, suckers fill their pots with roots in an incredibly short time, and often require shifting before their broad, stocky leaves indicate their condition. The only drawback to frame-struck plants is the danger of a check from removal to more airy succession pits; therefore to avoid this, they should be returned to the frame for a time after potting, and gradually inured to more light and air with a minimum of shade before they are transferred.

POT VINES.

When pot Vines have been cleared of their fruit, they should be turned out into a warm sheltered corner to harden off, and if not wanted for any other purpose, they will form excellent subjects for planting against old trees or buildings. The majority of these I know are thrown away, but the sorts usually forced, including Hamburgh, Madresfield, Foster's, Buckland Sweetwater, and Royal Muscadine, are not only hardy and ornamental, but quite capable of giving good fruit when well managed upon warm sunny walls and gables. When the house has been thoroughly cleansed and the bed levelled down, it cannot be better employed than for ripening off the pick of the batch intended for next year's forcing. Always assuming that these Vines are not allowed to root through, there will be no difficulty or danger attached to their removal from an inferior to a more suitable structure. If the place they occupy is good enough for the finish, this labour will be superfluous, but there are few gardens in which a little additional room is not beneficial to pot Vines in all stages. Whether they are moved or not, the pots should be raised out of and placed upon the surface of the bed, as ripe roots are quite as valuable as ripe wood. When they have completed their growth they will require a free circulation of air, a good supply of water, and a daily syringing until the foliage begins to change colour, when shutting up with dry sun-heat will ripen the buds and form the germs of future bunches. If all the main leaves on the lower parts of the young rods are sound and good, the laterals may now be pruned back to the fruit-producing buds, but on no account must this be done where the leaf has been lost, as the removal of the next best substitute, the first and only leaf on the lateral, will prevent the bud from drawing the nourishment still necessary to its perfect formation.

Vines from eyes intended for cutting back or planting out next season should be shifted into 6-inch to 8-inch pots before the balls become root-bound. Young Vines will grow in almost any free, sweet soil, but the compost which suits them best is made by mixing light, rich turfy loam, bone dust, and burnt earth or lime rubble together a week or two before it is wanted for use. Into this, when the balls are thoroughly moist, pot firmly, replunge for a short time to give the roots a fresh start, and when they have recovered from the check, gradually draw the pots to the surface of the bed, where they may remain until they require more head room. As soon as there is danger of the young foliage obstructing the light, a batch of the earliest and best must be drawn out and placed in a light house where they can have more air and a temperature rising from 60° at night to 75° or 80° by day, good syringing, and plenty of water. Stout, short-jointed canes being the object, remove all laterals at the first leaf and pinch the points of the young canes when they have made 6 feet to 8 feet of growth, more or less, according to future requirements. Weaker and later Vines intended for cutting down to a single bud may be pinched when they have grown 4 feet, and the pots in which they are grown need not exceed 6 inches in diameter. W. C.

The protection of Figs.—Our wise and genial weekly instructor and my good friend, Mr. Coleman, seems rather to misunderstand the spirit and drift of my remarks on this very interesting and impor-

tant practical subject. He issued a challenge to all non-protectors of their Fig trees to write down their condition in THE GARDEN, and promised, in advance, to accept the facts as decisive of the wisdom and necessity, or otherwise, of protection. I sent facts and Fig wood in response (see p. 506) merely to show that Figs were hardier than many supposed, and without the slightest intention of finding fault with our friend Coleman's teaching or practice, which we all know to be of the highest order. As Mr. Coleman has made a comparison between Tea Roses and Figs, I may add that I think the former, with the exception of such hardy varieties as Gloire de Dijon, are much more tender than Figs. Then, too, as to the latter, I should be glad to have Mr. Coleman's opinion as to one material element in the hardiness of the Figs noted and described by me—viz., their starving regimen.—D. T. F.

FERNS.

W. H. GOWER.

THE WEST INDIAN FAN FERN.

(RHIPIDOPTERIS PELTATA.)

THIS very elegant Fern is nearly related to the genus Polybotrya, although it differs in size from any member of that family. It is a native



The West Indian Fan Fern (*Rhipidopteris peltata*).

of Peru, Mexico, Brazil, and several of the West Indian Islands. Two other species of this genus are recorded, *R. fœniculacea*, from Ecuador, and *R. flabellata*, from Peru and New Granada. The chief points of difference of these, however, lie in the more or less finely-cut ramifications of their infertile fronds.

Our illustration is an excellent representation of a barren and fertile frond of this species, but it does not render an idea of the exquisite beauty of a well-grown specimen of the plant. It has a slender, creeping rootstock, and produces its fronds in abundance in the temperature of a cool stove, the barren ones being the more numerous. These are about 6 inches high, several times dichotomously forked, somewhat coriaceous in texture, deep green in colour, and very persistent. The fertile ones are orbicular, more or less bilobed, deep green above, the under side covered with sori, which in the

young state are black, changing to bright brown when ripe. These fronds are sparingly produced and are very fugitive.

This plant is admirably adapted for covering a boulder of sandstone or the dead stem of a Tree Fern. When once established in such situations it quickly clothes either with an elegant drapery of green fronds. Smaller, yet handsome, plants of this species may be grown upon a small block cut from a Tree Fern stem and suspended from the roof in a shady situation, or even in a Wardian case in the dwelling-house; but in the last-named place, growth, as a matter of course, will be much slower, and the fronds produced somewhat less in size. A little Sphagnum Moss should be fastened about its root-stocks, in order to assist in keeping them moist until the fibres have penetrated the block, when all that is requisite to keep the plant in vigorous health is an abundant supply of water. Treated as a pot plant this species seldom thrives for any length of time, as it appears to dislike its roots being confined in soil.

SCHIZOCLENA SINUATA.

THIS is a remarkable little Tree Fern, belonging to the tribe Cyathea. A few species constitute the genus, which are characterised by their sori being situated on the middle instead of the forks of the veins. This plant is peculiar to the island of Ceylon, but even there it is by no means plentiful. It grows in dense shady woods on the mountain-sides, the places where it is found being comparatively cool, while outside the woods the temperature ranges high. It is perhaps the smallest member of the Tree Fern family in existence, whilst it is dissimilar from all, inasmuch as it bears simple fronds. The stems seldom attain a greater height than 3 feet or 4 feet, and are as slender as an ordinary walking cane. The fronds are simple, spreading, forming an umbrella-like crown, from 1 foot to 2 feet in length, and from 1 inch to 2 inches in breadth, tapering at each end, somewhat thin in texture, and bright lively green in colour. This species was first introduced in a living state about the year 1862, but it has never become plentiful, which is much to be regretted; indeed it has not hitherto long survived after being imported. This, however, may be more the result of circumstances than from any peculiar difficulties attending its cultivation. In the first place, the majority of the stems sent to this country have been from 1 foot to 3 feet high, and which having nearly arrived at maturity, would soon have died had they been left intact in their native habitats. It is therefore no wonder that these slender, wiry stems seldom develop fronds for any length of time after the check they must have received by the destruction of the roots, arising from removal and during transit. It would give Fern growers at home greater chances of success if younger plants were imported. It has hitherto been the custom to grow this plant under a glass case, but from personal experience with it I am fully convinced it would thrive better in the open fernery, if the atmosphere was kept fairly moist and the situation chosen for it heavily shaded. It should be potted in peat and Sphagnum Moss.

W. H. G.

PROPAGATING.

ACACIAS.—This pretty genus of trees and shrubs, mostly natives of Australia, and valuable here for their free-flowering qualities, are usually raised from cuttings, and though they take some little time to root, there are many other subjects far more difficult to strike. In most cases the plants that flowered in the spring will have started into growth some time since, so that the young shoots have already lost some of their succulent character, and when this happens it is just the time to take the cuttings. They will require to be kept very close till rooted, and on that account should be either confined in a close case within a propagating house or placed

under a bell-glass. In either case the pots prepared for their reception must be well drained and filled firmly with soil passed through a sieve with a quarter of an inch mesh. A very suitable compost is two parts peat to one each of loam and sand, the whole being well incorporated together. After pressing the soil down firmly a space should be left at the top for a layer of clean silver sand. The cuttings are better if selected from the small minor shoots in preference to the stout, succulent ones, as these last are liable to decay. A length of 2 inches to 4 inches is very suitable for the cuttings, the first-mentioned size being quite large enough for the small needle-leaved kinds, while the larger ones, such as dealbata, affinis, and that type, must be about 4 inches long. When the bottom leaves are removed the cuttings must be dibbled in firmly (guarding against overcrowding), and after this a thorough watering given. The propagating case prepared for their reception may be in a structure kept at an intermediate temperature, and if put under bell-glasses the same conditions will suit them, or they may be stood in a cool and shaded part of the greenhouse, where, however, they take a longer time to root than if assisted with a gentle heat. A good plan with those that are under bell-glasses is to keep them in a greenhouse temperature or in a cool frame till callused, and when that takes place, if they are then removed into a gentle heat, they root quickly. When the cuttings begin to grow, then the bell-glasses may be tilted to allow of a circulation of air, and after a time removed altogether. In selecting a place for the cuttings after insertion, it should be borne in mind that if so situated that they do not dry very quickly, the chances of success in striking them are greater than if they constantly required watering, as this last frequently leads to decay. It is by no means necessary to propagate all the Acacias in this way, as seeds of many of them can be obtained, but where free-flowering specimens in a small state are needed, plants raised from cuttings are preferable to seedlings, though if required for roofs or pillars, these last, from their more rapid growth, are the most suitable. Seeds of Acacia imported into this country from Australia generally arrive in good condition, and should be sown as soon as possible after being received. If they appear to be very hard and dry, a good plan is to soak them in slightly warmed water for twenty-four hours, as the germination is greatly assisted thereby. The seed should be sown in a mixture of loam, peat or leaf-mould, and sand, and if kept fairly moist will soon germinate. When they commence to grow, the cotyledons will generally be supported on long, naked stems, which at the first potting should be buried nearly to the seed leaves, otherwise they are liable to topple over and decay. The potting off should be done as soon as the first leaf, independent of the seed leaves, is developed.

ORANGES.—Small Orange plants when in bloom are very popular and by no means difficult to obtain, yet as cuttings do not strike readily and seedlings must reach a considerable size before they flower, it is necessary to graft shoots from a flowering specimen on to young plants raised from pips. If the stocks are in a free and healthy condition, a union will soon be effected, as the bark then readily unites. Grafting may be carried out at almost any season, but just now is about the most suitable time. The scions should be clean, well grown shoots almost ripened, and the stock one whose bark has not yet reached that rugged character common to old plants. Side grafting is the method generally employed, and it may be carried out as near the ground as possible or at a sufficient height to form a small standard, according to the wishes of the operator. If the union be neatly effected and the graft tied securely in position, no clay nor wax of any kind will be needed, provided the plants are kept close till a union takes place. By these means one is able to watch the progress of the operation, which is not the case where the point of union is entirely hid from view.

ROSA RUGOSA.—This Rose, which forms such an attractive feature at the present time, will strike fairly well from cuttings put firmly in a border

during the autumn months, but a very good way to increase it is, if an established specimen exists in a position suitable for the operation, to layer the branches, for those treated in this way during the winter are already throwing up shoots in all directions, and where cut, the stems are now beginning to root. The white variety being as yet much scarcer is sometimes budded, but in this case suckers from the stock are often a nuisance, and it is more satisfactory when struck from cuttings or layers. Seeds take a long time to germinate, which they do very irregularly, but in the case, at least, of the red variety they perpetuate the same kind.

ROGIERA GRATISSIMA.—This pretty greenhouse-flowering shrub, which many fail to strike in a satisfactory manner, can be rooted without difficulty from cuttings, provided the suitable treatment is accorded them. In a greenhouse temperature this Rogiera will be now in full growth, and this is a suitable stage to take the cuttings. The shoots chosen for this purpose should not be the terminal ones, but the minor side branches, as they strike better than the stout ones. A length of about 3 inches is very suitable for the cuttings, and when the bottom leaves are removed they must without delay be dibbled into well drained pots of very sandy peat. The soil for the purpose must be pressed down firmly, and before use passed through a sieve with a quarter of an inch mesh, as a rougher compost would interfere greatly with the chances of success. They must then be placed in a close case in the propagating house, or, failing this, under a bell-glass in the cool end of the stove, but they must not be plunged in bottom heat till a sufficient length of time has elapsed for them to callus, when a little additional warmth will hasten the formation of roots.

GREENHOUSE AND STOVE CLIMBERS.—Nearly all these will be now in active growth, and therefore good clean shoots suitable for cuttings are readily obtainable, and in most cases will strike root without difficulty. The cuttings of *Passifloras* and *Taesonias* strike quickly and grow away rapidly, while plants raised in this way are preferable to seedlings, for they are more floriferous, besides which they can be relied on to perpetuate any particular variety. One caution to be observed is that climbers near the roof are sometimes infested with red spider, and if there are any on the leaves when put in a propagating case they quickly spread; therefore great care must be taken that they are thoroughly clean before being inserted. T.

ORCHIDS.

W. H. GOWER.

THE ERECT-FLOWERING SACCOLABIUMS.

THESE comprise a few small-growing, free-flowering plants, which form a very natural group, and they specially recommend themselves to those having but limited accommodation. As before remarked, these plants are dwarf in habit, and consequently succeed best on blocks of wood or in baskets; the latter are preferable, as treated in this manner they can be suspended from the roof near the glass, and thus obtain all the benefit from sun and light, conditions under which they thrive admirably, although they must be screened from the sun during the hottest part of the day in summer. The baskets in which these plants are grown should have a layer of nodules of charcoal at the bottom to ensure thorough drainage, and the Sphagnum Moss surrounding them should be alive and sweet, but very little of this material is necessary, as they do not like their roots to be much confined. They enjoy strong heat and an abundant supply of water during the growing season, but after growth is finished, a decided period of rest is necessary to produce bloom; during this time, however, the leaves must not be allowed to shrivel, as if the drying system is

carried out so severely as to cause this, it is difficult to restore the plants to a healthy condition; moreover, the loss of leaves which ensues from the shrivelling system greatly disfigures the plants, and as they make their leaves slowly the disfigurement remains an eyesore for several years. The safest plan to adopt in resting these *Saccolabiums* is to reduce the temperature to about 60° during the winter months, and only give a little water from time to time just to keep the plants from being injured by drought.

S. AMPULLACEUM is a handsome kind: the leaves are two-ranked, somewhat short, truncate at the ends, and pale green, sparingly dotted with dull purple. The racemes are produced very freely, and are some 4 inches or 5 inches high. The flowers are wholly delicate rosy magenta, saving the base of the small lip, which is white; these appear in the spring and summer months, and last several weeks in perfection. It is not desirable to allow the blooms to remain too long, as the plant is so floriferous that there is danger of death from exhaustion. The variety *moulmeinense*, introduced by the Messrs. Rolleston, is a stronger growing plant; its leaves are more profusely spotted, and the racemes of bloom are longer, and the individual flowers are larger and of a rich deep rose colour. Moulmein.

S. CURVIFOLIUM.—The leaves of this plant are narrow, deflexed, thick and fleshy in texture, and pale green. The racemes are 6 inches or more high, very dense, flowers bright cinnabar-red, lip tinged with orange and bearing two orange spots at the top of the spur-tube. In the variety *luteum* the flowers are clear yellow, which renders it very desirable as a contrast; it is, however, still very rare. Both forms bloom during the late spring and early summer months.

S. CELESTE.—This is a plant of quite recent introduction; it appears to be much stronger in growth than the last named species, and its erect spikes are a foot high, bearing quantities of flowers of an azure blue. It has hitherto only flowered in Sir Trevor Lawrence's collection; but as a fine consignment has recently been received, we are likely to see this charming plant frequently.

S. HENDERSONIANUM.—The leaves of this plant are about 6 inches long, about half-an-inch broad, tapering to a point, and bright green. The racemes are nearly 6 inches high, very dense, flowers bright rosy red with a narrow white lip. Borneo.

SHORT NOTES.—ORCHIDS.

The **Lizard Orchis** (*O. hircina*) which I send is, I think, a rare British species almost extinct on the chalk. St. Brican.

* This British plant is very rarely now to be met with. It is interesting, but not pretty, and the smell is disagreeable.—E.

Oncidium nigratum. This is a most distinct and interesting species with panicles about 2 feet long, which bear small, well-coloured flowers. The sepals and petals are crisp white with almost black blotches, and the yellow lip is spotted with light cinnamon. It is in flower at Messrs. Veitch's.—E.

Oncidium lanceanum. This distinct species is flowering at Messrs. Veitch's. The spike attains a length of from 12 inches to 18 inches, and bears a number of richly-coloured, fragrant flowers of striking beauty. The sepals and petals are thickly spotted with rich brownish-crimson on a yellow ground; the lip is rosy violet, the base of a deeper shade of the same hue.—It is not often seen in such healthy condition as at this nursery.—T. W.

Masdevallia demissa. This is a very pretty and free-flowering new species recently introduced by

Mr. Shuttleworth from Costa Rica, and is now flowering in his nursery at Clapham. It belongs to the coriacea section, the flowers being reddish crimson in colour, the tail-like ends of the segments yellow.—W. H. G.

Scutellaria Steeli.—We saw this handsome Epiphyte in flower recently at Mr. Bull's. The fragrant flowers are of large size, the sepals and petals yellow, blotched with brown, the bold lip being striped with brown on a ground of the same hue. The whip-like leafage gives the plant a singular and distinct appearance.—E.

Epidendrum tovarense.—This plant is now flowering in Mr. Shuttleworth's nursery, and, although not long established, it appears likely to prove a welcome addition to the paniculate section of this genus. Its flowers are pure white, with a honey-like fragrance, and are borne on branching racemes. It requires quite cool treatment.—W. H. G.

Madeira Orchid (*Orchis foliosa*).—This is an excellent plant for growing in pots. There are at the present time several excellent specimens in full bloom in one of the pits at Chiswick. Plenty of water during the growing season and protection from heavy rains and severe frosts are necessary to secure an abundant leafage and profuse display of the rich purple flowers. T. W.

Aerides crassifolium.—This Burmese species numbers among the most beautiful of the *Aerides*. It is of neat, compact habit, and has dark green, leathery leafage, which harmonises well with the pendent racemes of delicately fragrant flowers. These are very large and pale amethyst in colour; the lip highly developed, and forming a characteristic feature. It is one of the largest flowered of the genus. When cultivated in a basket and placed near the light it makes a sturdy growth. It is in bloom now at Mr. Bull's.—C.

Lælia purpurata.—Like *Cattleya Mossiae* and *C. Mendeli*, this varies considerably in depth of colouring, some forms being richer than others, and though the varieties are many in number, comparatively few are of inferior quality. We saw a fine variety recently at Messrs. Veitch's, the lip being of a rich claret-purple, and at Mr. Bull's a form called *versicolor* is in bloom. This is one of the most distinct we have seen; the petals are flushed with rosy purple of nearly as intense a colour as the lip.—T. W.

Masdevallias of the *Harryana* section are well grown and flowered in the collection of Mr. Hyatt, Hethersett, Streatham, in a very low temperature. Mr. Luff says "he finds them grow better and flower most profusely in rather small pots." This statement is well borne out by the numbers of flowers now expanded, the varieties varying much in size and intensity of colour. In the same collection are also flowering good forms of *M. Veitchi* and *M. ignea*, the latter now bearing its second crop of flowers this season, which is said to be characteristic of this species at Hethersett.—W. H. G.

Cypripedium Curtisii.—This rare and beautiful Lady's Slipper is now flowering in Mr. Williams' nursery at Holloway. It appears to have some affinity with *C. ciliolare*, but is very distinct from that plant, or, indeed, any other of this now numerous genus of Orchids. The leaves are broad, the ground colour dull green, boldly tessellated with dark green; flowers large and handsome; the dorsal sepal is light green, bordered with white, and veined with dull purple; petals are deflexed, with recurved tips, greenish white, veined with purple and covered with magenta-purple dots, the edges densely fringed with short black hairs. It enjoys strong heat and moisture. W. H. G.

Cattleyas.—Various species and varieties of this genus are in great beauty in Mr. Laing's nursery at Forest Hill, C. Mendeli and C. Mossiae being, however, on the wane. These are being succeeded by numerous forms of *C. Gaskelliana*, which is a fine summer-flowering form. The most conspicuous just now, however, is *C. gigas*. A fine form of it is bearing flowers upwards of 9 inches across, the sepals and petals large and full, rosy lilac, lip dark violet-purple, the eye-like spots at the sides rich orange-yellow. The plants of this species flowering here are not the very robust-growing kind, but, as in plants noted last week, they are by

comparison weak; yet they flower more freely and produce blooms equally as large and as highly coloured as the stronger type. W. H. G.

TREES AND SHRUBS.

W. GOLDRING.

CEANOTHUSES.

THESE plants do not, I think, receive the attention that their merits deserve, as they are easily grown and their beautiful racemes of blue flowers are borne with great freedom. They are nearly hardy; in fact, against an east wall at Chiswick they have, with a slight protection, withstood the severe winters we have lately experienced, and in the summer months they well repay any little trouble that may be taken with them in the winter in the way of protecting with mats, Fern, &c. There is no necessity to prune them until they grow too far away from the wall, in which case they may be, after all danger of frost is over, cut back close, when they will again break out fresh on all sides. We prefer, however, to leave them alone, thinning out only the small and useless wood, thus enabling the stronger shoots to produce more flowers. In the case of those which are planted out during the summer months, we find the best plan is to treat them like Fuchsias. Towards the end of March or beginning of April they may be stood in an open position so as to thoroughly harden them. When the time comes for planting out, say the first week in May, they may be taken out of the pots and planted, taking care that they have a good supply of water during the summer months. If attended to in this way they will, during the months of August and September, give a rich display of flowers, which will continue in full beauty until frost cuts them off. On the approach of frost the plants may be lifted and cut hard back and again put into pots and placed in a position safe from frosts. They will not require much water during the winter months, but as soon as they begin to break fresh they must have plenty of moisture. In due course they will be again ready to take their place in the flower garden. They may be treated in this way year after year, and by keeping them hard pruned both at the roots and the tops they will not grow to an ungainly size.

The following are a few of the best varieties, all of which have originated on the Continent and all are hybrids of *C. azureus*: *Sceptre d'Azur*, a vigorous grower, with large leaves and long racemes of blue flowers; *Gloire de Versailles*, one of the best, similar to the foregoing, and a truly beautiful variety; *Gloire de Vaite*, the dwarfest and best of all the *Ceanothuses*, the leaves small and the blue flowers produced in great profusion; *Azur* is similar to the last, but more compact in growth, the flowers bright blue; *Le Celestial*, a variety of strong growth, the racemes of bright blue flowers short and borne freely; and *Blue Celeste*, a plant of dwarf growth, the flowers very pale blue. *Marie Lemoine* and *Le Géant* are two varieties with pinkish white flowers, and which look well when planted along with those with blue flowers. T. W.

Rhododendron cinnabarinum.—The class of *Rhododendrons* represented by this species cannot be compared, as far as the showiness of their flowers is concerned, with many other kinds, yet the wide difference between their flowers and those of most other *Rhododendrons* makes them worthy of note. The flowers in the largest form are bell-shaped, about 2 inches long, and 1 inch in diameter, of a rather thick waxy texture, and borne in terminal clusters. Their colour is orange-red, generally somewhat paler towards the edges of the petals. The individual blooms greatly resemble those of that pretty Australian genus of plants, the *Blandfordias*; indeed, on one of these *Rhododendrons* the name of *blanfordiaeflorum* has been bestowed, but as usually met with it seems to differ little, if at all, from *cinnabarinum*. These *Rhododendrons* will survive most winters around London, but they usually flower best when treated as greenhouse plants, and planted out in a peaty border. Another of this class

is *R. retusum*, with small dark green Myrtle-like foliage, which when young is prettily tinged with red. The small tubular-shaped flowers are borne in clusters, and their colour, a sort of glowing orange-red, renders them very conspicuous. Both in shape, size, and tint, the blooms of this remind one of the scarce *Fuchsia triphylla*. This last-named *Rhododendron* (*R. retusum*) is by no means new, yet it is a very uncommon kind. Between this and *R. javanicum*, Messrs. Rollisson raised *R. Prince of Wales*, and more recently *R. Daviesi* has been obtained from the same cross.—T.

The Jerusalem Sage (*Phlomis frutescens*). Though classed as a shrub, this is by no means so woody a texture as most of them, yet it forms rather a conspicuous feature, owing to its being distinct from any other shrub and the blossoms being showy. The rugose leaves are of a peculiar hoary character, and the flowers, which are borne in whorls on the points of the shoots, are of a distinct bronzy yellow colour. The Jerusalem Sage will flourish where the soil is dry; indeed, in such spots it forms a more lasting shrub than in a free and moist position, where it at first grows rapidly, but after a few years commences to decay. The Jerusalem Sage is also noteworthy from its being one of the very few plants belonging to the Order Labiate that can be by any means classed as hardy shrubs.—T.

Eccentric Laburnums.—This is a correct designation to apply to some *Laburnums* in Mr. C. Noble's nursery at Summingdale. As is usual the pale purple *Cytisus purpureus* was grafted on to the stems of the common *Cytisus Laburnum*. Since then they have grown into good and vigorous young trees, and on some of the branches can be seen the tufted growth of *C. Adami* looking like a parasite feeding on the life blood of a different organism. But there is something more: from out of *C. purpureus* have also grown shoots of the common *Laburnum* bearing its long yellow racemes, and so the flowers of three distinct species can be seen on the trees at one time. The curious fact that by grafting *C. purpureus* on to *C. Laburnum*, *C. Adami* is produced, is now an old tale, but there are no doubt many readers of THE GARDEN who are unacquainted with this curious circumstance, and might desire to see it for themselves. The late Mr. C. Darwin alludes to the production of *C. Adami* in his "Origin of Species."—R. D.

Trees grown as bushes.—There is nothing finer for a small lawn or for groups on a large lawn. Among the best for this purpose are the Lindens, especially our common Basswood; the Catalpas, Tulip tree, Beeches and Birches; and among fruit trees the Cherries. I have on my lawns many specimens of Catalpa that are invaluable. They do not exceed 10 feet in height and are in some cases as many feet through, and are covered not only with rich foliage, but in the season with flowers. Most of the *Magnolias* do better cut in this form. The Linden furnishes much larger leaves, and will blossom freely when old. I have cut them down when 3 inches to 5 inches in diameter, and in two years secured superb shrubs. From E. Y. Teas, at Dunreith, I received some golden-leaved and purple-leaved Catalpas of his own cross-breeding. These are beautiful during the summer grown as shrubs. There are many people who long to grow trees, but have no room for large subjects. Let them grow any old favourite as a bush, and they will enjoy it.—REV. E. P. POWELL, in *Gardener's Monthly*.

The purple-leaved Barberry. In a recent number a correspondent, "T." calls attention to the merits of the above as one of the most striking for forming purple masses in the spring. He also says truly that the more fully exposed to the sun the more dense and brilliant the colouring. To prevent disappointment with this charming plant, I would add that the poorer the soil and drier the site the deeper the purple of the leaves. So much, in fact, is this variety dependent on site or soil, that it will lose most of its purple colouring by being planted in rich soil in a shady place. "T." names a companion plant to set off the purple-leaved Barberry to greater advantage, viz., the golden-leaved *Spiraea opulifolia*. This is good, as

is the less common golden-leaved *Syringa*, which matches the Barberry better in height. More effective, however, than either for contrast is the Silver Maple (*Acer Negundo variegata*). The latter also forms grand masses contrasted with the purple Filbert and the broad and darkest-leaved variety of the purple Beech. The latter is a most accommodating plant, and may with a little attention be cut and kept down to any height in the shrubbery desired. When this fact is more generally recognised by landscape gardeners, the purple Beech is likely to be more largely employed as a background for *Laburnums*, white Lilacs, light or silver *Rhododendrons*, &c., while for telling masses of purple in the fore or middle rank of shrubberies there are few plants equal to purple Filberts in the spring or summer months. HORTIC.

The Cockspar Thorn. Among the Thorns now in bloom, that known as the Cockspar Thorn (*Crataegus Crus-galli*) is the finest, and even if it flowered with the Hawthorn it would be conspicuous, as its broad shining foliage of a bright, cheerful green makes it so different from other Thorns. The flowers are not so numerous as those of the Hawthorn, but they have a more elegant appearance on the tree, and decidedly possess a more agreeable fragrance. Though not an uncommon tree, the Cockspar Thorn is not one of the stock-in-trade trees of the ordinary planter, and therefore large specimens of it are not frequently met with. Considering the beauty of this Thorn in autumn, too, when its leaves die off a brilliant colour, it is not one deserving neglect. There are several distinct varieties of it that are very valuable in ornamental planting. W. G.

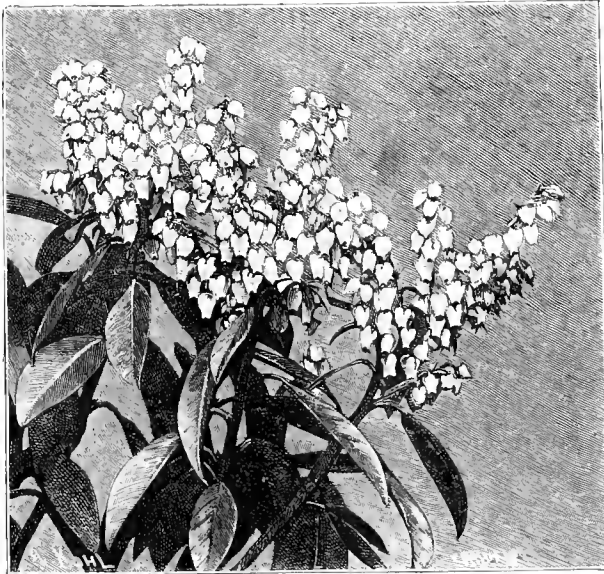
The Californian Azalea.—The charming *Azalea occidentalis* perhaps receives more attention and is more admired than the numberless varieties of hardy Azaleas that flower in the American shrub ground at Kew. When all the others are out of flower, or on the wane, this Californian form stands out in full beauty, every bush of it being crowded with clusters of white and delightfully fragrant flowers, the contrast of which with the fresh and green foliage is most striking. A large bush of *A. occidentalis* is now in full bloom, attracting the attention of every visitor who comes to see the fading beauty only of the bright-coloured Azaleas. This Californian *Azalea* possesses a value which can scarcely be overrated, as it may be the means of producing a new race of hardy Azaleas, which may prolong the too fleeting beauty of the earlier flowering sorts. Already, we believe, the hybridist has been at work upon it, but there seems at present to be no race of hybrids that combine the high colours of the early kinds and the late flowering of *A. occidentalis*. W. G.

The Tamarisk in bloom.—This is a common object by the seaside, but it is rarely seen inland, though it will thrive as well as on the coast. The Tamarisk is frequently seen clipped and trimmed in to form hedges or screens, but when allowed to assume its natural character it forms a handsome specimen, of a very graceful habit, and just now an additional charm is furnished by the profusion of its pretty pink blossoms. These flowers are borne in small crowded spikes, and are thickly arranged on the upper portion of the long, wand-like shoots, and at a very little distance it is difficult to tell the flowers from the leaves except in colour. The Tamarisk will thrive in any soil, provided it is not too dry; indeed, it is a very pleasing object when in close proximity to water, though a very moist spot is not essential to its well-doing, the only condition to be observed in this respect being that it does not get parched up. Another commendable point about this Tamarisk is the fact that it can be readily propagated, for it is by no means necessary to put in small cuttings, as good sized branches will root if stuck in the ground.—T.

The Nine Bark. as *Spiraea opulifolia* is called in North America, is an invaluable hardy shrub, and one that everybody should plant who seeks only the best among the numberless shrubs to be found enumerated in nursery catalogues. It possesses all the qualities of a first-rate hardy shrub. It is

thoroughly hardy, grows anywhere, and where it thrives best makes a large handsome bush 6 feet or more high and twice as much through, and with its long slender shoots feathering the ground on all sides. For the past fortnight it has been in full bloom, every luxuriant bush being covered with myriads of small white flower clusters, which, being borne on slender twigs, are charming material for flower vases. It is useless to put this *Spiraea* in a dry, hungry soil and expect it to thrive. What it likes is partial shade, such as that afforded by a thinly planted shrubbery and a good and moist soil. Under such conditions it will grow rapidly, and will rival in effect such familiar old shrubs as the Guelder Rose and Mock Orange. The golden-leaved variety of the Nine Bark is even more valuable than the original, for it excels all other golden-leaved deciduous shrubs, keeping its bright sheen of golden leafage throughout the year, and is especially bright when first unfolded in May. By planting this golden *Spiraea* and the claret-leaved *Prunus Pissardi* together a fine effect may be produced.—W. G.

Erica cinerea.—This bright little Heath is again in full bloom, brightening many a rock garden with myriads of tiny flowers of a vivid



The Lily of the Valley Tree (*Andromeda floribunda*). Engraved for THE GARDEN from a photograph.

magenta. This is the colour of the common sort, but there are others that are darker and lighter, and some very much richer in tint. For instance, one sort called *coccinea* is of a glowing crimson-red, and is the finest coloured of all hardy Heaths. Another called *superba* in nurseries is likewise brighter than the type, while a third, called *pallida*, is of a pale purple, and *atropurpurea* of a deep purple. All these, if planted in prominent parts of a boldly planted rock garden, would make a bright show at this season for a fortnight or longer. The proper place to plant this and other Heaths is on a flat, exposed ledge where there is plenty of soil—if peaty so much the better—or at the foot of the rocks, but always in spots open to rain and sun. The smaller growing Heaths are often left out of lists of plants for the rock garden, though they are very suitable for it, and what plant gives a brighter effect in winter than *Erica carnea*? Though heatheries and American plant gardens are not made now-a-days a distinctive feature in gardens, the hardy Heaths should not be neglected.—W. G.

The Pyracantha in bloom.—The great profusion of brightly coloured berries borne by this Thorn serves to render it a conspicuous object during the winter months, and though its prominent features at that season are fully recognised,

little attention is paid to its blossoms, which are just now at their best. A specimen of it here is now quite a mass of white flowers, arranged in large, closely packed heads, and though individually small, yet from their numbers they make a fine display. As the blooming season of this Thorn occurs, too, when many of the others are on the wane, it is thus rendered additionally valuable. So profusely are the flowers produced, that I have seen small plants not more than a foot high quite a mass of white, but they had been struck from cuttings, and, therefore, flowered more freely in a young state than seedlings would have done.—H. P.

LILY OF THE VALLEY TREE.

(*ANDROMEDA FLORIBUNDA*.)

ONE of the best of dwarf shrubs, looking neat and well furnished throughout the year. The flower-buds are formed and considerably developed in the late autumn, so that the little shrub looks throughout the winter as if about to burst into flower; the flowers expand towards the end of March, and remain in beauty through-

out April. It is an excellent shrub for a rock garden. The single sprays are valuable for cutting, lasting long in water and looking well alone, or with almost any flower. J.

Golden-leaved Acacia.—Among trees remarkable for the yellow hue of their foliage at this season the golden-leaved variety of the common False Acacia is one of the best, for it is free and vigorous in growth and retains the colour of its leaves well. Unlike many plants, the leaves of this do not become green as the season advances, neither are they burnt up by the sun. Notwithstanding that the list of golden-leaved trees is somewhat extensive, many of them for some reason or other are not so valuable as this Acacia. In passing, mention may well be made of the great freedom with which these Acacias are blooming this season, and as they bloom after the bulk of flowering trees are past their best, they are additionally welcome.—T.

Magnolia tripetala.—Several of the Magnolias have very large and handsome foliage, but that with the largest leaves of all (*M. macrophylla*) is very particular in its requirements, and is seldom seen doing well. *M. tripetala*, on the other hand, is of a very vigorous constitution, and should be

made a note of where large-leaved trees are needed. It forms a free-growing tree of a somewhat open habit, the branches being furnished principally towards their extremities with magnificent foliage, which imparts to a large specimen a grand and imposing appearance. The flowers, which are large and of a whitish tint, are now very conspicuous by reason of their being borne on the tips of the shoots and surrounded by a ray-like whorl of the massive foliage. This *Magnolia* is a native of North America, and is also known as *M. umbrella*.—T.

GARDEN IVIES.

To say the Ivy is a neglected plant may to many appear incorrect, but those well versed in gardening hold a different opinion. There are perhaps few enthusiastic admirers of the plant, but that is no reason why it should not be grown in greater variety, and in a way to develop its true character. We have plenty of Ivies, but the selection is restricted to one or two kinds, and though we may occasionally find in some old-fashioned garden a wall or knoll clothed with luxuriant and glossy growth, yet it is the rule to place the plants under conditions least of all favourable to proper development. There is, unfortunately for the Ivy, an idea that it will live and thrive anywhere, but, though certainly hard to kill, it has its peculiarities, and these must be studied to ensure success. In the Royal Horticultural Society's gardens at Chiswick a collection is grown, and it is interesting to note the great variety in the form of the leafage and the habit of the various kinds. It is time a thorough trial was made of Ivies, as the nomenclature is at present almost hopelessly confused, and nothing but a careful revision and comparison will set matters on a proper footing. As regards this important point we have at present nothing more to say, as it is a subject that requires delicate handling, but we hope that something will be done at Chiswick to bring about order. As previously mentioned, the Ivy will not grow anywhere, and from experience it has been found that there are certain positions fatal to the welfare of the plants. On a hot wall, with full exposure to the sun, the Ivy never displays its splendid capabilities, and, again, in a starving dry soil it is equally unhappy. It is through being planted in such positions as these that it has, to a certain extent, fallen into disrepute, and earned the undesirable character of being slow in growth, straggling, and displaying more bare stems than leaves. To ensure a leafy, luxuriant growth, it is essential to provide a moderately shady position and moist, substantial soil; also, if possible, give the tender variegated varieties a corner where they will not be exposed to the full force of cutting east winds. We have seen the common Ivy of the hedgerow almost shrivelled up through this cause, but with genial weather the plants have generally quickly recovered. When treated as advised, it is surprising what rapid growth the different varieties make, and the colours of the variegated kinds are brighter by reason of the vigorous health of the plants. A collection of Ivies costs a comparatively small sum, and it will be always a source of interest, as the several forms differ widely in character. It is unnecessary to enter into detail respecting the cultivation, propagation, &c., except that we may mention with advantage that cuttings of the delicate variegated sorts should be struck in pots placed in a cold frame, as if dibbled in a border out of doors many of them fail to root. The collection at Chiswick was planted about twelve months ago, and it is astonishing the progress some of the varieties have made, especially where the plants are situated in shady, moist positions, as we mentioned was in accordance with their requirements. We have selected a few, of which the following are the best: *Emeritus grandis*, an excellent green-leaved variety, neat habit and foliage, and a quick grower. *Emerald Gem* is king of the green-leaved section, the growth dense, and the habit remarkably robust. It grows rapidly, and soon covers a comparatively large space; one of the best for the garden we know. *Lobata major* is another variety of this class, neat in habit, the leaves dark green with

white nerves. Minor is a pleasing neat-growing Ivy, not very robust, but clings close to the wall. To those forming a collection it is invaluable for its distinctness. *Palmata aurea* is a variety that requires the association of green-coloured foliage to bring out the bright yellow of its leaves, which are palmate and of moderate size. *Angularis aurea* is a dense grower, the majority of the shallow-lobed leaves coloured with yellow; it is a useful variety. *Succinata* is distinct, and its leaves are all pure yellow, but it lacks robustness, though it might be highly prized by an Ivy fancier. *Spectabilis aurea* makes a free growth when suitably placed; but, like most of the variegated kinds, it will not thrive everywhere. *Elegantissima marginata rubra* is a neat, pretty Ivy, but will not do in hot exposed spots; its leaves are green margined with silvery white. Why it is called *rubra* is not apparent, as there is not a trace of red on the leafage, but perhaps this colour may be developed later on. *E. m. grandis* is of spreading habit, the leaves medium-sized and of a similar colour to the last mentioned. The type is a beautiful variety when properly treated, the leaves almost triangular, small, and broadly margined with creamy white. *Himalaica* makes a free, picturesque growth, and clings close to the wall; the leaves are small, ovate, green, with dull white nerves; a useful kind. *Caenwoodiana* is distinct, and a thoroughly serviceable Ivy for a prominent position; it is neat, fairly vigorous, and has pleasing green leafage, the middle finger-like lobe giving it a characteristic appearance. *Sagittifolia* is a good garden Ivy, though its name is misleading, as the long, green, small-lobed leaves are more hastate than sagittate. *Rhomboides ovata* we have seen do well in some places, but it is not one of the best, the growth being too stiff and formal; the leaves are ovate, leathery, and deep green. *Dentata*, as labelled at Chiswick, presents a contrast to any that we have mentioned. It needs plenty of space to develop its abundance of large cordate leaves, which change from yellowish to deep green. It would do to plant against a wall that requires covering, but not for a prominent position, as it is not sufficiently refined in appearance. *Poetica* is a useful Ivy for a shady wall; so also is *contracta*. The variegated variety of the Irish Ivy and *Ragneriana* are too well known to need further mention, as they are among the commonest. Such vigorous growers as these are more suited for covering fences than the small-leaved Ivies, which may be used for clothing tree stumps, rockeries, and rustic arbours with the best results.

E. C.

The Tamarisks are among the flowering shrubs of the week, and they have an extremely pretty effect with their long, wand-like shoots clothed with feathery foliage and plumes of pale pink bloom. Though usually planted most plentifully in seaside districts, they grow and flower luxuriantly in inland gardens, and are capital shrubs for planting in dry, poor spots where stronger growing shrubs would fail. They are so much unlike other hardy shrubs, that for the sake of variety they deserve attention. There are several kinds, but the most readily obtainable in nurseries is *Tamarix gallica*. On the light soil at Kew all the Tamarisks thrive perfectly, and a dry bank in the arboretum is beautifully clothed with them, some being now in full bloom.—W. G.

Japanese Lilac (*Syringa japonica*).—Some cut blooms of this new hardy shrub exhibited by Messrs. Veitch at South Kensington on Tuesday showed admirably what a valuable introduction it is. There is a family likeness among all the other species of *Syringa*, but this one is so different from the rest and so much resembles some of the Privets (*Ligustrum*), that it was and still is known as *Ligustrum amurense*. Since, however, the nature of its fruit has become known to botanists, it is found to be a true species of *Syringa*. In foliage it strongly resembles that of the Himalayan Lilac (*S. Emodi*), being quite as large and of similar colour. The myriads of tiny creamy white flowers are borne in paneled clusters at the tips of the shoots. At first they are quite white, but afterwards turn creamy. The perfume of the flowers is similar to that of the

Privet, but less powerful. It is apparently quite hardy, and if it can be grown in any position or soil as other *Lilacs* its value is increased.—W. G.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL.

HARDY JUNE flowers, Orchids, and various other miscellaneous plants made the meeting on Tuesday last one of the most interesting that has been held this year. It was larger and displayed greater variety than the previous one, the exhibits comprising a number of very rare subjects, a few, notably the magnificent specimen *Cattleya gigas*, from Mr. G. Nevile Wyatt, Cheltenham, evincing high cultural skill.

First-class certificates were awarded as follows:—

HEUCHERA SANGUINEA.—This is now fairly well known, and will quickly become a popular garden plant by reason of its bright appearance. It is quite hardy, the habit very compact, and the effective reddish scarlet flowers produced freely in neat spikes. It comes from Mexico, and is well adapted either for the border or rockery. Shown by Mr. T. S. Ware, Tottenham.

ROSE CLEOPATRA.—A fine addition to the pedigree Tea Roses. Mr. H. Bennett, of Shepperton, showed several flowers of large size, beautiful form, and delicate fragrance; the petals are exquisitely arranged and both broad and firm, the colour being of a delicate tint of salmon-pink, deepening towards the centre of the flower; the petals are also edged with the same hue.

ROSE LADY ALICE. A sport from Lady Mary Fitzwilliam, and of similar size and form, but different in colour, being almost white, with a pinky centre. If it keeps its character it will prove an acquisition. Exhibited by Messrs. Paul and Son, of Cheshunt.

SYRINGA JAPONICA.—A beautiful free-flowering shrub, reminding one of the *Ligustrum* or Privet. It bears a profusion of large, dense clusters of creamy white flowers, which have a foam-like appearance and powerful fragrance. From Messrs. J. Veitch and Sons, Chelsea.

GAILLARDIA VIVIAN GREY.—A bold variety, with large flowers, having broad, bright yellow ray florets and centre. It will make a useful garden plant by reason of its effective colouring. Exhibited by Messrs. Kelway and Sons, Langport, Somerset.

PEONY GLORY OF SOMERSET.—This is a very large-flowered variety, but is neither coarse nor gaudy. The colour is of a telling shade of pink, and the form is good. Exhibited by Messrs. Kelway.

DELPHINIUMS BRITANNIA AND CHAMONT.—Two fine varieties. The former bears a long, somewhat loose, symmetrical spike of double flowers, the outside petals bright purple, the inside creamy white. The last-mentioned has a dense spike, fully 18 inches long, of bright metallic-blue and reddish bronze flowers. From Messrs. Kelway.

CHRYSANTHEMUM LEUCANTHEMUM SEMI-DUPLEX.—Flowers pure white, slightly double, and pretty. Exhibited by Messrs. Saltmarsh and Son, Chelmsford.

CYPRIPEDIUM SUPERCILIARE.—A well-grown plant of this was shown bearing six flowers. It reminds one of *C. superbiens*, the foliage being handsome, broad, and distinctly tessellated. The flowers are of bold form, the lip reddish brown, and the petals dull coloured, with conspicuous deep crimson warts at the margin; the dorsal sepal is white, with green and crimson veins. Exhibited by Sir Trevor Lawrence, Bart., M.P., Dorking.

CATTELYA LABIATA LEUCOPHEA.—A very distinct and interesting variety. The flower is of medium size, with the sepals and petals very pale rose, approaching to white; the lip is of a peculiar shade of lilac, the base being white and the throat striped with yellow; the edge delicately crimped. Shown by Mr. F. G. Tautz, Shepherd's Bush.

AERIDES EXPANSUM LEONIE.—An attractive and

rare variety, bearing a similarity both to *A. falcatum* and *A. Houlettianum*. A plant was shown having a pendent spike of brightly coloured flowers, which are not set so closely as in many of the *Aerides*. The sepals and petals are white, tinged and tipped with rosy red; the middle lobe of the lip is well developed and suffused and spotted with rose-crimson; the lateral lobes being pure white with spots or stripes of the same bright hue. It is a variety that should be in every choice collection. Shown by Mr. F. G. Tautz.

ORCHIDS formed the most interesting feature. Sir Trevor Lawrence, Bart., M.P., Burford Lodge, Dorking, exhibited a fine collection, containing many varieties, and the whole of the plants showed careful cultivation. Among the most important were *Bolbophyllum barbigerum*, a botanical curiosity, the finely hinged lip having a prominent brush of reddish brown hairs, which cause it to oscillate at the slightest movement; *Cattleya gigas Sanderiana*, a splendid variety; the lip fully 3 inches across, and of an intense crimson-purple; the whole flower is richly coloured. A good specimen of *Phalaenopsis Marie* was exhibited; this is allied to *P. sumatrana*; the flowers being borne in a pendent raceme, with the sepals and petals white, transversely barred with rich brown; the lip is of a beautiful shade of magenta, the margin white. *Aerides Godefroye* is a fine form; the flowers are sweet-scented, and produced in a pendent raceme; the lip is rosy pink and the sepals and petals are spotted with the same hue. The rare *Galeandra nivalis* was also shown. This has reflexed deep brown sepals and petals and a broad lip, white flushed with dull violet. *Lycaste Deppii punctatissima*, a beautifully spotted variety, was in the collection, also a white-flowered unnamed species of *Aerides*, the flowers pure waxy white. *Cypripedium caudatum* was represented by a sturdy plant bearing several well-coloured flowers. We frequently find this grown in the East Indian house, but this specimen had been grown with the *Odontoglossums*, and its healthy condition showed that the treatment suited its requirements. *Cypripedium Curtisi* is a fine Lady's Slipper, the lip large, dull brownish purple; the petals are spotted and flushed with crimson, the dorsal sepal being veined and suffused with green, the margin white. *Cattleya Schilleriana* was exhibited in fine condition; this is peculiarly rich in colouring, the deep brownish sepals and petals contrasting effectively with the brightly coloured lip, which is shaded and striped with deep crimson-pink.

The *Cattleya gigas* from Mr. Simeoe, gardener to Mr. G. Nevile Wyatt, Lake House, Cheltenham, was a model specimen, the leafage robust, and the plant carrying on four sturdy spikes upwards of twenty-six well-coloured and boldly-formed flowers; the lip measures about 3 inches across and is of a bright purplish crimson, with two eye-like blotches at the base. A bronze medal was awarded.

From Mr. A. J. Hollington, Enfield, came *Odontoglossum vexillarium Hollingtoni*, and a variety of this Orchid named Pagei was also shown by Messrs. H. Page and Son, Teddington. Mr. F. G. Tautz, Studley House, Shepherd's Bush, exhibited the beautiful *Phalaenopsis Marie*, also *Odontoglossum vexillarium striatum*, a well-flowered variety, the base of the lip of a rich crimson with radiating stripes. A cultural commendation was awarded to Mr. J. Ridout, gardener to Mr. T. B. Haywood, Woodhatch Lodge, Reigate, for *Odontoglossum vexillarium Regina*, the specimen bearing two racemes, the lip being large, pink, and striped with rich crimson at the base. Mr. D. East, gardener to Mr. F. Wigan, Clare Lawn, Sheen, showed *Dendrobium polyphlebium*, and also a variety of *O. Alexandra*, with large white flowers; the crest deep yellow.

HARDY FLOWERS made a fine display of colour. Mr. T. S. Ware, Tottenham, exhibited a large group, comprising many interesting plants. The most noticeable were: *Delphinium Héricart de Thury*, a bright bluish purple variety; *Arum eructum*—this is remarkable for the immense size of the spathe, which is reddish and coated with hairs; *Campanula grandis major*, a deep violet-purple variety, the flowers large and produced in dense spikes; *Inula*

glandulosa, a fine variety, the flower-heads measuring fully 5 inches, and of a rich orange colour; *Helianthus occidentalis*, an early-flowering and dwarf-growing perennial Sunflower; *Lilium pomponium*, recently reintroduced from the Southern Alps, the foliage narrow, and the flowers of a brilliant scarlet colour; and the white form of the common Maragon Lily. A silver medal was awarded. Messrs. Paul and Son, Cheshunt, also staged a group, comprising Peonies and other flowers in season. A silver medal was awarded. Messrs. Kelway and Son, Somerset, were awarded a bronze medal for a collection of Delphiniums, Gaillardias, Peonies, and Iris. Amongst the former, Apollon, deep blue, and Cherub, light metallic blue and pink, were conspicuous. Messrs. Barr and Son, Covent Garden, received a like award for their group of hardy flowers.

The Poppies raised and shown by the Rev. W. Wilks, Shirley Vicarage, Croydon, displayed an interesting range of colouring, comprising delicate pinks, pure whites, and rich scarlets. All were varieties of the common English field Poppy. Mr. T. Laxton, Bedford, showed a new Sweet Pea, named Invincible Blue, the colour being a fine blue. Carnations were sent by Mr. H. B. May, Dyson's Lane, Edmonton, the whole of the plants well flowered. The varieties included Miss Joliffe, one of the best; Dr. Raymond, similar in colour and fragrance to the old crimson Glove; and Belle Halliday, light yellow. Mr. J. Douglas, Great Gearies, Ilford, contributed Picotee Almira, a yellow ground of good form, the petals coloured here and there with light red; and P. Agnes Chambers, also a yellow ground, the flower full, lightly edged with pale terra-cotta colour.

From Mr. Henry Bennett, Shepperton, came the pedigree Tea Roses Princess Beatrice and William Francis Bennett. The first is well known, and the latter is a deep carmine, beautiful in the bud, but when fully expanded shows the centre. Mr. R. Dean sent *Chrysanthemum coronarium* Sunbeam, bright yellow, and varieties of *Dianthus plumarius*; and from Mr. O. Hodges, Lachine, Chislehurst, came Sweet Pea Terra Cotta; *Begonia Gaston Wirix*, semi-double pink and yellow; and B. Gilbert, a rich scarlet double variety.

Messrs. J. Veitch and Sons staged *Styrax japonica*, a free-flowering, elegant, and pretty tree with white blossoms; and *Andromeda speciosa pulverulenta*, which bears dense spikes of pretty white, bell-shaped flowers. Mr. C. Noble, Bagshot, showed *Acacia Decaisneana*, a pink variety of the False *Acacia* (*Robinia Pseudacacia*); the flowers are borne in large pendent racemes. Mr. Gordon, Twickenham, exhibited a new Japanese Maple, *Calceolaria Cloth of Gold* came from Mr. W. Rapley, Bedford Hill House, Balham; the flowers are large and of a bright yellow colour.

Fruit committee. Fruit was fairly plentiful. Mr. Charles Turner, Slough, exhibited Turner's Green Flesh Melon, a large fruited variety; and from Mr. Goodacre came Lockington Hall Muscat and Rockferry Hamburgh Grapes, the first a white variety, and the other black, both being of good appearance. Mr. Clarke, of Twickenham, sent a basket of Pauline Strawberry, a variety with large, highly-coloured fruit; and a collection of Apples in an excellent state of preservation, considering the season, was exhibited by Mr. John Watkins, Pomona Farm, Withington, Hereford. The best of the varieties were Moss's Incomparable, Striped Beaufin, Dumelow's Seedling, Winter Greening, Hambleton Deux Ans, Norfolk Beaufin, and Rymer.

In competition for the prizes offered by Messrs. Carter and Co. for Melon Glenheim Orange, Mr. T. Lockie, the Gardens, Oakley Court, Windsor, was first with a fine fruit; Mr. H. W. Ward, gardener to the Earl of Radnor, Longford Castle, Salisbury, being second; and Mr. C. J. Waite, Glenhurst Gardens, Esher, third. The same firm also offered prizes for a brace of Cucumbers, Messrs. T. Lockie and C. J. Waite being first and second respectively, and Mr. G. Collins, gardener to Mr. J. A. Ross, Wandsworth Common, third. Special prizes were also offered by Messrs. Sutton and Sons, of Reading for a brace of Melons, Mr. J. H. Goodacre,

Elvaston Castle Gardens, Derby, coming first with fine fruits of Hero of Lockinge; Messrs. C. J. Waite and T. Lockie were second and third respectively. For the special prizes offered by Messrs. Webb and Son for Melons, the prize-takers were Messrs. J. H. Goodacre and T. Lockie in the order named.

Special Meeting.

A special meeting of the Royal Horticultural Society was held on Tuesday last at South Kensington for the purpose of announcing to the Fellows the real position of the society, and to gain their opinion as to what should be done for its future welfare. There was a good attendance, including many of the leading horticulturists, and throughout there was manifested a keen interest in the society and a desire to place it upon a sound basis, so that it may become a real power in the furtherance of practical and scientific horticulture in this country. The chair was taken by Sir Trevor Lawrence, Bart., who, in the course of his remarks, mentioned that the state of affairs was very much as it was last spring, and the uncertainty as to the future of the society was having a prejudicial effect upon it, several old Fellows having ceased to become members and no new ones joining. The Royal Commissioners of 1851 offered a site, but it was inadequate, and the council have done all in their power to obtain one, but their efforts have failed. Moreover, the expenses were still going on, and not decreasing, so that under the present condition of things the society would soon be in debt. Under the most favourable circumstances there will be at the end of the year a deficit approaching £1000, this being due in a great measure to the failure of the Liverpool show. The chairman felt sure that if the society were to put forth a definite and practical scheme that it would be supported. The council propose to take steps for the future housing of the society, and, with a view to economising, to carry on the operations for a time at Chiswick after the end of the year. The opinion that prevailed was in accordance with this proposal, but that large shows and the meetings should be held near the city, Chiswick not being sufficiently central. It was thought that by so doing the sphere of usefulness would be extended, and the society become far more national in its character than it is at present. It was proposed and seconded that steps be taken immediately to secure accommodation for the society at the close of the year, either permanent or temporary, in some central situation in or not far from the city.

Gardeners' Orphan Fund.—The first general meeting of the supporters of this fund will be held in the conservatory of the Royal Horticultural Society, South Kensington, on Tuesday, July 12, at 3 p.m., to receive and adopt the report of the provisional committee as a basis upon which to establish the Gardeners' Orphan Fund, to elect officers, executive committee, &c. It is hoped that all sympathisers with the movement will make it convenient to attend. Mr. A. F. Barron is the honorary secretary.

Gardeners' Royal Benevolent Institution.

The annual dinner of this institution took place on Wednesday evening at the Albion Hotel, Aldersgate Street, E.C. Baron Ferdinand de Rothschild, M.P., presided, and a very large company was present, including many of the leading horticulturists. The chairman proposed the toast of the evening, and in a careful and able speech reviewed the past history of the institution, which originated as far back as 1839. After it had once established itself it made vigorous progress. He strongly advocated the claims of the institution, and appealed for a further increase in the funds to meet the need of those who seek for assistance, but which cannot be given until the subscriptions are increased. He felt sure that it might be supported even more liberally than it is by the gardeners themselves, and mentioned the resolution of the committee to increase the list of pensioners to 122 to fittingly mark this jubilee year of Her Majesty. Mr. Harry Veitch, the present treasurer, said that the first year £126 were obtained, the next year £200, and from that time the funds have steadily increased.

The annual subscriptions were highly satisfactory, and the secretary, Mr. E. Cutler, announced that over £1400 had been received that evening, £714 coming from the gardeners—a healthy sign for the continued prosperity of the institution.

THE RATING OF NURSERIES.

A PUBLIC meeting of nurserymen was held at the Horticultural Club on Wednesday last "to take into consideration the excessive rating of nurseries, and to agree on a combined course of action with a view to the reduction of assessments." Mr. J. Wood-Ingram, of The Nurseries, Huntingdon, took the chair, and there was a good attendance. The secretary (Mr. Goodchild) read several letters received from nurserymen in various parts of the country, who pointed out the unfair rating of nurseries. One individual, writing from Middlesex, stated that for one place he paid £20 a year and was assessed at £15; for another he paid £15 and was assessed at about £70. The chairman pointed out that there was no satisfactory basis of assessment, and it was desirable that a case should be decided by the highest court, so as to obtain such a basis. He showed, by illustrations derived from his own experience, that the amount of assessment was determined in a haphazard manner. He moved the following resolution:—

That this meeting of nurserymen and market gardeners, representing the London and provincial trades, hereby protests against the excessive rating of nurseries and the absence of any basis on which the assessments are founded, and is of opinion that the matter is one which calls for combined action with a view to taking such steps as may be necessary for placing the assessments on a well defined basis; and pledges itself to do all in its power to effect this purpose.

Mr. Sharman (Carter and Co.) seconded the proposal, and said that for one house his firm paid £100 a year, and was rated at £200. The whole thing seemed crude and undefined. Mr. Bennett argued that the assessments must be based on the rentals. Nurserymen could remove their erections when they liked, and that proved that the erections were nothing but chattels, which could be removed in case of bankruptcy. He had long been engaged in assessment work, and had never known one single case in which the assessment of an agricultural holding was advanced unless the rent had been increased. He advised that everyone should refuse to pay on anything more than his rental.

Mr. Haines, Penge Nursery, stated that he had in hand an action against his parish for the return of £250 odd, which they had illegally taken from him. The discussion was continued by Mr. Horsman, of Inkley, near Bradford; Mr. Beer, of Worthing (who advocated the formation of a deputation to wait upon the Home Secretary with a view to the appointment of a commission); and Mr. Cobb, Forest Hill; and the resolution was then agreed to unanimously. Mr. George Bunyard, Maidstone, moved:—

That a committee be appointed to carry out the previous resolution.

Mr. Haines seconded, and it was agreed to. The following gentlemen consented to act, and were given power to add to their number:—Messrs. Sharman, Wood-Ingram, Haines, Beer, Pearson, Williams, Horsman, Bennett, and Bunyard. Mr. Chitty, Walthamstow, moved that a guarantee fund be raised. This was seconded by Mr. Lowe, Ex-bridge, and agreed to.

Royal Horticultural Society, Chiswick.—We learn that the Strawberry fête is fixed for Saturday, July 9.

We learn from *Nature* that Miss Oldfield has presented to the herbarium of the Royal Gardens, Kew, the botanical collections made in Australia by her late brother, Mr. Augustus Oldfield. The series of Eucalypts are especially good, as great pains were taken to obtain the characteristic forms of each species.

Names of plants.—*E. B.*—*Asimina triloba*.—*J. F.* 1. *Sempervivum arachnoideum*; 2. *Tussilago Farfara variegata*.—*J. Stapleton*.—1, 2, 3, 4, varieties of *Orchis maculata*; 5. *Iris pseudacorus*.—*F. M.*—Impossible to name varieties of Iris.

WOODS & FORESTS.

"YORKSHIREMAN."

THE GIANT ARBOR-VITE.

(THUJA GIGANTEA.)

THAT the climate of Britain is peculiarly well suited for the development of this stately, fast-growing tree is certainly beyond a doubt, for although introduced only thirty-five years, many specimens of 70 feet and upwards are to be met with. On this estate the annual rate of growth exceeds that of most other trees of which I have kept a record, twenty-four trees of this Thuja growing under ordinary conditions in the park having made an average annual growth of 22 inches; but even this is far surpassed by young trees of 8 feet or 10 feet growing in the home nursery. Unlike many of its American relatives—such as the Wellingtonia and Sequoia—this tree is never seen with a Carrot-shaped stem, but gradually tapering throughout, and terminating in a leading shoot that is as thin and pliable as a whip-handle. As an illustration of what is meant, we may say that the usual stem girth of a specimen 60 feet in height is 4 feet at a yard from the ground; whereas a tree of the Wellingtonia of similar height would in most instances be double that girth, and with a fast taper from base to tip. The branches are numerous, very irregularly arranged along the stem, and short in proportion to the tree's height, the branch diameter of a 50 feet high specimen standing alone being usually but 12 feet at the widest part. They are placed at right angles to the stem, or nearly so, very flexible, frondose, and with up-curved tips, and thickly covered with scale-like, finely-pointed leaves, which are of a bright glossy green on the upper side, and distinctly glaucous beneath. Usually the cones, which are fully half-an-inch long, and resembling those of the common American Arbor-vite, are produced in great abundance on the upper half of the tree, and when fully ripe impart, from their great quantity and tawny brown colour, a by no means uninteresting feature to the tree. Judging from several hundreds of this tree planted over the estate, I should say that a deep, sandy, but moist loam suits this tree best; but yet it is far from particular as regards choice of soil, for we have numerous grand, rapid-growing, well-furnished specimens on deep well-decayed vegetable matter, rough sandy soil, rocky debris, and in loam of a rather clayey nature.

Professor Macoun, of Ottawa, tells me that he has found this tree of largest size where growing in rather damp alluvial deposit; indeed, that it is almost unknown in the dry central plateau, but plentiful along the coast and lower parts of the rivers in its Canadian wilds. As to exposure, this Thuja is likewise to a great extent indifferent, although we must admit that even in our warm maritime county there is certainly a marked difference between trees growing in sheltered, sunny corners and such as are fully exposed to cold, keen-blowing winds, but even in the latter situation and when at a moderate elevation above sea level this tree does fairly well—better, indeed, than many other kinds that have been brought from the American coast. Even during the memorable Tay Bridge gale, when almost every tree suffered in some way or other, this Thuja remained unharmed, and I can safely say that during my ten years' sojourn at Penrhyn I have never seen a single specimen uprooted or a leader broken over by the wind. This latter is not to be wondered at, for I have more than once tied a knot on the leading shoot, so pliable and tough is the wood, and which, when released, springs back to its original position in a manner that is quite surprising.

The timber of this tree, as everyone must know who had the privilege to behold the huge logs and nicely dressed smaller boards in the Canadian court of the late Colonial Exhibition, is of excellent quality, and highly prized by our American cousins. It is of a desirable yellow colour, fine in the grain, easily worked, remarkably durable, and, what is especially valuable in any wood, light in proportion

to its bulk. It must be understood, however, that we are now referring to timber produced in Canada, for as few specimens of this tree in Britain have reached a greater age than five-and-thirty years, the timber cannot be said to have attained to anything like maturity. From a specimen preserved here, and which was grown on the estate, it appears little different either in colour or texture from that produced in its native country. The large butt of this tree referred to above, and which attracted a great amount of attention at the Colonial Exhibition, was no less than 21 feet in girth, and was taken from a tree 250 feet in height. Professor Macoun mentioned that this specimen might be considered as about the largest, but that, under favourable circumstances, the average dimensions reached by this stately, fast-growing tree are but little less.

In many instances the largest trees are hollow, and he likewise told me that it was not at all uncommon for several stems to issue from one crown, and that, like the Spruce Fir in this country, the outer branches of large specimens growing along the margins or open portions of the wood when they come in contact with the ground, take root and send up stout stems, thus imparting a curious appearance to such portions of the woodlands.

The north-west coast of the United States may be considered as the headquarters of this giant Arbor-vite, and where it may be seen of all sizes from 10 feet or 50 feet to about 250 feet in height, and with stems girthing from 12 feet to sometimes as much as fully 40 feet, these being clean, straight, and of gradual taper throughout. Not only for its timber, but bark as well, is this tree highly valued in its native country, this being converted into mats, ropes, clothing, and other articles of domestic economy. As the timber works readily and takes a good polish, it is much sought after by the American cabinetmaker, while most of the canoes made on Vancouver's Island are cut out of it, as also boats and ships; while for lasting qualities it surpasses most of the native timbers, for we were told that in repairing an old fort the only log found sound after twenty-one years' trial of those used for under-pinning was that of an Arbor-vite.

Some five years ago we planted experimentally a small piece of ground near sea level with fine healthy 4 feet high plants of Thuja gigantea. These were planted at 16 feet apart, and the intervening spaces filled up with Larch and several species of hardwood for removal at an early date. The soil being rather cold and damp, though artificially drained, was not well suited to the perfect development of this fast-growing tree, and, moreover, it was of a stiffish nature, in some places rapidly inclining to clay. To obviate the evil as much as possible the ground was well turned up at the time of planting, and the soil exposed for a short period to the ameliorating influences of a winter's frost. The plants have now become quite established and are growing rapidly; indeed, an examination of several specimens made to-day clearly shows that they will ultimately surpass both in height and stem bulk any of the other trees with which they are associated. It is evident from the narrow spread of the branches of this Thuja that it is eminently adapted for forest planting—at least that it will succeed better when grown thickly together than the majority of Conifers whose spread of branches is wide in proportion to their height. As it may be transplanted when of large size, this Thuja is of great value for filling up gaps in young plantations, and as its hardihood in this country is now quite an established fact, it bids fair to outrival many others for planting in even the coldest parts of the British Isles.

As a substitute for the Larch, in conjunction with the Corsican Pine and Douglas Fir, this giant Arbor-vite is well worthy of attention; indeed, it possesses qualities of which both these species are deficient, viz., in its being readily transplanted at all sizes up to 6 feet (want of this is the Corsican's greatest drawback); while its leading shoot never gets injured on rising above its neighbours, a fault to which we have found the Douglas Fir particu-

larly susceptible. The nursery management of this Thuja is also of the simplest description, it being very readily raised from seed, perfectly hardy in its younger stages, and at all times bushy, well rooted, and consequently sure-footed. It may, however, be well to say that ample space should at all times be allowed it whilst in the nursery borders, and oft transplanting, as with other trees, induces the formation of numerous rootlets; therefore, to have nice bushy specimens the two requisites alone are plenty of room and frequent removals. As an ornamental tree Thuja gigantea holds a high place, its compact, but easy contour, beautiful vivid green foliage, and well furnished appearance even when planted under what might be considered as disadvantageous circumstances rendering it a general favourite with the lover of hardy trees. Planted either singly or in masses of, say, five or seven together on the greensward and in close contiguity to clumps of the more still-growing Pines, it never fails to attract attention and produce the most pleasing effect. Again, as a single specimen for planting at irregular intervals around the margins of plantations that are visible from park drives and walks it is well suited, and quickly forms a neat tree of very pleasing appearance, and in such positions is of great value for lighting up our deciduous woodlands during the winter months. This handsome, fast-growing tree was sent to this country by Jeffrey in 1851. A. D. WEBSTER.

WOODS FOR GARDEN FRAMES.

THERE is probably no wood better suited for making frames than home-grown Elm. It is certainly somewhat heavy, but as extreme portability is not a great consideration, this is of little consequence. In any case the objection is overcome by building the frames so that they can easily be taken to pieces. Discretion, however, is necessary in selecting material, or disappointment is sure to follow. Young, tough, and imperfectly seasoned wood will be a source of continual trouble. A clear and well-matured butt of Elm for conversion into planks of from 1½ inches to 1¾ inches in thickness for good-sized frames is none too heavy. This should not be cut through and through so that the planks or boards come off at various widths and with wavy edges, but what is technically known as a "stock," i.e., a single thick plank of from 12 inches to 20 inches in thickness should be taken out of the centre of the tree. This is afterwards reduced to the 1½-inch or 1¾-inch boards or planks. By these means the best part of the tree is secured, and the edges of the planks square and free from sap. Approximately too they are in line with the grain. In Elm this is not so important as in some woods, but it is nevertheless a great advantage, as it makes the material less absorbent. As a proof of this, Oak cut across the grain is useless to cask-makers on account of its allowing the liquor to penetrate. The length of time these planks will take to season will, to a certain extent, depend upon circumstances. At first sight it may appear that, as the frames have to be constantly exposed, the use of seasoned wood will matter but little. This, however, is a mistake, as no frame can be considered complete until it has been thoroughly painted, and what the painting of imperfectly seasoned wood means, those who have had opportunities of observing will not be at a loss to determine. The actual method of construction is rather a question for the carpenter than for the yard manager or the gardener, it always being necessary that the joints should be made close to prevent the escape of heat; plunging and tonguing are probably the safest plans. In speaking of frames, of course, I refer to the frames proper, and not to the sashes or lights. The woodwork of these is generally made of the best red deal. As a small amount of twisting or warping is almost inevitable from the nature of Elm, especially when cut into small dimensions and unsupported, clean seasoned Oak is to be recommended in preference to it for the bars across the frame upon which the lights slide. Deal being more easily worked, there is a temptation to use it for this purpose instead of Oak, but when Oak is available it should always be chosen, as when selected with judgment it will last as long

as the remainder of the frame. A little thought will show that it is upon these bars that the great stress comes, and that constructing them of proper material is very important. D. J. YEO.

THE EXHAUSTION OF THE SOIL BY THE ROOTS OF TREES.

"T. B." directs attention to this in *THE GARDEN* (p. 517). While agreeing with him as to the evils of a starvation treatment for the roots of trees, I think this arises oftener for lack of timely thinning than from over-thick planting. There is but little risk of any serious scarcity of food during the earlier stages of the growth of trees and shrubs. Through these stages the soil is fresh, and mostly fairly well stored with plant-food. What the plants need most is shelter, warmth, quickening stimulus to enable them to utilise the food in the soil, rather than largish masses of food in bulk, set aside each for itself. It is thus that thickish planting fosters, not hinders, growth—provided always that overcrowding or crushing is avoided, and that prompt and timely thinning takes place before the competition for food among the roots becomes so severe, that the weakest must suffer severely, or go down in the severe struggle that must ensue over the survival of the fittest—that is, the strongest.

It is difficult, not to say impossible, to remedy the evil results of such destructive competition at any future period. True, when plants and roots are thinned out, those left will hasten to occupy the vacant places of those cleared away. But it is not always the best or most profitable plants or roots that survive. Very frequently it is very much the contrary, and no after treatment or subsequent thinning can recall the dead roots to life again. Even weakly or sickly ones are long in recovering to perfect health, and in not a few cases trees or plantations never recover their early crushings and starvings.

So obvious is all this, that some planters have been driven to find excuses for thick planting and slow thinning, on the ground that by using mixtures,

the evil of too many mouths for the food present in the soil is greatly mitigated, if not wholly cured. If it be true, and it is, that one man's meat is another man's poison, why should not the same law or truth hold good among the roots of trees of widely differing species and varieties? Hence they fail to see or admit what seems so obvious to "T. B.," "that the earth can no more sustain two plants where one requires all the nutriment present than it can feed two animals on a space only large enough for one." It may, or can, they reply, provided the two plants choose and indeed require, very different nutriment. And were not this the case to a very large extent, it would be quite impossible for the earth to carry half the crops that it does.

And in the case of trees and shrubs, &c., not only do the plants to a large extent feed on different foods, but each also feeds on a different plane—that is, a distinct depth from the surface. Hence the wisdom and profit of a mixed crop, especially in permanent plantations. Only thus can all the feeding properties of the soil be utilised to the best advantage and turned into the most profitable channels.

But none of this is meant to oppose "T. B.'s" protest against root-starving by over-crowding and under-feeding, but rather to show how trees subsist and grow at times under the most unfavourable conditions. One set may thrive on the other's leavings, and the wide-running, deep-boring roots are always reaching and utilising fresh fields of food further afield or deeper down.

How far a food-famine at the roots quickens their extension has never yet been clearly shown, but that root-hunger stimulates root-growth can hardly be doubted, as it is mostly found in practice that the poorer the soil the further the roots run, and the more widely and minutely they ramify; and no practical man needs to have explained to him the important bearing of this latter feature of root-structure on their collecting and feeding properties.

HORTUS.

Garden seats and trellises.—This is the most suitable time for securing the small Oak branches that are used for garden seats and trellises. Where a felling of Oak has taken place, these branches, in most cases, may be purchased for a small sum. When properly constructed, seats and trellises made of this wood are in keeping with the character of a garden; but it requires considerable experience to utilise satisfactorily these crooked sticks. The wood, too, is not very durable. Being so near the top of the tree, the branches are mostly sap wood, and when exposed to all weathers soon begin to decay. In the case of trellises this is not such a drawback, as a little decaying wood, provided there is strength enough to carry the weight, does not matter much, as it is usually hidden by climbing plants. With regard to seats, there is a want of comfort in them when made of Oak branches, and to meet this difficulty, I suggest that the seats be made of solid boards. I have just succeeded in making a seat, which is not out of character with its surroundings. This is of solid Oak, and consists of what, in the market, would be three-quarter-inch boards of very little value, that is, boards which contain knots. The supports of the seat consist of rough Oak posts, which are hidden by overhanging trees and shrubs. Although these Oak branches answer for making trellises, many of our common woods may also be used. For light constructions, provided the posts are of lasting material, the trellis itself may be made of any of the Firs which have a recognised timber value. Cut into strips of the required dimensions, even Poplar may be worked in to advantage. Considering the ease with which such things may be made, it is rather surprising that they are not more common, as, by the use of quick-growing plants, unsightly objects are so effectively covered; when obtainable, Yew is an admirable wood for such purposes. For out-of-the-way positions, where the trellis would be more of the character of a fence, slabs which come off in squaring up the various kinds of home-grown timber sometimes answer well. —D. J. YEO.



